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Economic freedom, economic growth and international tourism for post-communist (transition) countries: A panel causality analysis

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Abstract. *This paper examines the causal relationship between economic freedom and foreign tourist arrivals for 17 post-socialist transition countries during the period from 1996 to 2012. We employ the recently introduced panel Granger causality approach that is flexible enough to take account of both cross-country correlation and heterogeneity across the countries. The empirical results support the evidence on (i) the neutrality between economic freedom-economic growth and between economic growth-international tourism with few exceptions and (ii) the causality from economic freedom to tourism in six out of seventeen transition economies.*
Post-socialist countries are still in the process of integrating into the market economic system and also the global system; and consequently, the results of the current study are heavily shaped by the historical backgrounds and also the infancy of the transition process of these nations.

Keywords: economic freedom, foreign tourism, economic growth, transition countries, panel causality.

JEL Classification: Z32, C33, P24, O47.

Introduction

Since the conclusion of the Second World War, the economic and political landscape has dramatically changed in a rather discrete manner but the frequency and the speed with which the landscape has shifted have been tremendous, particularly after the 1990s. Globalization encompasses all dimensions of our lives, where there has been a broadening, deepening and speeding up of worldwide interconnectedness, from cultural to economic, from financial to religious, from entertainment to politics, from cuisine to international trade and, finally, from tourism to the environment. In today's global world, tourism's (particularly foreign tourism's) contribution to the overall economy is one or a combination of these three mechanisms: direct, indirect and induced. The sector's contribution in the form of favorable externalities may be even stronger than the primary direct effects. Due to these primary and secondary effects, we have witnessed government incentive schemes with a variety of forms and specific policy measures to fuel the growth of the tourism sector in a large number of countries. Because of these endogenous government policies and also the transformation originating from the globalization process, international tourism has gained substantial momentum, mostly in the last two decades.

Given the importance of tourism in both economic growth and sustainable development, special attention, on the one hand, is paid to the causal dynamics between economic growth and tourism. Empirical studies with the aim of uncovering the causal link between economic growth and foreign tourism yielded conflicting results. Some studies found evidence supporting the causality from tourism to economic growth (inter alias; Schubert et al., 2011; Brida et al., 2010; Zorturk, 2009; Kim et al., 2006; Gunduz and Hatemi, 2005), yet some other studies found evidence on the causality from economic growth to tourism (inter alias, Oh, 2005; Narayan, 2004). Bidirectional causality was detected by (inter alias, Mallick et al., 2016; Chen and Chiou-Wei, 2009; Cortes-Jimenez et al., 2009; Dritsakis, 2004; Durbarry, 2004 and Lee and Chang, 2008) whereas some studies failed to find statistically significant evidence about causality in any direction between two variables (inter alias, Eugenio-Martin et al., 2004; Katircioglu, 2009; Figini and Vici, 2010)[(1)]. On the other hand, many scholar have paid keen interest in the causal links between foreign tourism and a variety of variables, including international trade (inter alias, Kulendran and Wilson, 2000; Khan et al., 2005 and Kadir and Jusoff, 2010), regional convergence (inter alias, Cortés-Jiménez, 2010 and Soukiazis and Proenca, 2008) and political (in) stability (inter alias, Algieri, 2006 and Narayan et al., 2010). One of the prominent explanations behind the conflicting results on the causality between tourism and the variety of economic aggregates is the differences in institutional structure amongst countries. According to Landes (1998), cultural norms and institutions are often believed to explain why certain countries grow rich and others remain poor.

Over the past few decades, the world has undergone a remarkable transformation. During this era, the transformation concerned increasing levels of economic and technological integration in the world system and resulted in new patterns of social,

economic, cultural and political alignments, including extensive liberalization policies (particularly in developing nations in the economic, political and financial areas), the end of the Cold War, growth in international tourism, and creation of a global culture, etc. The pattern of transformation in the global system is also related to our research questions in two interconnected points: (1) during the same era, a significant growth trend in international tourism has been observed, and the tendency has become more pronounced for developing nations, and (2) the same era also coincides with the end of the Cold War and beginning of transformation struggles for some countries, known as post-socialist states.

Since the onset of transition at the end of the 1980s, a large number of countries in the Euro-Asia region have implemented a set of reforms intended to develop market based institutions involving almost all aspects of economic, social and democratic context. Up to early 1990s, these post-communist countries had centralized "command" economy which is incompatible with international tourism (see for example, Hall, 1991 and 2001), and therefore, it may be misleading to assume that these countries completed the necessary fundamentals for successful international tourism development. These transition countries had different initial conditions, and each of these nations employed different transition models; therefore, the process of the transition from planned economic system to market economy displays significant differences among these nations. Related to the differences in transition process, the important point is about the fact that international tourism is very vibrant, and their relationship with economic growth and also with economic freedom is extremely complex. In this dynamic and vibrant process, the places, namely tourist destinations, are endlessly (re)invented, (re)produced, (re)captured and (re)created by the simultaneous coexistence of global and local forces (Milne and Ateljevic, 2001).

In the early 1990s, the total factor productivity in the value added process in the post-communist transition countries was significantly lower than that of countries with similar per capita income level. The productivity gaps, in general, stemmed from the inherited capital and production structures as well as ineffective institutions supporting economic activity (European Bank for Reconstruction and Development, 2013). The major reforms in price liberalization, small-scale privatization and the opening-up of trade and foreign exchange markets were mostly implemented by the end of the 1990s. Because of the favorable impact of these reforms on production, consumption and investment, we observe that by the mid-2000s, the productivity gap between these (at least majority of) transition countries and other emerging economies with similar GDP per capita level was almost fully closed.

The institutional economic literature states perfectly that well designed and enforced institutions may significantly improve efficiency for almost all the sectors, including tourism. Acemoglu et al. (2001) ask whether the quality of economic institutions (economic freedom) may play some role in augmenting or hampering the influence of international tourism over economic growth or vice-versa. The tourism-led-growth

hypothesis may be more relevant if we consider institutional factors; that is, some nations can exploit the opportunities accrued from foreign tourism to boost macroeconomic performances if they possess good institutions inherited from the complex and dynamic procedures. In addition to this motivation from the view of political economy, the important motivation in examining the causal linkages among economic freedom, economic growth and tourism is that the transition process is associated with the increase in income level and most of the transition countries possess an attractive tourist destinations. However, we have not encountered any studies in the literature that have investigated the *causality* for these three variables (or other variables consistent with institutional economic theory) referencing post-communist countries that offer a remarkable "controlled" experiment because of their unique resemblance in political, social, economical and cultural stance in the early 1990s. Investigating these causal linkages provides insights to better understand the role of transition process because all post-communist nations began the transition process with similar backgrounds (centralized command-economy, price control, limited or no private property, large state monopoly industries and so on). Moreover, in comparison with other developing countries, all these post-communist nations began the transition process with relatively large stocks of human capital (that is, the neoclassic model of endogenous growth model via human capital is accounted for) and therefore the differences in human capital should not play a decisive role explaining differences in growth rates among these countries. In addition to these factors, since the transition path pursued by each these post-communist state has been quite different, this represents a particularly good source of data for engaging meaningful statistical analysis.

This study aims at investigating casual relationships among international tourism, economic growth and economic freedom utilizing a panel Granger causality framework for 17 post-socialist countries (Albania, Armenia, Belarus, Bulgaria, Croatia, the Czech Republic, Georgia, Hungary, Latvia, Lithuania, Moldova, Poland, Romania, Russia, Slovakia, Slovenia and Ukraine) for the period of 1996-2012. The panel results indicate the lack of causal link between economic growth-tourism arrivals, economic growth-economic freedom, and finally economic freedom-foreign tourist arrivals. Besides, given the importance of heterogeneity with respect to level of development and economic freedom as well as share of tourism in economic structure, we find clear evidence on the heterogeneity across-countries for the causal linkages between economic freedom and tourism arrivals.

The next section is devoted to a literature review. In section 3 and section 4, the data set and the methodological devices utilized in the study are explained at length, respectively. The results are reported in section 5, which is followed by conclusions.

Background and literature review

Scholars have long had interest in addressing whether "tourism" is the elusive quest for growth. The importance and the relevancy of foreign or international tourism on this quest, however, are relatively new. In the past two decades, quite a large number of empirical studies have been devoted to examining the causality and/or correlation between international tourism and other economic and social variables. One of the most attractive research questions has been the statistical correlation and also causality between foreign tourism and economic growth (inter alias, Sequerira and Nunes, 2008; Brida and Pulina, 2010; Narayan et al., 2010; and Ivanov and Webster, 2013). These empirical studies have utilized different empirical tools, different time spans and different sets of countries and yielded conflicting results. Based on the inconsistencies in results, four different alternative hypotheses have been proposed: (1) the tourism-led-growth (TLEG, henceforth) hypothesis[(2)], (2) the growth-driven-tourism (GDT, henceforth) hypothesis, (3) bidirectional causality and (4) no-causality.

Although there is substantial literature on this topic for a large number of countries, the large share of these studies is devoted to the OECD countries and particularly countries with globally famous tourism backgrounds (for example, Greece, Spain and Turkey). The empirical studies limiting their focus to transition countries (particularly to the post-communist countries) hardly exist. Chen and Chiou-Wie (2009) examines two Asian countries, S. Korea and Taiwan. Chen and Chiou-Wie (2009) employed the VAR-method (to examine the causality) and to control the uncertainty they employed the EGARCH method by utilizing data covering 1975Q1-2007Q1. They reported that TLEG is more in tune with Taiwan, whereas bidirectional causality was detected for S. Korea. Oh (2005) conducted an empirical study for S. Korea with a data set covering 1975-2001 by utilizing a Granger-causality test based on the VAR framework and failed to find evidence supporting the TLEG hypothesis. Kim et al. (2006) undertook a similar study on Taiwan in the period between 1971 and 2003 and used a two different set of data-spans: both quarterly (1971–2003) and annual (1956-2002). They found strong evidence supporting bidirectional causality for each case.

Three studies (Payne and Mervar, 2010; Surugiu and Surugiu, 2013 and Chou, 2013) with a specific focus in post-socialist countries deserve some attention. Payne and Mervar (2010) examined the relevancy of TLEG hypothesis for Croatia using quarterly data covering from 2000Q1-2008Q3. They employed Toda–Yamamoto causality tests and reported that the causality run from real GDP to international tourism revenue. Surugiu and Surugiu (2013) and Chou (2013) address the long-run causal relationships between tourism growth (in particular tourism spending) and economic growth. Surugiu and Surugiu (2013) employ Granger causality analysis based on the vector error correction model (VECM) and impulse functions for Romania by employing data set covering from 1988 to 2009 and reported evidence supporting TLEG hypothesis. Chou (2013) uses panel causality test for 10 transition countries (Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Poland, Romania, Slovakia and Slovenia) and find that (ii)

TLEG is supported for Cyprus, Latvia and Slovakia; (ii) the GDT hypothesis is more appropriate for the Czech Republic and Poland; (iii) the feedback mechanism is more appropriate for Estonia and Hungary; and finally, (iv) the neutrality hypothesis (neither tourism development nor economic growth is sensitive with the other) was detected for Bulgaria, Romania and Slovenia.

Growth theory asserts that in addition to factors in standard neoclassic production function, high quality formal institutions play an important role in economic growth process. North (1990) and Landes (1998) postulate that there exist strong links between economic institutions and economic growth. The intuition derived from the conventional institutional approach exclusively assumes that the causality runs from institutions to economic development, and therefore, the theory ignores an important possibility that economic growth may also stimulate better economic institutions. Acemoglu and Robinson (2013) argue that economic institutions that enforce property rights, create a level playing field, and encourage investments in new technologies and skills are conducive to economic growth. According to Berggren (2003: 194), economic freedom is a composite arrangement that attempts to characterize the degree to which an economy is a market economy, that is, the degree to which it entails the possibility of entering into voluntary contracts within the framework of a stable and predictable rules of law that uphold contracts and protect private property, with a limited degree of interventionism in the form of government ownership, regulations, and taxes. The freedom is, therefore, related to freedom of individuals to work, to produce, to consume, and to invest in any way they please, and the freedom is both protected by the state and unconstrained by the state (Beach and Kane, 2008).

In the applied works, economic freedom indexes (or economic freedom indicators) are generally considered as the degree of compatibility of a country's institutional structure with a market economic system. This hypothesis has been tested for many countries and with different methodological tools in the empirical literature. Studies by Barro (1996), Keefer and Knack (1997), Hall and Jones (1999), Acemoglu et al. (2001) and many others explored the positive link between the institutional environment and economic performance for a large number of developing and developed countries.(3) In the empirical literature, contrary to the main argument of conventional institutional theory, some studies produce strong evidences showing that the existence of formal economic institutions may not lead to economic prosperity in the former socialist economies since they often lack compatibility with post-communist economic systems or prevalent informal norms.(4) According to Tamilina and Tamilina (2012), the lack of strong political contexts is believed to restrain these countries from further improving their formal institutions, and as a result, institutional reforms usually end up promoting only the redistribution of economic or political power without entraining any substantial change in economic growth

In the literature, the number of empirical studies that share similar scientific enterprise with ours for these post-socialist countries is relatively small: We have encountered

only five studies examining the causality/correlation between economic growth and economic freedom for transition states. Paakkonen (2010) engages regression/correlation analysis for post-socialist countries by employing both the standard growth accounting variables (inter alias, capital formation including FDI, human capital, R&D) and also institutional variables. He reports that the favorable role played by institutional variables is relatively small; and in some cases, even not significant. However, Seputiene and Skuncikiene (2011) and Prochniak (2011) utilize standard regression method and run a battery of regressions with alternating variables, and they demonstrate that in addition to standard variables in growth accounting literature (i.e., physical capital, human capital, etc.), variables in accordance with institutional theory (including economic freedom) generally have a positive contribution to economic growth. Other econometric studies with formal causality tests, for example, Peev and Mueller (2012) and Piatek et al. (2013), provide some evidence that economic freedom matters in achieving better growth performance. However, Piatek et al. (2013) use a composite index rather than country specific data and the causality results reported by Peev and Mueller (2012) are based on panel regression.

For the relationship between economic freedom and international tourism, the institutional economic theory postulates institutions may play important role in improving efficiency for almost all the sectors, including tourism (Acemoglu et al., 2001). The collapse of socialism in the late 1980s led to multifaceted and deep changes and challenges in the political, economic, social, and cultural systems in these countries; and in this respect, free market formal institutions (both legal framework and also enforcement mechanisms) are not expected to be fully operative and functioning in these transition countries. The institutional economics is a subfield in political economy and in terms of both theoretical and empirical dimensions it is a very active field of research. However, political tourism economics is a relatively new subfield within the tourism discipline. Because the field is relatively new and still evolving, we have not encountered any studies examining the correlation or causality issues among variables that may be located around the intersection between political economy and tourism economy. In addition to this, international tourism is also relatively a new phenomenon and therefore, difficult to connect with the role played by formal institutions in fueling the contribution of the tourism industry to economic performance. Having only a relatively short history for both domains, the topics seem to be very fertile ground for academic research. At the same time, however, given the relative infancy of institutional domains in transition countries and also the relative infancy of widespread international tourism from the global perspective, the research questions the current study is aimed at examining are crucial to better understand the causal linkages between foreign tourism and economic freedom.

Data

In this paper, economic freedom is measured by the economic freedom index (EFI) constructed by the Heritage Foundation. The index consists of ten freedom indicators (business freedom, trade freedom, monetary freedom, freedom from government, fiscal freedom, property rights, investment freedom, financial freedom, freedom from corruption and labor freedom). These freedom indicators are averaged equally into the economic freedom index and scaled from 0 to 100 with 100 representing the maximum freedom. Economic growth is measured by real GDP per capita in 2005 constant US dollars (RY), and the data are collected from the World Development Indicators (WDI) on-line database. The total number of international tourist arrivals (ITA) is employed as a proxy for tourism growth, and the data are retrieved from the database of the WDI and United Nations World Tourism Organization (UNWTO). In empirical analysis, the variables are utilized in natural logarithmic form. Based on data availability, we employ annual data for the period from 1996 to 2012 for seventeen transition economies – Albania, Armenia, Belarus, Bulgaria, Croatia, the Czech Republic, Georgia, Hungary, Latvia, Lithuania, Moldova, Poland, Romania, Russia, Slovakia, Slovenia, and the Ukraine.

The descriptive statistics are reported in Table 1. At first glance, the data shows that the mean of the economic freedom in the transition economics is close to 60, implying that the countries in the sample appear not to have high levels of economic freedom. This, in fact, is not surprising because economic freedom requires structural changes in the business environment, trade, the monetary-fiscal-financial system, property rights, corruption and labor markets that require a long-term perspective. The divergence between the maximum (72.4) and minimum (35.4) degrees of the economic freedom index may imply a high level of heterogeneity in the transition economies. A similar inference can be drawn for income level and tourism arrivals. The coefficient of variation as a simple indicator for volatility indicates that tourism arrivals to the transition economies have the highest volatility compared with economic growth and economic freedom. However, the economic freedom index has the smallest variability, as is expected because economic freedom, first of all, requires institutional changes, and once the quality of such institutions reach a certain stage, it is not likely the system would reverse. The transition countries that the current study focuses on possess different attractiveness-capacity (involving historical, natural-attraction and cultural elements and proximity to main trading routes, etc.); therefore, we observe notable variability in tourism arrivals.

The correlation coefficients in Table 1 indicate a positive linear association between economic freedom and economic growth, economic freedom and international tourism arrivals, and economic growth and international tourism arrivals. It appears that economic freedom and economic growth are highly correlated, implying that economic freedom (economic growth) facilitates economic growth (economic freedom) in the transition economies. The linear association between economic growth and international tourist

arrivals is as strong as the correlation between economic freedom and international tourism arrivals. However, the correlation is not necessarily translated into causality; and therefore, instead of simple descriptive and graphical analyses, an appropriate way to determine presence/absence of causal link among variable of interest requires application of formal statistical procedures (Nazlioglu, 2011).

Table 1. *Descriptive statistics and correlations*

Descriptive statistics	EFI	Growth	ITA
Mean	58.44	6183.76	5,824,551
Maximum	72.40	20706.67	28,177,000
Minimum	35.40	570.024	7,000
Std. Dev.	8.34	4667.88	6,550,563
Coefficient of variation	0.14	0.75	1.124
Observations	289	289	289
Correlation matrix			
EFI	1		
Growth	0.83	1	
ITA	0.65	0.59	1

Methodology

To determine the direction of causality between the variables of interest, we employ the panel data framework because panel methods increase the power of tests in hypothesis testing. In examining causal linkages within the panel framework, two issues play a key role for selecting the appropriate causality tool. The first issue is to control for cross-sectional dependence across the members of the panel because a shock affecting one country may also affect other countries through the high degree of globalization and also international trade and financial integration. The Monte Carlo experiment conducted by Pesaran (2006) demonstrates the importance of testing for cross-sectional dependence in a panel data study and also illustrates the substantial bias and size distortions when cross-sectional dependence is ignored in the estimates (Pesaran, 2006). The second issue is to consider whether the data can be pooled across countries or whether panel estimates account for country specific heterogeneity (Pesaran and Smith, 1995; Luintel and Khan, 2004). First of all, the assumption that the slope coefficients are homogeneous is unlikely to hold because countries differ in their stages of development (Luintel and Khan, 2009). Furthermore, in a panel causality analysis, imposing the joint restriction for the whole panel is the strong null hypothesis (Granger, 2003) and assumes that homogeneity may mask the country specific characteristics (Breitung, 2005).

Therefore, testing for cross-sectional dependence and slope homogeneity in a panel causality analysis is a crucial step. We hereby begin by investigating whether there is cross-sectional dependence and heterogeneity across the transition economies. In what follows, we outline the preliminary tests for cross-section dependence and slope homogeneity tests, before providing the details of the panel Granger causality test.

Preliminary tests

To test for cross-sectional dependency, one well-known test is the Lagrange multiplier (hereafter, LM) test developed by Breusch and Pagan (1980). The procedure to compute the LM test requires the estimation of the following panel data model:

$$y_{it} = \alpha_i + \beta_i' x_{it} + \varepsilon_{it} \text{ for } i = 1,2,...,N \text{ ; } t = 1,2,...,T \quad (1)$$

where i is the cross section dimension, t is the time dimension, y_{it} is the dependent variable (ITA), x_{it} is the vector of explanatory variables (i.e., EFI and RY), α_i and β_i are respectively the individual intercepts and slope coefficients that are allowed to vary across cross-section[(5)]. The null hypothesis of no cross-sectional dependence- $H_0 : Cov(\varepsilon_{it}, \varepsilon_{jt}) = 0$ for all *t and* $i \neq j$ - is tested against the alternative hypothesis of cross-section dependence- $H_1 : Cov(\varepsilon_{it}, \varepsilon_{jt}) \neq 0$ - for at least one pair of $i \neq j$. The LM test is calculated by

$$LM = T\sum_{i=1}^{N-1}\sum_{j=i+1}^{N} \hat{\rho}_{ij}^2 \; \square \; \chi^2_{N(N-1)/2} \quad (2)$$

where $\hat{\rho}_{ij}$ is the sample estimate of the pair-wise correlation of the residuals from the individual ordinary least squares (OLS) estimation of the equation (1) for each *i*. The LM test is valid for panels in which N is relatively small and T is sufficiently large. For large panels where $T \to \infty$ first and then $N \to \infty$, Pesaran (2004) proposed the scaled version of the *LM* test as follows:

$$CD_{lm} = \left(\frac{1}{N(N-1)}\right)^{1/2} \sum_{i=1}^{N-1}\sum_{j=i+1}^{N} (T\hat{\rho}_{ij}^2 - 1) \; \square \; N(0,1) \quad (3)$$

The CD_{lm} test is subject to substantial size distortions when *N* is large and *T* is small. Pesaran (2004) developed a more general cross-sectional dependency test that is valid for panels where T→∞ and N→∞ in any order. The new test is calculated as follows:

$$CD = \sqrt{\left(\frac{2T}{N(N-1)}\right)}\left(\sum_{i=1}^{N-1}\sum_{j=i+1}^{N} \hat{\rho}_{ij}\right) \; \square \; N(0,1) \quad (4)$$

Pesaran (2004) demonstrates that the *CD* test has a mean of zero for fixed T and N and is robust for heterogeneous dynamic models, including multiple breaks in slope coefficients and/or error variances, so as long as the unconditional means of the dependent and independent variables are time-invariant and their innovations have symmetric distributions. However, the *CD* test will lack power in certain situations where the population average pair-wise correlations are zero, but the underlying individual population pair-wise correlations are non-zero (Pesaran et al., 2008, p. 106). For large panels when first T→∞ and then N→∞, Pesaran et al. (2008) propose a bias-adjusted test

which is a modified version of the LM test by utilizing the exact mean and variance of the LM statistic. The bias-adjusted LM test is

$$LM_{adj} = \sqrt{\left(\frac{2}{N(N-1)}\right)}\sum_{i=1}^{N-1}\sum_{j=i+1}^{N}\frac{(T-k)\hat{\rho}_{ij}^2 - \mu_{Tij}}{\sqrt{v_{Tij}^2}} \sim N(0,1) \quad (5)$$

where k is the number of regressors, μ_{Tij} and v_{Tij}^2 are, respectively, the exact mean and variance of $(T-k)\hat{\rho}_{ij}^2$ that are provided in Pesaran et al. (2008, p. 108).

With respect to testing for slope homogeneity, Pesaran and Yamagata (2008) proposed the so-called delta ($\tilde{\Delta}$) test for the null hypothesis of homogeneity - $H_0 : \beta_i = \beta$ for all *i*- against the alternative hypothesis heterogeneity- $H_1 : \beta_i \neq \beta_j$ for a non-zero fraction of pair-wise slopes for $i \neq j$ -. The $\tilde{\Delta}$ test is valid as $(N,T) \to \infty$ without any restrictions on the relative expansion rates of N and T when the error terms are normally distributed. In the $\tilde{\Delta}$ test approach, the first step is to compute the following modified version of the Swamy test:

$$\tilde{S} = \sum_{i=1}^{N}\left(\hat{\beta}_i - \tilde{\beta}_{WFE}\right)' \frac{x_i' M_\tau x_i}{\tilde{\sigma}_i^2}\left(\hat{\beta}_i - \tilde{\beta}_{WFE}\right) \quad (6)$$

where $\hat{\beta}_i$ is the pooled OLS and $\tilde{\beta}_{WFE}$ is the weighted fixed effect estimation of equation (1), M_τ is an identity matrix of order T, and $\tilde{\sigma}_i^2$ is the estimator of σ_i^2 .(6) The test statistic is defined as

$$\tilde{\Delta} = \sqrt{N}\left(\frac{N^{-1}\tilde{S} - k}{\sqrt{2k(T-k-1)/T+1}}\right) \sim N(0,1) \quad (7)$$

The results reported in Table 2 indicate that the null hypothesis of no cross-sectional dependence is rejected at the 1 percent level of significance. This finding implies that a shock that occurs in one transition country may be transmitted to other countries. Table 2 also shows the results of two tests of the slope homogeneity. As observed, the null hypothesis of slope homogeneity is rejected at 1% level of significance by both tests which therefore support country specific heterogeneity. In sum, we can therefore conclude that the policy implications driven from the causality approach that considers cross-sectional dependency appear to be more appropriate for designing sound policies.

Table 2. *Cross-section dependency and homogeneity tests*

Cross-Sectional Dependency			
	Test	Statistic	p-value
Breusch and Pagan (1980)	*LM*	230.24***	0.000
Pesaran (2004)	CD_{LM}	5.71***	0.000
	CD	3.04***	0.000
Pesaran et al. (2008)	LM_{adj}	16.21***	0.000
Slope Homogeneity			
Pesaran and Yamagata (2008)	$\tilde{\Delta}$	19.71***	0.000

*** denotes statistical significance at 1 percent.

Panel Granger causality test

Testing causality in a panel framework has attracted interest during the last decade, and different approaches have been developed to examine the direction of causality in a panel data context. One attempt is based on estimating a panel vector autoregressive or vector error correction model by means of a generalized method of moments (GMM) estimator. This approach is, however, not able to consider either cross-sectional dependence or heterogeneity. GMM estimators, furthermore, can produce inconsistent and misleading parameters unless slope coefficients are, in fact, homogeneous (Pesaran et al., 1999).

The second approach proposed by Konya (2006) is sufficient to account for cross-sectional dependency and heterogeneity across cross-sections. This approach employs the seemingly unrelated regressions (SUR) estimation method developed by Zellner (1962) to control for contemporaneous correlations (cross-sectional dependency) and produces bootstrap critical values to make results robust irrespective of unit root and co-integration properties. Although Konya's testing procedure has attracted much interest in empirical applications, this approach includes a drawback for the panel data sets if the number of cross-sections (N) is not reasonably smaller than time periods (T) because the SUR estimator is only feasible for panels with large T and small N (Pesaran et al., 1999).

The third approach proposed by Dumitrescu and Hurlin (2012) is based on averaging standard individual Wald statistics of Granger tests under the assumption of cross-section independency. This approach, thereby, controls for heterogeneity but it is not able to account for cross-sectional dependence. The individual Granger causality analysis requires estimating vector autoregressive (VAR) models with stationary variables. The presence of non-stationary variables in VAR models may cause a nonstandard asymptotic distribution of Wald statistics based on unit root and co-integration properties where these nonstandard asymptotic properties arise from the singularity of the asymptotic distributions of the estimators (Lütkepohl, 2004, p. 148). To overcome this problem, Toda and Yamamoto (1995) developed an intuitive causality approach by augmenting the VAR model with the maximum integration degree of variables, which leads to valid Wald tests with asymptotic distribution irrespective of whether variables are non-stationary or co-integrated. Emirmahmutoglu and Kose (2011) extended the Toda-Yamamoto approach to Granger causality in time series data for panel data sets in a simple way. This

approach to panel causality thereby accounts for cross-country heterogeneity irrespective of whether the variables of interest are non-stationary or co-integrated. In addition to this flexibility, because the critical values for panel statistics are derived from bootstrap distributions, it also considers the cross-section dependency.

In the Emirmahmutoglu-Kose approach, the following VAR model is estimated for each cross-section:

$$y_{it} = \mu_i + A_{1i} y_{i(t-1)} + \cdots + A_{p_i} y_{i(t-p_i)} + \cdots + A_{(p+d)i} y_{i(t-p_i-d_i)} + \varepsilon_{it}. \quad (8)$$

where y_{it} is vector of endogenous variables (ITA, RY, EFI), $\boldsymbol{\mu_i}$ denotes the p dimensional vector of fixed effects, p_i is the optimal lag(s) and d_i is the maximum integration degree of the variables. The null hypothesis of no-Granger causality against the alternative hypothesis of Granger causality is tested by imposing zero restriction on the first p parameters. The so-called modified Wald statistic has the asymptotic chi-square distribution with p degrees of freedom. To test the Granger non-causality hypothesis for the panel, the Fisher statistic is developed that defined as:

$$\lambda = -2\sum_{i=1}^{N} \ln(\pi_i) \quad (9)$$

where π_i is the probability corresponding to the individual modified Wald statistic. The Fisher statistic has an asymptotic chi-square distribution with $2N$ degrees of freedom. However, the limit distribution of the Fisher test statistic is no longer valid in the presence of cross-section dependency. To accommodate for cross-section dependency in the panel, Emirmahmutoglu and Kose (2011) suggest obtaining an empirical distribution of the panel statistic using the bootstrap method[7].

Empirical results

The results for the panel causality analysis[8] between economic growth and foreign tourism are presented in Table 3. The country specific results indicate that there is a unidirectional causality from economic growth to tourism in Georgia and Romania in which per capita income provides us with predictive power for tourism arrivals. The opposite unidirectional causality from tourism to economic growth is detected only for Moldova where higher per capita income is associated with higher tourism arrivals. The neutrality hypothesis is in tune with 14 countries: Albania, Armenia, Belarus, Bulgaria, Croatia, the Czech Republic, Hungary, Latvia, Lithuania, Poland, Russia, Slovakia, Slovenia and Ukraine. The panel results demonstrate that the null hypothesis of non-causality from economic growth to tourism is rejected at the 1-percent level of significance because the panel Fisher statistic exceeds the bootstrap critical values. However, the null hypothesis of non-causality from tourism to economic growth cannot be rejected at any percentage level of significance because the panel Fisher statistic cannot exceed the bootstrap critical values. It is important to note here that the panel

results for the causality from economic growth to tourism should be interpreted with caution because the Fisher statistic may be affected by a very high individual Wald statistic (thereby, very smaller p-value) for the case of Romania.

Our empirical results support the neutrality hypothesis for most of the transition economies, indicating that neither increase in foreign tourist arrivals nor economic growth is cause to each other. In the literature, some empirical studies (among others, Adamou and Chlorides, 2010; Holzner, 2011; Narayan et al., 2010; Sequeira and Nunes, 2008) show that the more a country is specialized in tourism, the greater the effect tourism growth has on GDP growth. Given this, our result of neutrality is, in fact, not surprising in transition countries because tourism makes a relatively small contribution to income level in these countries. Annual country reports published by World Travel and Tourism Council-WTTC (2011) exhibit that except Albania, Croatia, Georgia and Hungary the share of tourism sector in overall GDP for the remaining 13 countries is extremely low which is around 0,5 to 2 percent. These numbers are well below European and World averages of 3 percent.(9)

Table 3. *Causality between economic growth and tourism*

		Growth ≠> Tourism		Tourism ≠> Growth	
Country	Lag(s)	Statistic	p-value	Statistic	p-value
Albania	2	1.763	0.414	0.033	0.984
Armenia	1	0.010	0.922	0.212	0.645
Belarus	1	0.003	0.958	0.219	0.640
Bulgaria	2	0.082	0.960	0.089	0.957
Croatia	2	0.465	0.793	1.437	0.487
Czech Republic	1	0.090	0.764	0.255	0.614
Georgia	2	4.959*	0.084	4.456	0.108
Hungary	2	0.167	0.920	2.969	0.227
Latvia	1	1.461	0.227	0.129	0.719
Lithuania	2	4.139	0.126	4.108	0.128
Moldova	2	0.677	0.713	4.995*	0.082
Poland	2	2.692	0.260	1.542	0.463
Romania	2	62.416***	0.000	1.435	0.488
Russia	2	0.565	0.754	1.667	0.435
Slovakia	2	2.792	0.248	2.256	0.324
Slovenia	1	0.351	0.554	0.687	0.407
Ukraine	2	0.255	0.880	3.257	0.196
			Bootstrap critical values		
Panel results		Fisher stat.	10%	5%	1%
Growth ≠> Tourism		85.907***	83.625	84.583	85.279
Tourism ≠> Growth		33.445	90.746	91.799	92.721

Notes: ≠> denotes non-Granger causality hypothesis. The optimal lag(s) are selected by Schwarz information criterion by setting maximum lags to 3 in VAR model. The bootstrap critical values are based on 1000 bootstrap replications. *, ** and *** respectively denote statistical significance at 10, 5 and 1 percent.

In Table 4, we present the results from the causality analysis between economic freedom and economic growth. The country specific analysis demonstrates that only in the case of Poland, there is unidirectional causality from economic growth to economic freedom. For

the case of sixteen countries, the null hypothesis of non-causality between economic growth and economic freedom cannot be rejected. Consistent with the country specific results, the panel results demonstrate that the hypothesis of non-causality cannot be rejected. We therefore find strong evidence on the neutrality between growth and economic freedom in transition countries. The neutrality between economic freedom and economic growth in transition countries can be attributed to the fact that these countries are still in the process of transition, and therefore, the relationship between economic freedom and economic performance may not be as strong as in countries where the transition process started long ago, such as in developed countries and emerging markets.

Table 4. *Causality between economic freedom and economic growth*

		EFI ≠> Growth		Growth ≠> EFI	
Country	Lag(s)	Statistic	p-value	Statistic	p-value
Albania	2	0.017	0.992	2.815	0.245
Armenia	1	0.118	0.732	0.001	0.980
Belarus	1	0.869	0.351	0.371	0.542
Bulgaria	2	1.004	0.605	1.051	0.591
Croatia	2	2.774	0.250	3.749	0.153
Czech Republic	1	0.683	0.409	0.190	0.663
Georgia	2	3.580	0.167	0.712	0.701
Hungary	2	2.879	0.237	2.368	0.306
Latvia	1	0.528	0.467	1.406	0.236
Lithuania	2	1.960	0.375	3.683	0.159
Moldova	2	3.978	0.137	1.327	0.515
Poland	2	1.932	0.381	5.630*	0.060
Romania	2	1.123	0.570	0.791	0.673
Russia	2	3.394	0.183	1.382	0.501
Slovakia	2	4.169	0.124	1.539	0.463
Slovenia	1	0.177	0.674	1.731	0.188
Ukraine	2	4.535	0.104	4.576	0.101
			Bootstrap critical values		
Panel results		Fisher stat.	10%	5%	1%
EFI ≠> Growth		38.160	69.711	70.637	71.327
Growth ≠> EFI		37.941	86.897	87.815	88.582

Notes: ≠> denotes non-Granger causality hypothesis. The optimal lag(s) are selected by and Schwarz information criterion by setting maximum lags to 3 in VAR model. The bootstrap critical values are based on 1000 bootstrap replications. *, ** and *** respectively denote statistical significance at 10, 5 and 1 percent.

Table 5 reports the results for causality between economic freedom and foreign tourist arrivals. The country specific results indicate that the hypothesis of non-causality from economic freedom to tourist arrivals is rejected in the case of Albania, Croatia, the Czech Republic, Georgia, Lithuania, and Romania. The null hypothesis of non-causality from tourism to economic freedom is rejected only in two cases –Belarus and the Ukraine. For the case of eight countries, the null hypothesis of non-causality neither from economic freedom to tourism nor from tourism to economic freedom can be rejected, implying the evidence on neutrality between these two variables that economic freedom and tourism do not have predictive power on each other. The panel results show that the null

hypothesis from economic freedom to tourism and from tourism to economic freedom cannot be rejected because the Fisher statistics do not exceed the bootstrap critical values.

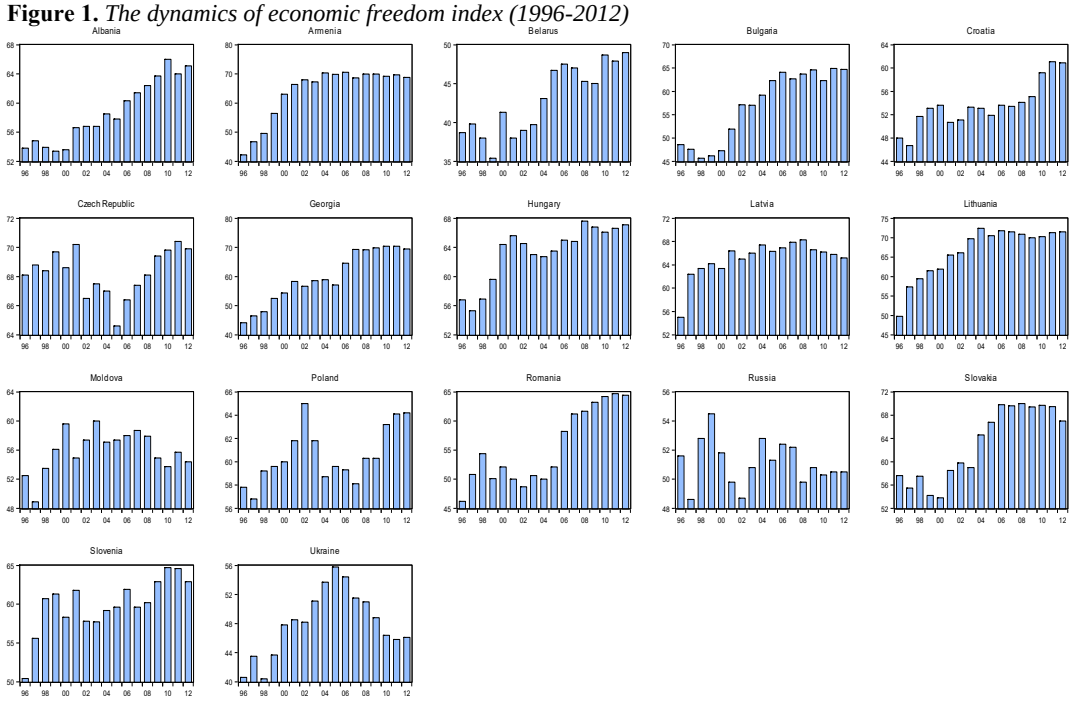
Table 5. *Causality between economic freedom and tourism*

		EFI ≠> Tourism		Tourism ≠> EFI	
Country	Lag(s)	Statistic	p-value	Statistic	p-value
Albania	2	6.538**	0.038	1.559	0.459
Armenia	1	0.209	0.648	0.717	0.397
Belarus	1	1.015	0.314	2.789*	0.095
Bulgaria	2	1.635	0.442	2.252	0.324
Croatia	2	5.422*	0.066	3.559	0.169
Czech Republic	1	17.980***	0.000	1.391	0.238
Georgia	2	9.619***	0.008	1.704	0.426
Hungary	2	0.241	0.887	0.833	0.659
Latvia	1	0.020	0.887	0.005	0.941
Lithuania	2	8.555**	0.014	2.805	0.246
Moldova	2	0.154	0.926	0.122	0.941
Poland	2	0.930	0.628	4.554	0.103
Romania	2	11.848***	0.003	0.078	0.962
Russia	2	0.783	0.676	1.726	0.422
Slovakia	2	2.389	0.303	1.805	0.405
Slovenia	1	0.097	0.756	0.753	0.386
Ukraine	2	0.407	0.816	8.046**	0.018
			Bootstrap critical values		
Panel results		Fisher stat.	10%	5%	1%
EFI ≠> Tourism		73.927	143.675	144.78	145.663
Tourism ≠> EFI		40.498	84.802	85.674	86.368

Notes: ≠> denotes non-Granger causality hypothesis. The optimal lag(s) are selected by and Schwarz information criterion by setting maximum lags to 3 in VAR model. The bootstrap critical values are based on 1000 bootstrap replications. *, ** and *** respectively denote statistical significance at 10, 5 and 1 percent.

If one considers the country specific and panel results together, there is clear evidence on the heterogeneity across-countries. This heterogeneity in causality between economic freedom and tourism can be attributed to the diversified level of economic freedom in transition countries. At this point, visual inspection for freedom index can be performed to have further intuition about the causality from economic freedom to tourism arrivals. The yearly value of freedom index is shown in Figure 1. A closer look at the figure shows first that Czech Republic and Lithuania have the highest economic freedom level(10). Uninterrupted favorable trend in economic freedom is clearly a case for Albania, Bulgaria, Georgia, Hungary and Lithuania. Armenia and Croatia also have clear upward trend but in the early 2000s the indexes for these countries display some stagnation-like pattern. Although institutional variables in developed western countries do not display large swings, the figure indicates that there are clear up-and-down movements in economic freedom indicators for the Czech Republic, Moldova, Poland, Romania, Russia, Slovakia and Ukraine.

Figure 1. *The dynamics of economic freedom index (1996-2012)*



Discussion

In the above sections, a formal causality test was applied to examine the causal linkages between economic freedom (the reform process), economic growth, and international tourism for transition countries. The tourism sector's contribution to economic growth requires strong backward and forward linkages. However, the strength of the backward and forward linkages depends strongly on behaviors of actors in both demand and supply side of the market as well as the structure of the markets. On the demand side, for example, both the length of stay and also average expenditure per foreign tourist are well below the European average[(11)]. In addition to and also parallel to this point, post-communist restructuring seems to stimulate regional cross-border mobility (Hall, 2001). For example, according to OECD report on Bulgarian tourism[(12)]: of Bulgaria's 5 million visitor arrivals at frontiers in 2005 with average stay of 2.2 days, and moreover, according to Hall (2001) almost 75% of total arrivals are from neighboring countries and suggesting significant local cross-border activity. In the supply side, there are also some problems. In order to flourish international tourism, the pursuit of sound and steady government policies are required. The government incentives may cover a large spectrum of areas including (but not limited to) a well-developed infrastructure (including roads, airports, railroads), adequate human capital compatible with tourism sector's needs, state supported advertisement campaigns, attracting FDI (particularly from renowned international hotel chains). However, with the post-communist reduction of the role of the state, we have observed that the most state governments in these transition countries,

despite various incentives and policy statements, have shown an unwillingness or inability to invest significantly in the tourism industry or to secure significant international funding for it (Hall, 2001). Due to adverse features related to both supply and demand sides, the size of international tourism in overall economy is very small and if the governments do not implement some vigorous measures to stimulate the sector, the international tourism may keep its low profile. In sum, the neutrality hypothesis uncovered in this study is mainly due to insignificant share of the foreign tourism's contribution in overall economy for the majority of transition countries.

As touched above, we have observed that economic reform has stagnated in the majority of transition countries since the mid-2000s, even in countries that are still far from reaching the transition frontier. A comparison of economic freedom indicators as well as democratic freedom indicators from 1996 to 2012 is carried in a study titled "Transition Report 2013" prepared by European Bank. According to the report, Poland, Lithuania, the Slovak Republic, Slovenia, Croatia, Georgia, the Czech Republic and Romania has displayed somewhat superior dynamic performance in either economic or democratic (or both) indicators than the other countries in the transition region. In our study, the causal links working from economic freedom to foreign tourist arrivals are detected for Albania, Croatia, the Czech Republic, Georgia, Lithuania and Romania. High quality democratic institutions are prerequisites in achieving desired benefits accrued from implementing other reforms (including reforms in economic freedom). However, today none of the former Soviet Union countries has even moderately strong democratic institutions – with the exception of the three Baltic States, Estonia, Latvia and Lithuania (Peev and Mueller, 2012). Therefore, taken together, the majority of these transition countries may not have reached to a critical threshold point in their transition frontier curve; and therefore, the progress and depth of both economic institutions and the level of international tourism are not sufficient to generate intended gains.

Countries located in Central and Eastern Europe and Central Asia started a complex transition process just approximately 25 years ago. During these 25 years, these countries have implemented set of reforms involving almost all aspects of their systems, including political, economic, legal, administrative and societal. Therefore, the institutional configuration and its evolution for these nations should be assessed by considering the historical backgrounds of these nations. In particular, due to social, cultural and other forms of rigidities, democratic deadlocks and many other problems, the extensive transformation with this magnitude (switching from a socialist system to a market economic system) may require more time than 25 years. Related to the 25 years of transition process experiences for these nations, we need to enumerate three important points: (1) the structural transformation has not been fully completed for a large spectrum of domains, (2) the paths and the growth pace in the reform process display significant heterogeneous and volatile pattern among these nations, and (3) some transition countries have been more successful in the transformation process than others. These three points imply that the specific numeral value assigned as the economic freedom score may be indicative but may not be absolute.

7. Conclusion

This paper examines the causal links among economic freedom, foreign tourism arrivals and economic growth for 17 post—socialist transition countries by applying panel-Granger-causality tests over the data set from 1996 to 2012. Causality analysis provides predictive power for a variable based on knowledge of past values of another variable. The current study examines three sets of causality nexus: (1) economic growth and foreign tourist arrivals, (2) economic growth and economic freedom, and (3) economic freedom and foreign tourist arrivals. The empirical results support evidence favoring the neutrality hypothesis for all these three nexus. The lack of causality among these three nexus has some mechanical and also some interpretive implications. In a mechanical way, the neutrality between tourism and economic growth implies that increases in tourism arrivals to transition economies do not boost income levels directly or the increase in economic growth does not have meaningful effects in attracting more tourists. The same intuition can also be applied to the remaining two nexus. However, the advantages and multidimensionality of the tourism sector will make it remain crucial in the transition process over time. Given the historical, economic and political backgrounds of these transition countries, the lack of causality among these variables should be interpreted by considering these points.

Notes

(1) To see an extensive survey for the issue, see, for example, Brida and Pulina (2010).

(2) We refer an interested reader to Pablo-Romero and Molina (2013) for a very extensive review about the hypotheses.

(3) An extensive survey can be found in Seputiene (2007) and Doucouliagos and Ulubasoglu (2006).

(4) See Tamilina and Tamilina (2012, p. 5).

(5) In our case, we estimate the panel regression model by employing real income as the dependent variable and foreign tourism and economic freedom as the explanatory variables.

(6) In order to save space, we refer readers to Pesaran and Yamagata (2008) for details of Swamy's test and the estimators described in equation (7).

(7) In order to save space, the details of bootstrapping method is not outlined here. An interested reader is referred to Konya (2006) and Emirmahmutoglu and Kose (2011).

(8) The causality procedure employed here first requires determining the maximum integration degree (d) of the series. Following Emirmahmutoglu and Kose (2011), we investigate the time series properties of the variables by means of the unit root test by Dickey and Fuller (1981) and find out that d is equal to one for each country in our panel. In order to save space, we do not report the results from the unit root analysis here but are available upon request.

(9) According to the country reports by World Travel and Tourism Council, the shares of these four countries are: Albania (4.8%); Croatia (12.2%); Georgia (6.2%) and Hungary (4.1%).

(10) The mean of the economic freedom index in the Czech Republic and Lithuania was, respectively, 68.28 and 66.55 for 1996-2012.

(11) Based on country reports by World Travel and Tourism Council (2011), we calculate that the average spending per foreign tourist in these transition countries in our sample is about 400-500 US$ while the average spending for Spain, Greece and Turkey is around 800-1000US$.

(12) See OECD report: http://www.oecd.org/industry/tourism/40239491.pdf

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