The Influence of Economic Policy Uncertainty and Geopolitical Risk on U.S. Citizens Overseas Air Passenger Travel by Regional Destination

James E. Payne, Ph.D.*
Dean, College of Business Administration
Paul L. Foster and Alejandra de la Vega Foster
Distinguished Chair in International Business
The University of Texas at El Paso
500 W. University Avenue
El Paso, TX 79968
jpayne2@utep.edu

Nicholas Apergis
Professor of Economics
Division of Economics and Finance
School of Business, Law and Social Sciences
University of Derby
Kedleston Road Campus
Derby DE22 1GB
United Kingdom
n.apergis@derby.ac.uk

August 2020

*Corresponding Author.

The Influence of Economic Policy Uncertainty and Geopolitical Risk on U.S. Citizens Overseas Air Passenger Travel by Regional Destination

ABSTRACT: This research note extends the literature on the role of economic policy uncertainty and geopolitical risk on U.S. citizens overseas air travel through the examination of the forecast error variance decomposition of total overseas air travel and by regional destination. Our empirical findings indicate that across regional destinations U.S. economic policy uncertainty explains more of the forecast error variance of U.S. overseas air travel followed by geopolitical risk with global economic policy uncertainty explaining a much smaller percentage of the forecast error variance.

JEL Codes: F0, Z3

Keywords: U.S. overseas air travel; economic policy uncertainty; geopolitical risk; tourism demand

The Influence of Economic Policy Uncertainty and Geopolitical Risk on U.S. Citizens Overseas Air Passenger Travel by Regional Destination

1. Introduction

With the emergence of the respective news-based measures for economic policy uncertainty by Baker et al. (2016) and geopolitical risk by Cardara and Iacoviello (2018), researchers have begun to explore the influence of such measures on the tourism sector.[1] For many countries, tourism provides for the acquisition of foreign exchange, the generation of income from the consumption of goods and services by tourists, employment in the tourism and related service sectors, and tax revenues from tourist expenditures and businesses within the tourism industry. The determinants that dictate US tourist outflows provide a study framework that is part of the international trade theory, since tourism is essentially a form of international trade. Among the different types of international trade, the closest to tourism are other types of trade in services, such as financial services. The Heckscher–Ohlin paradigm, which constitutes the reference point for the theoretical international trade literature, explains trade flows mainly based on relative factor endowments. This approach is attractive given that the host places can be used as important 'factors of production', although it is substantially hard to quantify those factors. Therefore, tourist outflows lie in the domain of tourist supply (Rosselló-Nadal et al., 2007). As a result, the quantity of tourism supply differs from one country to another as a result

[1] Economic policy uncertainty referenced pertains to the economic policy uncertainty indices developed in part of the work of Baker et al. (2016), and subsequent indices developed for a number of countries. See Baker et al. (2016) and the link www.policyuncertainty.com for details on the news-based indices. See Cardara and Iacoviello (2018) for details on the news-based geopolitical risk index.

of a group of factors, such as, prices, exchange rates, income and uncertainty about the future of various forms of economic policy (Cooper et al., 2008).

Thus, understanding the behavior of the determinants of tourism is essential for the planning necessary to accommodate both domestic and international tourists. In this context, uncertainty serves a prominent role in the decision-making process for tourists with respect to their consumption decisions and for firms in the tourism industry in terms of their investment decisions. As noted by Bernanke (1983) and Giavazzi and McMahon (2012), if the precautionary motive takes hold, an increase in uncertainty will likely reduce consumption and investment spending as individuals, firms, and governments seek to minimize their future financial risk.

In the vast majority of studies, researchers find that economic policy uncertainty adversely impacts tourism flow indicators[2] (see Dragouni et al. 2016; Gozgor and Ongan 2017; Balli et al. 2018; Demir and Gozgor, 2018; Ongan and Gozgor, 2018; Gozgor and Demir, 2018; Tsui et al. 2018; Akadiri et al. 2019; Ghosh, 2019; Isik et al. 2019; Sharma, 2019; Singh et al. 2019; Wu and Wu . 2019, 2020; Chen et al. 2020; Khan et al. 2020; Liu et al. 2020; Nguyen et al. 2020; and Payne et al. 2020). In regards to geopolitical risk, studies by Balli et al. (2019), Alola et al. (2019), Tiwari et al. (2019), and Akadiri et al. (2020) show the negative impact of geopolitical risk on tourism flow indicators as well.[3] With the U.S. a primary source market for many tourist destinations across the globe, we extend the literature by examining the dynamic interplay between U.S. and global economic policy uncertainty alongside geopolitical risk with respect to U.S. citizens overseas air travel in total and by regional destination. Specifically, we estimate a VAR that includes U.S. overseas air travel, the real effective exchange rate, per capita

[2] Tourism indicators represent tourist arrivals/departures, receipts/expenditures, and hotel room demand

[3] Other related studies include the impact of economic policy uncertaintyand/or geopolitical risk on stock returns of tourism companies (Demir and Ersan, 2019; Demiralay and Kilincarslan, 2019; and Ersan et al. 2019), investment in the hospitality industry (Akron et al. 2020), hotel operating performance (Madanoglu and Ozdemir, 2018), and cash holdings of hospitality companies (Demir et al. 2019).

real personable disposable income, U.S. economic policy uncertainty, global economic policy uncertainty, and geopolitical risk with the variables denoted in growth rates. Based on the VAR model we examine the forecast error variance decomposition associated with a positive shock to the respective measures of U.S. overseas air travel. Section 2 presents the data, methodology, and results. Section 3 provides concluding remarks.

2. Data, Methodology, and Results

Our analysis utilizes monthly data from 2000:1 to 2019:10. Data on U.S. citizens overseas air passenger travel in total (OST) and by eight regional destinations in order of air travel volume (Europe, EUR; Caribbean, CAR; Asia, ASIA; Central America, CAM; South America, SAM; Middle East, MIDE; Oceania, OCE; and Africa, AFR) was obtained from the U.S. Department of Commerce, International Trade Administration, Office of Travel and Tourism Industries and seasonally adjusted using the X-11 procedure.[4] Data for the broad real effective exchange rate (ER) and per capita real personal disposable income (PY) were drawn from the St. Louis Federal Reserve Bank database, FRED II. The geopolitical risk index (GPR) along with the U.S. (USEPU) and global (GEPU) economic policy uncertainty indices were accessed from the website, www.policyuncertainty.com. The Index of Geopolitical Risk (GPR Index) counts the occurrence of words related to geopolitical tensions in eleven leading national and international newspapers: The Boston Globe, Chicago Tribune, The Daily Telegraph, Financial Times, The Globe and Mail, The Guardian, Los Angeles Times, The New York Times, The Times, The Wall Street Journal, and The Washington Post. The index counts the number of articles related to geopolitical risk in each newspaper (as a share of the total number of news articles). The search identifies articles containing references to six groups of words: Group 1:

[4] U.S. citizens air passenger travel outside of North American (excludes Canada and Mexico). Note the data on US. citizens air passenger travel overseas ends in 2019:10, and as such data during the COVID-19 pandemic is not available.

includes words associated with explicit mentions of geopolitical risk, as well as mentions of military-related tensions involving large regions of the world and a U.S. involvement, Group 2: includes words directly related to nuclear tensions, Groups 3 and 4: include mentions related to war threats and terrorist threats, respectively, and finally, Groups 5 and 6: aim at capturing press coverage of actual adverse geopolitical events (as opposed to just risks) which can be reasonably expected to lead to increases in geopolitical uncertainty, such as terrorist acts or the beginning of a war. In terms of the US economic policy uncertainty index, it reflects the frequency of articles in 10 leading US newspapers that contain the following triple: "economic" or "economy"; "uncertain" or "uncertainty"; and one or more of "congress", "deficit", "Federal Reserve", "legislation", "regulation" or "White House". This index captures 'who makes economic policy decisions, what economic policy actions are undertaken and when, and the economic effects of policy actions' (Baker et al., 2016). Finally, the analysis uses the Global Economic Policy Index (GEPU) which is a GDP-weighted average of national EPU indices for 21 countries (Australia, Brazil, Canada, Chile, China, Colombia, France, Germany, Greece, India, Ireland, Italy, Japan, Mexico, the Netherlands, Russia, South Korea, Spain, Sweden, the UK, and the US). Each national EPU index reflects the relative frequency of own-country newspaper articles that contain a trio of terms pertaining to the economy, policy, and uncertainty. In other words, each national EPU index value is proportional to the share of own-country newspaper articles that discuss economic policy uncertainty in that month (Davis, 2016). Table 1 provides certain descriptive statistics. The places that received the highest number of US tourists were Europe, Caribbean, and Asia. All variables were converted to growth rates based on first-difference of the natural logarithms of the variables.[5]

[5]ADF-GLS unit root tests available upon request demonstrate the growth rates of the respective variables are integrated of order zero, I(0).

[Insert Table 1 about here]

We begin by estimating unrestricted vector autoregressive (VAR) models with the lag length determined by Akaike information criterion.[6] The results from a VAR model are superior to those coming from a univariate model. According to Sims (1980), this is justified by the absence of any hidden endogeneity effects since the VAR model is expressed in a reduced form that explicitly considers the role of all endogenous variables included in the model, while avoiding their direct interaction that raises endogeneity problems. In other words, each endogenous variable is explained by its lagged, or past, values and the lagged values of all other endogenous variables in the model. Moreover, it avoids the need to provide a dynamic theory, specifying the relationships across the jointly determined variables. Finally, a major advantage of the VAR modelling is that the results come in the form of variance decompositions that explicitly highlight the contribution of each shock associated with the endogenous variables in explaining the forecasting variance of the targeted variable. To determine the interaction between U.S. overseas air travel and the remaining variables, the following VAR model was considered:

$$Y'_t = c + A' \sum_{i=1}^{p} Y'_{t-i} + u_t \qquad (1)$$

where Y is a vector of the variables included in the VAR system, i.e. global economic policy uncertainty, U.S. economic policy uncertainty, geopolitical risk, real effective exchange rate, per capita real personal disposable income, and U.S. overseas air travel, A denotes fixed coefficient matrices, c is a vector of constants, u stands for a white noise vector, with $E(u_t) = 0$, $E(u_t\, U'_s) = \Sigma_u$ and $E(U_t\, U_s)' = 0$ with $s \neq t$.

[6] AIC lag lengths for the VARs: TOTAL (3), EUR (3), CAR (5), ASIA (5), CAM (5), SAM (5), MIDE (6), OCE (5), and AFR (5).

The Choleski decomposition was deployed to isolate the structural errors by recursive orthogonalization, whereby the variables are ordered based on the speed by which the variables act in response to shocks. In that sense, the variables placed higher in the ordering have a contemporaneous impact on the variables lower in the ordering, while the variables placed lower in the ordering do not have a contemporaneous impact on the variables higher in the ordering. To this end, the variable ordering is global economic policy uncertainty, U.S. economic policy uncertainty, geopolitical risk, real effective exchange rate, per capita real personal disposable income, and U.S. overseas air travel.[7] Finally, forecast error variance decompositions are used to evaluate the relative impact of the economic policy uncertainty measures and geopolitical risk on U.S. overseas air travel.

The results from forecast error variance decompositions across all models at various forecasting horizons are presented in Table 2. A shock in U.S. overseas travel (in total and by regional destination) reveals that U.S. economic policy uncertainty explains the largest percentage of the forecast error variance at 60 months ranging from 16.32 percent in Africa to 38.02 percent in Central America. Geopolitical risk follows U.S. economic policy uncertainty in terms of the percentage of forecast error variance explained (with the exception of Middle East, Oceania, and Africa), ranging from 12.30 percent in Africa to 23.90 percent in Europe. Close behind geopolitical risk is per capita real personable disposable income, ranging from 12.73 percent in Africa to 21.84 percent in Europe. Both the real effective exchange rate and global economic policy uncertainty explain a relatively minor portion of the forecast error variance. Our finding that U.S. economic policy serves a more dominant role than global economic policy in explaining the forecast error variance parallels the findings of Singh et al. (2019), but runs

[7] The forecast error variance decompositions results did not change by changing the order of the variables entering the VAR system.

counter to the results reported Payne et al. (2020). Likewise, our finding that U.S. economic policy uncertainty explains a greater percentage of the forecast error variance than geopolitical risk is in contrast to the findings Tiwari et al. (2019).

[Insert Table 2 about here]

3. Concluding Remarks

This research note examines the forecast error variance decomposition associated with the estimation of VAR models that include the growth rates of U.S. overseas air travel (for total and by regional destination), the real effective exchange rate, per capita real personable disposable income, U.S. economic policy uncertainty, global economic policy uncertainty, and geopolitical risk. We find that U.S. economic policy uncertainty explains more of the forecast error variance associated with U.S. overseas air travel than geopolitical risk and global economic policy uncertainty. Though not to discount the importance of the economic policy uncertainty measures and that of geopolitical risk, the results presented suggest that U.S. citizens respond more to U.S. economic policy uncertainty, and to some extent geopolitical risk, than global economic policy uncertainty. As a result, policymakers should focus efforts toward maintaining policy stability and credibility in order to reduce the level of policy uncertainty. The tourism industry should recognize the importance of including economic policy uncertainty and geopolitical risk in the modeling of tourism behavior in order to enhance planning and the design of risk mitigation strategies for the tourism sector.

References

Akadiri, S.S., A.A. Alola, and G. Uzuner (2019), "Economic Policy Uncertainty and Tourism: Evidence from the Heterogeneous Panel", *Current Issues in Tourism*, forthcoming.

Akadiri, S.S., K.K. Eluole, A.C. Akadiri, and T. Avci (2020), "Does Causality between geopolitical Risk, Tourism and Economic Growth Matter? Evidence from Turkey", *Journal of Hospitality and Tourism Management*, forthcoming.

Akron, S., E. Demir, J.M. Diez-Esteban, and C.D. Garcia-Gomez (2020), "Economic Policy Uncertainty and Corporate Investment: Evidence from the U.S. Hospitality Industry", *Tourism Management*, forthcoming.

Alola, U.V., S. Cop, and A.A. Alola (2019), "The Spillover Effects of Tourism Receipts, Political Risk, Real Exchange Rate, and Trade Indicators in Turkey", *International Journal of Tourism Research*, 21, 813-823.

Baker, S.R., N. Bloom, and S.J. Davis (2016), "Measuring Economic Policy Uncertainty", *Quarterly Journal of Economics*, 131(4), 1593-1636.

Balli, F., S.J.H. Shahzad, and G.S. Uddin (2018), "A Tale of Two Shocks: What Do We Learn from the Impacts of Economic Policy Uncertainties on Tourism?", *Tourism Management*, 68, 470-475.

Balli, F., G.S. Uddin, and S.J.H. Shahzad (2019), "Geopolitical Risk and Tourism Demand in Emerging Economies", *Tourism Economics*, 25(6), 997-1005.

Bernanke, B.S. (1983), "Irreversibility, Uncertainty, and Cyclical Investment", *Quarterly Journal of Economics*, 98, 85-106.

Caldara, D. and M. Iacoviello (2018), "Measuring Geopolitical Risk", Board of Governors of the Federal Reserve System, working paper.

Chen, C.-M. K.-T. Hua, J.-T. Chyou, and C.-C. Tai (2020), "The Effect of Economic Policy Uncertainty on Hotel Room Demand: Evidence from Mainland Chinese and Japanese Tourists in Taiwan", *Current Issues in Tourism*, 23(12), 1443-1448.

Cooper, C.H., Fletcher, J., Fyall, A., Gilbert, D., and Wanhill, S. (2008). *Tourism: Principles and Practice [Fourth Edition]*, Harlow: Pearson Education Limited.

Davis, S.J. (2016), "An Index of Global Economic Policy Uncertainty", Working Paper, No. 22740, National Bureau of Economic Research.

Demir, E. and G. Gozgor (2018), "Does Economic Policy Uncertainty Affect Tourism?", *Annals of Tourism Research*, 69, 15-17.

Demir, E. and O. Ersan (2019), "The Impact of Economic Policy Uncertainty on Stock Returns of Turkish Tourism Companies", *Current Issues in Tourism*, 21(8), 847-855.

Demir, E., J.M. Diez-Esteban, and C.D. Carcia-Gomez (2019), "The Impact of Geopolitical Risks on Cash Holdings of Hospitality Companies: Evidence from Emerging Countries", *Journal of Hospitality and Tourism Management*, 39, 166-174.

Demiralay, S. and E. Kilincarslan (2019), "The Impact of Geopolitical Risks on Travel and Leisure Stocks", *Tourism Management*, 75, 460-476.

Dragouni, M., G. Filis, K. Gavriilidis, and D. Santamaria (2016), "Sentiment, Mood and Outbound Tourism Demand", *Annals of Tourism Research*, 60, 80-96.

Ersan, O., S. Akron, and E. Demir (2019), "The Effect of European and Global Uncertainty on Stock Returns of Travel and Leisure Companies", *Tourism Economics*, 25(1), 51-66.

Ghosh, S. (2019), "Uncertainty, Economic Growth Its Impact on Tourism, Some Country Experience", *Asia Pacific Journal of Tourism Research*, 24(1), 83-107.

Giavazzi, F. and M. McMahon (2012), "Policy Uncertainty and Household Savings", *Review of Economics and Statistics*, 94(2), 517-531.

Gozgor, G. and S. Ongan (2017), "Economic Policy Uncertainty and Tourism Demand: Empirical Evidence from the USA", *International Journal of Tourism Research*, 19, 99-106.

Gozgor, G. and E. Demir (2018), "The Effects of Economic Policy Uncertainty on Outbound Travel Expenditures", *Journal of Competitiveness*, 10(3), 5-15.

Isik, C., E. Sirakaya-Turk, and S. Ongan (2019), "Testing the Efficacy of the Economic Policy Uncertainty Index on Tourism Demand in USMCA: Theory and Evidence", *Tourism Economics*, forthcoming.

Khan, K., C.-W. Su, Y.-D. Xiao, H. Zhu, and X. Zhang (2020), "Trends in Tourism under Economic Uncertainty", *Tourism Econ*omics, forthcoming.

Liu, H., Y. Liu, and Y. Wang (2020), "Exploring the Influence of Economic Policy Uncertainty on the Relationship between Tourism and Economic Growth with an MF-VAR Model", *Tourism Economics*, forthcoming.

Madanoglu, M. and O. Ozdemir (2018), "Economic Policy Uncertainty and Hotel Operating Performance", *Tourism Management*, 71, 443-452.

Nguyen, C.P., C. Schinckus, and T.D. Su (2020), "Economic Policy Uncertainty and Demand for International Tourism: An Empirical Study", *Tourism Economics*, forthcoming.

Ongan, S. and G. Gozgor (2018), "Tourism Demand Analysis: The Impact of the Economic Policy Uncertainty on the Arrival of Japanese Tourists to the USA", *International Journal of Tourism Research*, 20, 308-316.

Payne, J.E., M. Topcu, M. Hajille, and F. Niroomand (2020), "Economic Policy Uncertainty Shocks and U.S. Overseas Travel", *International Trade Journal*, forthcoming.

Rosselló-Nadal, J., Riera-Font, A., and Capó-Parrilla, J. (2007), "The Contributions of Economic Analyses to Tourism: A Survey", 79-108 in Tavidze, A. (Ed.) *Progress in Economics Research, Volume 11*. New York: Nova Science Publishers.

Sharma, C. (2019), "Testing the Asymmetric Effects of the Economic Policy Uncertainty on the Tourism Demand in India", *Tourism Economics*, forthcoming.

Sims, C.A. (1980), "Macroeconomics and Reality", *Econometrica*, 48, 1-48.

Singh, R. D. Das, R.K. Jana, and A.K. Tiwari (2019), "A Wavelet Analysis for Exploring the Relationship between Economic Policy Uncertainty and Tourist Footfalls in the USA", *Current Issues in Tourism*, 22(15), 1789-1796.

Tiwari, A.K., D. Das, and A. Dutta (2019), "Geopolitical Risk, Economic Policy Uncertainty, and Tourist Arrivals: Evidence from a Developing Country", *Tourism Management*, 75, 323-327.

Tsui, W.H.K., F. Balli, D.T.W. Tan, O. Lau, and M. Hasan (2018), "New Zealand Business Tourism: Exploring the Impact of Economic Policy Uncertainties", *Tourism Economics*, 24(4), 386-417.

Wu, T.-P. and H.C. Wu (2019), "Causality between European Economic Policy Uncertainty and tourism Using Wavelet-Based Approaches", *Journal of Travel Research*, 58(8), 1347-1356.

Wu, T.-P. and H.C. Wu (2020), "A Multiple and Partial Wavelet Analysis of the Economic Policy Uncertainty and Tourism Nexus in BRIC", *Current Issues in Tourism*, 23(7), 906-916

Table 1. Descriptive Statisics

Variables	Mean	SD	Min	Max
TOTAL	2,541,048	648,864.8	1,422,363	5,131,219
EUR	1,066,586	380,786.9	414,958	2,566,724
CAR	518,367	161,880.9	220,141	1,006,030
ASIA	399,548	82,794.8	176,244	611,415
CAM	200,370	64,281.6	73,723	364,499
SAM	167,881	37,327.3	99,264	290,232
MIDE	101,549	65,222.6	13,434	256,427
OCE	60,861	13,956.6	35,137	108,323
AFR	25,886	9,988.9	6,956	61,360
GEPU	121	51.6	48	307
USEPU	125	48.4	45	284
GPR	104	70.7	27	545
BREER	110	9.6	93	129
PYPC	38,711	3,213.9	33,112	45,809

SD = standard deviation

Table 2. Forecast Error Variance Decompositions of U.S. Overseas Air Travel (in months)

TOTAL:	TOTAL	GEPU	USEPU	GPR	BREER	PYPC
1	100.00	0.00	0.00	0.00	0.00	0.00
12	43.09	3.39	20.12	16.65	2.54	14.21
60	21.46	6.04	28.73	23.81	3.60	16.36
EUR:	EUR	GEPU	USEPU	GPR	BREER	PYPC
1	100.00	0.00	0.00	0.00	0.00	0.00
12	41.62	3.14	21.79	17.64	2.26	13.55
60	18.71	5.24	32.36	23.92	2.74	17.03
CAR:	CAR	GEPU	USEPU	GPR	BREER	PYPC
1	100.00	0.00	0.00	0.00	0.00	0.00
12	50.16	2.71	18.54	14.69	2.08	11.82
60	23.74	2.89	33.61	20.75	2.46	16.55
ASIA:	ASIA	GEPU	USEPU	GPR	BREER	PYPC
1	100.00	0.00	0.00	0.00	0.00	0.00
12	37.92	1.16	27.74	15.36	1.24	16.58
60	21.60	1.32	35.63	21.89	1.35	20.21
CAM:	CAM	GEPU	USEPU	GPR	BREER	PYPC
1	100.00	0.00	0.00	0.00	0.00	0.00
12	46.22	3.64	19.15	16.44	2.30	12.25
60	14.27	5.85	38.02	19.66	3.51	18.69
SAM:	SAM	GEPU	USEPU	GPR	BREER	PYPC
1	100.00	0.00	0.00	0.00	0.00	0.00
12	48.62	2.24	20.11	15.06	1.73	12.24
60	20.47	4.49	33.93	20.35	2.64	18.12
MIDE:	MIDE	GEPU	USEPU	GPR	BREER	PYPC
1	100.00	0.00	0.00	0.00	0.00	0.00
12	41.58	1.29	23.18	16.39	1.40	16.16
60	28.36	1.45	26.71	20.05	1.59	21.84

OCE:	OCE	GEPU	USEPU	GPR	BREER	PYPC
1	100.00	0.00	0.00	0.00	0.00	0.00
12	44.98	1.12	24.72	12.77	1.27	15.14
60	38.05	1.23	25.11	17.81	1.33	16.47

AFR:	AFR	GEPU	USEPU	GPR	BREER	PYPC
1	100.00	0.00	0.00	0.00	0.00	0.00
12	62.14	1.26	14.41	10.46	1.32	10.41
60	55.71	1.40	16.32	12.30	1.54	12.73