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SHORT RESEARCH AND DISCUSSION ARTICLE

Democracy and tourism demand in European countries: does environmental performance matter?

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Abstract

Recently, empirical studies revealed that democracy is positively associated with environmental quality through the freedom gained by the people to demand environmental protection. In this paper, we explore empirical evidence linking how environmental performance interacts with democracy to influence tourism demand in twenty-seven European countries. To achieve this objective, we use the method of moments quantile regression (MMQR) model by Machado and Silva (J Econ 213: 145-173, 2019) and a balanced panel data covering the period 2002 to 2014. The empirical results suggest that environmental performance interacts heterogenously with democracy at different quantiles of the conditional distribution to stimulate tourism demand. Also, the effect of an increase in income and environmental performance is stronger in countries with lower tourism market shares than in countries with higher tourism market shares. The major implication for this study is that countries with lesser shares of the tourism market should strive for higher environmental performance and economic development as this would grant them more advantage in the tourism sector than their counterparts with higher market shares.

Keywords Tourism demand · Democracy · Environmental performance · Income · MMQR

Jel codes L83 · C21 · C22 · Z32

Introduction

The world has come to realize that to build a sound economy, much attention needs to be given to the development of the tourism industry, which enhances economic growth and job creation. Consequently, tourism development becomes a great concern of the government and its managers in most countries of the world. According to the recent statistics by the United Nations World Trade Organization (2019), the world total earning from international tourism increased over the years with an unprecedented growth of 6% in 2018, which is higher than the growth of the merchandize exports. In European countries, the travel and tourism sector alone generated about 14 million direct jobs in 2017 and 14.4 million in 2018. More so, the contribution of this sector to gross domestic product (GDP) of the continent significantly increased from 1843.1 USD in 2012 to 2155.5 billion USD in 2018. As tourism sector is developing, environmental quality may tend to deteriorate due to the effects of an increase in carbon dioxide emissions from excessive use of fuel oil and other traditional energy consumption patterns related to tourism development (See Katircioğlu 2014; Usman et al. 2019a).

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Even though several studies have empirically examined the tourism-environment relationship (Dogan et al. 2017; Dogan and Aslan 2017) and tourism-economic growth relationship (Gunduz and Hatemi-J 2005; Balcilar et al. 2014; Shahbaz et al. 2018; Balcilar et al. 2020), the literature is still devoid of studies focusing the extent to which an increase in environmental quality would attract the inflow of tourism. In addition, these relationships may not be formed in isolation from the political institutions that govern the process. Hence, institutional variable such as democracy can affect tourism demand as revealed by Antonakakis et al. (2016). This argument is based on the positive correlation between democracy and income, which is the cornerstone of the modernization theory.[1] According to this theory, democracy may affect tourism sector in two ways: first, democracy increases income, which help in stimulating tourism development, and second, as income increases, environmental quality may deteriorate due to increase in energy consumption. On empirical ground, studies like Farzin and Bond (2006); Lv (2017); Usman et al. (2019b); Usman et al. (2020), and Ike et al. (2020) have provided evidence that the effect of democracy on macroeconomic variables changes with a country's income level. According to Winslow (2005) and Mak Arvin and Lew (2011), in a democratic setting, environmental quality tends to improve because people are better informed about environmental issues. Consequently, the total number of international tourism arrival increases. On the other hand, studies like Heilbronner (1974), Midlarsky (1998), and Roberts and Parks (2007) argue that the income effect of democratic regime increases carbon dioxide emissions, which in turn, discourages international tourism arrival.

Given this background, the objective of this study is to examine how environmental performance interacts with democracy to induce tourism demand in twenty-seven EU countries[2] and determine whether this effect is consistent across countries with different tourism market shares. Our choice of using European data is predicated on the fact that the travel and tourism sector in Europe grows significantly over the years, with the sector generating millions of direct and indirect jobs as well as contributing heavily to their Gross Domestic Product (GDP).[3] Furthermore, this period of tourism development coincides with the great improvement in democracy and accountability of the region. As such, our study makes a fourfold contribution to the literature. First, the paper reveals how income and the interaction of democracy and environmental performance enhance the government's goal of developing the tourism sector. Second, our paper allows to ascertain if the effect of these variables would change as the market share of tourism increases across countries. Third, we apply a model that controls for both distributional and cross-country unobserved heterogeneity by incorporating fixed effects. Fourth, by employing the method of moments quantile regression (MMQR) recently proposed by Machado and Silva (2019), we provide insights into the distributional heterogeneity of the environmental performance-tourism demand nexus at different conditional quantile distributions of tourism demand. Unlike other panel quantile regressions developed by Koenker (2004), Lamarche (2010), and Canay (2011), the MMQR invariably assumes that the covariate only affects the distribution of the variable of interest via location and scale functions rather than just shifting locations. Hence, it allows individual effects to influence the entire distribution.

The rest of the paper is structured as follows: the "Data and methodology" section presents the methodology employed. the "Results and discussion" section analyze the result while the "Conclusion" section concludes the paper.

Data and methodology

This study employs a panel data from 2002 to 2014 for 27 European countries as shown in Appendix 1. The study period is selected based on data availability. The variables, measurements, and sources are shown in Table 1.

Table 1 Variable, measurement, and source

Variable	Measurement	Source
Tourism demand (TRD)	Total number of international tourism receipts	World Development Indicator
Income (GDP)	World gross domestic product per capita (Constant 2010 USD).	World Development Indicators
Relative Prices (RP)	Real effective exchange rates	World Development Indicators
Democracy (DMC)	Polity2 Index measured from − 10 (most autocratic) to + 10 (most democratic). Rescaled to values ranging from 0 to 20 with higher value indicating greater democracy.	Polity IV dataset: http://www.systemicpeace.org/polity/polity4.htm.
Environmental Performance Index (EPI)	Measured with 24 indicators, 10 issue categories and 2 broad policy objectives with weights at each level as % of the total score (see Appendix Table 4).	Socioeconomic Data and Application Centre (SEDAC): http://www.ciesin.columbia.edu/indicators/ESI/.

Tourism demand, relative price, and income variables are in their natural logarithms except democracy and environmental performance

[1] A study by Alhassan and Alade (2017) validated a positive correlation between income and democracy for Sub-Saharan Africa.

[2] Among the EU-28 countries, data for democracy is not available for Malta, hence 27 European countries are used for the study.

[3] See the statistics by the United Nations World Trade Organization (2019) already provided.

Modelling techniques

In this study, the MMQR with fixed effects recently proposed by Machado and Silva (2019) is applied. One of the main advantages of this method is that, it enables the researchers to capture the distributional heterogeneity of the environmental performance-tourism demand nexus at different conditional quantile distributions of tourism demand by incorporating fixed effect—an effect, which is unavailable in conventional mean regressions. Following Martins et al. (2017), we construct a standard tourism demand model as[4]:

$$QlnTD_{it}(\tau|X_{it}) = \alpha_0 + lnRP_{it} + \alpha_1 lnGDP_{it} + \alpha_2 DMC_{it} + \alpha_3 EPI_{it} + (DMC_{it} * EPI_{it}) + \varepsilon_{it} \quad (1)$$

From Eq. (1) $lnTD_{it}(\tau|X_{it})$ represents τ^{th} conditional quantile function, and *TD* which is the dependent variable measures total international tourism receipts, *ln* is the natural logarithm, X_{it} denotes the explanatory variables. *RP* represents relative prices,[5] *GDP* measures the level of world income per capita; *EPI* measures environmental performance, *DMC* measures democracy, $DMC * EPI$ represents the interaction term of democracy and environmental performance while ε_{it} denotes the residual which is independently and identically distributed across individual country *i* at time *t*. A strong democracy can incentivize the flow of tourists due to perceived assurances bordering on safety as well as reduced human rights violations. Environmental quality can also spur tourist inflows because humans have a natural affinity towards healthier environments. Also, tourism arrivals can negatively affect environmental performance due to the possible environmental degrading effect of tourism activities. The residual is orthogonal to X_{it} and normalized in order to satisfy the moment conditions in Machado and Silva (2019) which do not imply strict exogeneity. Therefore, from Eq. (1), it implies that:

$$lnTD(\tau|X_{it}) = (\alpha_i + \theta_i q(\tau)) + X_{it}\beta + Z_{it}\gamma q(\tau) \quad (2)$$

where $\alpha_i(\tau) \equiv \alpha_i + \theta_i q(\tau)$ is the scalar parameter which is indicative of the quantile-τ fixed effect for individual *i*. *Z* is a *k*-vector of identified components of *X* which are differentiable transformations with element *l* given by $Z_l = Z_l(X)$, $l = 1, \ldots, k$. Unlike the least squares fixed effects, the individual effects in this method do not represent intercept shifts. They are time-invariant parameters whose heterogeneous impacts are allowed to vary across the quantiles of the conditional distribution of the dependent variable. Equation (1), which is the conditional quantile function of the tourism demand-environmental performance nexus, is estimated using the MMQR approach, which gives solution to the following optimization problem:

$$min_q \sum_i \sum_t \rho_\tau \left(\widehat{R}_{it} - \left(\widehat{\delta}_i + Z_{it}\gamma \right) q \right) \quad (3)$$

where $\rho_\tau(A) = (\tau - 1)AI\{A \leq 0\} + \tau AI\{A > O\}$ is the standard quantile loss function. Due to a marginal change in *i*, the parameter for the dependent variable *i* may signify the marginal change in the r^{th} conditional quantile of $lnTD_{it}(\tau|X_{it})$.

Furthermore, we employ alternative estimation techniques to ascertain if the parameter estimates are robust to cross-sectional dependence as described by Acaravci and Akalin (2017). Due to the possible distorting effect of cross-sectional dependence and auto-correlation, we employ the fixed effects OLS (FE-OLS) and the random effects GLS (RE-GLS) regression with Driscoll and Kraay (1998) standard errors, which are robust to general forms of cross-sectional dependence and auto-correlation up to a specified lag. If the parameters from the RE-GLS and the FE-OLS mean regressions correspond closely to the location parameters of the MMQR in terms of magnitude and significance, it then implies that the MMQR estimation is robust to cross-sectional dependence and auto-correlation (see Machado and Silva 2019).

Results and discussion

The results from Table 2 indicate that the state of the world economy affects tourism demand positively and significantly, across all quantiles; however, the scale of this effect reduces from the lowest to the highest quantiles. This is also confirmed from the scale parameters. The elastic world income effect suggests the perception by the world that tourism to EU countries is a luxury good. An increase in relative prices diminishes tourism demand across all quantiles. Environmental performance and democracy are also shown to have positive but nonlinear effects on tourism. An increase in democracy increases tourism demand in countries with less environmental performance but reduces it in countries with higher environmental performance. Also, an increase in environmental performance increases tourism demand in countries with weaker democracy but reduces tourism demand in countries with stronger democracy. This result is consistent with Antonakakis et al. (2016) which isolates an economic driven tourism demand relationship in non-democratic countries. This relationship may allude to the possibility that in countries with either higher environmental quality or stronger democracy or both, the market for tourism may be more saturated than in countries in which these variables are relatively weaker. The effect of both environmental performance and democracy are, however, both insignificant at the highest quantiles (8th to 9th) which may entail the

[4] Our model differs significantly from Martins et al. (2017) due to its augmentation with institutional and environmental factors.

[5] Following the literature, relative prices are measured by real effective exchange rate. An increase in real effective exchange rate implies an appreciation while its decrease denotes a depreciation.

Table 2 MM-QR estimation results

Variables	Method of moments quantile regression with fixed effects										
	Location parameters	Scale parameters	FE-OLS	Quantiles							
				0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
LNRP	− 1.361*** (0.2284)	0.0496 (0.0628)	− 1.3608*** (0.0972)	− 1.444*** (0.320)	− 1.418*** (0.253)	− 1.394*** (0.1982)	− 1.377*** (0.1680)	− 1.357*** (0.1492)	− 1.340*** (0.1521)	− 1.323*** (0.1711)	− 1.306*** (0.2021)	− 1.291*** (0.2362)
LNGDP	3.4271*** (0.2829)	− 0.304*** (0.0723)	3.427*** (0.137)	3.937*** (0.302)	3.7795*** (0.2401)	3.632*** (0.1891)	3.527*** (0.1621)	3.403*** (0.1443)	3.301*** (0.1464)	3.198*** (0.163)	3.094*** (0.190)	3.002***
DMC	0.6302*** (0.2832)	− 0.0864 (0. 122)	0.630** (0.264)	0.7754 (0.585)	0.7304 (0.462)	0.688* (0.3621)	0.658** (0.3069)	0.623** (0.2727)	0.594** (0.2780)	0.565* (0.3126)	0.535 (0.3692)	0.5091 (0.4314
EPI	0.0893*** (0.0410)	0.01255 (0.0192)	0.0893** (0.039)	0.110 (0.084)	0.1038*** (0.066)	0.098* (0.051)	0.093*** (0.0439)	0.088** (0.0390)	0.084** (0.0397)	0.0798* (0.045)	0.0755 (0.053)	0.0716 (0.062)
DMC*EPI	− 0.009*** (0.004)	0.00108 (0.0019)	− 0.0086** (0.0038)	− 0.0104 (0.0085)	− 0.009 (0.0067)	− 0.009* (0.0053)	− 0.009** (0.0043)	− 0.009** (0.0040)	− 0.008** (0.0040)	− 0.0078* (0.0045)	− 0.0074 (0.0054)	− 0.0071 (0.0063)
Constant	− 21.51*** (4.078)	4.073*** (1.498)	− 21.51*** (3.614)									

*, **, and *** indicates significance at 10%, 5%, and 1% levels. The values in the parentheses are robust standard error of parameters

Source: Authors' computations

saturation of the tourism market in countries with the highest tourism market shares. The result aligns with Usman et al. (2019b) who found support for the hypothesis that democracy provides freedoms, which may improve environmental quality through a positive income effect. Also, the finding is similar to Neumayer (2004) who reported that tourism demand in autocratic regimes is low due to human rights violations, terrorism, and conflict intensity and Saha and Yap (2014) who discovered that political instability associated with autocracy is a barrier to tourism demand and thus strengthening democracy in these countries would see a surge in tourism demand. The findings are validated by the robustness checks via (FE-OLS) and the GLS (RE-GLS) regressions with Driscoll-Kraay standard errors.[6]

Conclusion

The objective of this paper is to investigate how democracy interacts with environmental performance to induce tourism demand in EU-27 countries by employing the novel MMQR approach proposed by Machado and Silva (2019). The results suggest that democracy spurs tourism in countries with lesser environmental performance while environmental performance spurs tourism in countries with weaker democracy alluding to the possibility of tourism market saturation in countries where either of these variables is at high levels. The quantile estimates show that countries with lower tourism market shares are more sensitive to the state of the world economy than countries with lesser tourism market shares. The policy implication for our findings is that countries with lesser tourism market shares should develop the quality of their environment and strengthen their democracy as this is the surest way to significantly improve the tourism sector.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Appendix 1

Table 3 List of countries

1. Austria	11. Germany	21. Portugal
2. Belgium	12. Greece	22. Romania
3. Bulgaria	13. Hungary	23. Slovakia
4. Croatia	14. Ireland	24. Slovenia
5. Cyprus	15. Italy	25. Spain
6. Czech Republic	16. Latvia	26. Sweden
7. Denmark	17. Lithuania	27. UK
8. Estonia	18. Luxembourg	
9. Finland	19. Netherlands	
10. France	20. Poland	

[6] The RE-GLS estimates are near identical to the FE-OLS estimates in terms of coefficient magnitudes, signs, and significance and are not reported due to space constraints.

Appendix 2

Table 4 Metrics for measuring a country environmental performance

	Policy objective		Issue category		Indicator	
	Title	TLA	Title	TLA	Title	TLA
EPI	Environmental health (40%)	HLT	Air quality (26%)	AIR	Household solid fuels (10.4%)	HAD
					$PM_{2.5}$ exposure (7.8%)	PME
					$PM_{2.5}$ exceedance (7.8%)	PMW
			Water and sanitation (12%)	H2O	Drinking water (6%)	UWD
					Sanitation (6%)	USD
			Heavy metals (2%)	HMT	Lead exposure (2%)	PBD
	Ecosystem vitality (60%)	ECO	Biodiversity and habitat (15%)	BDH	Marine protected areas (3%)	MPA
					Biome protection (national) (3%)	TBN
					Biome protection (global) (3%)	TBG
					Species protection index (3%)	SPI
					Representativeness index (3%)	PAR
					Species habitat index (1.5%)	SHI
			Forests (6%)	FOR	Tree cover loss (6%)	TCL
			Fisheries (6%)	FSH	Fish stock status (3%)	FSS
					Regional marine trophic index (3%)	MTR
			Climate and energy (18%)	CCE	CO_2 emissions—total (9%)	DCT
					CO_2 emissions—power (3.6%)	DPT
					Methane emissions (3.6%)	DMT
					N_2O emissions (0.9%)	DNT
					Black carbon emissions (0.9%)	DBT
			Air pollution (6%)	APE	SO_2 emissions (3%)	DST
					NO_x emissions (3%)	DXT
			Water resources (6%)	WRS	Wastewater treatment (6%)	WWT
			Agriculture (3%)	AGR	Sustainable nitrogen management (3%)	SNM

Source: World Economic Forum, Yale Centre for Environmental Law and Policy, 2018

References

Acaravci A, Akalin G (2017) Environment–economic growth nexus: a comparative analysis of developed and developing countries. Int J Energy Econ Policy 7(5):34–43

Alhassan A, Alade AS (2017) Income and democracy in sub-Saharan Africa. J Econ Sustain Dev 8(18):67–73

Antonakakis N, Dragouni M, Eeckels B, Filis G (2016) Tourism and economic growth: does democracy matter? Ann Tour Res 61:258–264

Balcilar M, van Eyden R, Inglesi-Lotz R, Gupta R (2014) Time-varying linkages between tourism receipts and economic growth in South Africa. Appl Econ 46:4381–4398

Balcilar M, Aghazadeh S, Ike GN (2020) Modelling the employment, income and price elasticities of outbound tourism demand in OECD countries. Tour Econ, 1354816620910929

Canay IA (2011) A simple approach to quantile regression for panel data. The Econom J 14(3):368–386

Dogan E, Aslan A (2017) Exploring the relationship among CO2 emissions, real GDP, energy consumption and tourism in the EU and candidate countries: evidence from panel models robust to heterogeneity and cross-sectional dependence. Renew Sust Energ Rev 77:239–245

Dogan E, Seker F, Bulbul S (2017) Investigating the impacts of energy consumption, real GDP, tourism and trade on CO2 emissions by accounting for cross-sectional dependence: a panel study of OECD countries. Curr Issue Tour 20(16):1701–1719

Driscoll JC, Kraay AC (1998) Consistent covariance matrix estimation with spatially dependent panel data. Rev Econ Stat 80:549–560

Farzin YH, Bond CA (2006) Democracy and environmental quality. J Dev Econ 81(1):213–235

Gunduz L, Hatemi-J A (2005) Is the tourism-led growth hypothesis valid for Turkey? Appl Econ Lett 12(8):499–504. https://doi.org/10.1080/13504850500109865

Heilbronner RL (1974) An inquiry into the human prospect. New York: Norton

Ike GN, Usman O, Sarkodie SA (2020) Testing the role of oil production in the environmental Kuznets curve of oil producing countries: new insights from method of moments quantile regression. Sci Total Environ 711:135208

Katircioğlu ST (2014) Testing the tourism-induced EKC hypothesis: the case of Singapore. Econ Model 41:383–391

Koenker R (2004) Quantile regression for longitudinal data. J Multivar Anal 91(1):74–89

Lamarche C (2010) Robust penalized quantile regression estimation for panel data. J Econom 157:396.408

Lv Z (2017) The effect of democracy on CO2 emissions in emerging countries: does the level of income matter? Renew Sust Energ Rev 72:900–906

Machado JA, Silva JS (2019) Quantiles via moments. J Econ 213:145–173. https://doi.org/10.1016/j.jeconom.2019.04.009

Mak Arvin B, Lew B (2011) Does democracy affect environmental quality in developing countries? Appl Econ 43(9):1151–1160

Martins LF, Gan Y, Ferreira-Lopes A (2017) An empirical analysis of the influence of macroeconomic determinants on world tourism demand. Tour Manag 61:248–260

Midlarsky MI (1998) Democracy and the environment: an empirical assessment. J Peace Res 35(3):341–361

Neumayer E (2004) The impact of political violence on tourism: dynamic cross-national estimation. J Confl Resolut 48(2):259–281

Roberts JT, Parks BC (2007) A climate of injustice: global inequality. North–south politics, and climate policy, Institute of Technology, Cambridge

Saha S, Yap G (2014) The moderation effects of political instability and terrorism on tourism development: a cross-country panel analysis. J Travel Res 53(4):509–521

Shahbaz M, Ferrer R, Shahzad SJH, Haouas I (2018) Is the tourism–economic growth nexus time-varying? Bootstrap rolling-window causality analysis for the top 10 tourist destinations. Appl Econ 50(24):2677–2697

United Nations World Tourism Organization UNWTO (2019) http://www2.unwto.org/en. Accessed 13 July 2019

Usman O, Elsalih O, Koshadh O (2019a) Environmental performance and tourism development in EU-28 countries: the role of institutional quality. Curr Issue Tour:1–6. https://doi.org/10.1080/13683500.2019.1635092

Usman O, Iorember PT, Olanipekun IO (2019b) Revisiting the environmental Kuznets curve (EKC) hypothesis in India: the effects of energy consumption and democracy. Environ Sci Pollut Res 26(13):13390–13400

Usman O, Olanipekun IO, Iorember PT, Abu-Goodman M (2020) Modelling environmental degradation in South Africa: the effects of energy consumption, democracy, and globalization using innovation accounting tests. Environ Sci Pollut Res 27(8):8334–8349. https://doi.org/10.1007/s11356-019-06687-6

Winslow M (2005) Is democracy good for the environment? J Environ Plan Manag 48(5):771–783