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Pandemic-induced uncertainty and tourism demand: Evidence on the moderator effect of democratic institutions

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Abstract

This paper explores the mitigating effect of democratic institutions in the nexus of tourism and pandemic-induced uncertainty in 24 Organisation for Economic Co-operation and Development (OECD) countries. Utilizing dynamic panel data analysis in the modeling process, the findings reveal that increased pandemic-related uncertainty in the target market negatively affects the tourism demand. However, the presence of democratic institutions in the destination country positively affects the tourism demand. Finally, democratic institutions help mitigate the negative effects of pandemic uncertainty on tourism demand. The research highlights that a democratic destination can provide a more favorable environment for tourism development amid pandemic uncertainty.

KEYWORDS

democratic institutions, generalized method of moments, pandemic uncertainty, panel data, tourism demand

1 | INTRODUCTION

The tourism industry is highly sensitive to external shocks such as financial crises, internal turmoil, wars, terrorist attacks, natural disasters, and epidemics such as severe acute respiratory syndrome, Ebola, and Middle East Respiratory Syndrome caused significant damage to the tourism sector. However, in comparison to all previous external shocks, coronavirus disease (COVID-19) has caused greater devastation than the total of all crises (Gössling et al., 2021; Le & Phi, 2021). The devastation caused by the COVID-19 pandemic is considered not only a public health crisis but also a mix of all shocks (Itani & Hollebeek, 2021).

Looking at the impact of COVID-19 by numbers, (i) COVID-19 has disrupted the global tourism supply–demand equilibrium, resulting in a 70% reduction in tourism (Liew, 2020). (ii) The loss in travel and tourism in 2020 was calculated as US $2.1 trillion (Škare et al., 2021). (iii) Compared with 2019, global decreases in tourist arrivals were 72% and 71% in 2020 and 2021, respectively, with corresponding decreases in global tourism revenues of 63% and 61% (UNWTO, 2023). (iv) Global export revenue loss from international tourism in 2020 is US $460 billion (Golets et al., 2023). (v) The lowest hotel occupancy rates have been reported since the Great Depression of 1929. The recovery was slow, and the tourism sector is projected to reach pre-pandemic levels in 2024, 5 years after the pandemic breakout, having already reached 88% of pre-pandemic levels in 2023 (UNWTO, 2024).

In the early stages of the pandemic, many studies have provided descriptive analyses or empirical estimates using daily data, indicating a linear relationship among vaccine coverage, COVID-19 cases, and fatalities, and the tourism sector (Foo et al., 2020; Kock et al., 2020; Sigala, 2020). The decline in case numbers and fatalities in some periods and the advances in vaccine production and distribution have also fostered optimism regarding the outlook for tourism (Hsieh et al., 2021; Koçak et al., 2022). However, recent global experiences in recent years have shown that this positive atmosphere can be disrupted with the emergence of new variants (Awijen et al., 2022). In early 2023, a new form of COVID-19 named EG.5 or ERIS appeared to be causing a rapid increase in the number of cases in many countries, including the UK and the United States (Looi, 2023). There is always the risk that new variants may spread faster, develop resistance to vaccines, become more lethal, or cause new outbreaks (Karim & Karim, 2021; Khairnar et al., 2022). Moreover, the pandemic

extends beyond a mere public health problem. For example, although the spread of COVID-19 is under control, the economic, political, and social uncertainties stemming from the pandemic continue to increase (Cobanoglu & Kocak, 2023). Alongside the pandemic, global challenges such as recession, inflation, and food crises are being experienced (Bobeica & Hartwig, 2023). These changes reshape social and cultural life, bringing uncertainties not only for the tourism industry but also across all economic sectors.

In terms of tourism research, anecdotal and descriptive findings derived from short-term data are catchy and can provide insights into the tourism–pandemic nexus. However, such research does not provide theoretical information about the underlying relationships or new perspectives for developing managerial strategies (Zenker & Kock, 2020). As of 2022, the world has entered a maturity period in terms of pandemics. Although the spread of the pandemic is controlled by vaccines and other efforts, uncertainties arising from the pandemic still persist. Moving forward, there is a need for studies that address the tourism–pandemic link on a theoretical basis, test implications, and offer new perspectives (Assaf et al., 2021). This paper examines the validity of the moderator role of democratic institutions in the pandemic uncertainty and tourism demand nexus in selected Organisation for Economic Co-operation and Development (OECD) countries. The contribution of the research is threefold. First, we discuss the influence of the main concepts of institutional economics on the relationship between tourism and pandemic uncertainty. Second, we apply both static and dynamic panel data models to investigate the moderator role of democratic institutions on the pandemic uncertainty–tourism demand relationship. Such an examination deserves attention due to the profound impacts of COVID-19. Third, we employ a recently developed pandemic uncertainty index (PUI) encompassing all recorded outbreaks within the epidemic category rather than solely focusing on COVID-19. Thus, not only COVID-19 but also the effects of Middle East respiratory syndrome (MERS) and other epidemic-induced uncertainties on tourism demand are examined. Consequently, the findings may offer insights into the implications of democratic institutions for enhancing the resilience of the tourism sector against future epidemics.

2 | THEORETICAL BACKGROUND

Institutional economics has attracted a great deal of attention in the economic development literature in recent years. This approach emphasizes the central role of inclusive institutions, rather than macroeconomic policies, as the driver of economic growth. Hodgson (2007) provides a compelling explanation by citing parts of the 1989 Nobel Prize-winning economist Trygve Magnus Haavelmo's speech on why Institutional Economics is essential to the development process. Haavelmo states in his speech that existing economic theories are not good enough to explain economic behavior. In existing theories, individual behaviors are examined under various conditions, and then a model is built for the entire economic society through a process called sociation. However, society can be thought of as the structure of regulations and rules in which its members operate. Therefore, the reactions of individuals to these rules and orders characterize society and yield important consequences. Ever since the recognition of Williamson (1975) as one of the founding fathers of Institutional Economics, the significance of inclusive institutions in economic development and the necessity of integrating them into economic models have been increasingly discussed in the literature.

Institutional Economics builds its theoretical explanations on three fundamental concepts: transaction costs, property rights, and bounded rationality. Transaction costs are a concept developed by Ronald Coase, who is regarded as an institutional economist. According to Coase (1937), transaction cost is the cost of using the market mechanism. Transaction refers to the exchange between the buyer and the seller. Transaction costs are all expenses incurred during the exchange process. North (1993) defines transaction cost as the cost of measuring the value of the exchanged item, protecting rights, enforcing agreements, and inspecting. Transaction costs increase due to unforeseen changes in environmental conditions, such as technology shock, market fluctuation, or political uncertainty (MacHer & Richman, 2008). Transaction costs arise from limited rationality, opportunism, and uniqueness of assets, in addition to environmental uncertainties. Environmental uncertainty and limited rationality lead to incomplete contracts and below-average decision-making. This makes it impossible to have complete contracts in terms of information, as neoclassical economics suggests. Under these conditions, one of the parties to the transaction can fall into opportunism and obtain economic rent. Therefore, trust in transactions is a vital element of the relationship between the parties (Ahluwalia et al., 2020). In terms of restructuring economic theory, the most important message is that institutions are of critical importance in situations where transaction costs are high.

The second important concept is property rights, closely related to the legal system and the political regime (Heo & Hahm, 2015). Property rights refer to an individual's ownership of something, which grants them legal and practical control, with others recognizing and respecting this ownership. Coase (1937) emphasizes the transaction costs incurred in establishing, protecting, and transferring property rights. The rewards for the efforts, investments, and innovative initiatives of individuals in a society are only ensured by well-defined and guaranteed property rights by governments. Well-defined and secured property rights are built with inclusive institutions (Acemoglu et al., 2001). The fact that property rights are guaranteed in a society is also an indication of the rule of law, the independence of the judiciary, the existence of democratic governance, and an environment of trust. Thus, transaction costs and property rights are common research concepts in economics, legal, and organizational theories.

Another important contribution of Institutional Economics is the concept of bounded rationality. To understand this concept, unbounded rationality should be well understood. In neo-classical analysis, perfect rationality is assumed for both individuals and organizations. Individuals demonstrate optimal behavior for the fulfillment of goals under given conditions and constraints (Simon, 1990).

Rationality for an organization means that the revenue either exceeds or equals the costs in all activities performed. According to this efficient situation, such an organization can anticipate all possible future situations, realize the optimum output level costless, maximize its profits, and effectively reach its end-of-period target (Furubotn, 2001; Jones, 2003). Consequently, there is no consideration for institutions in neo-classical analysis. However, in the real world, decisions about the future are often made under the conditions of partial understanding or bounded rationality due to the limited capacity of the human mind and the unpredictable nature of the future. Since it is not possible for people as decision-making units to accurately predict all possible future outcomes and make all decisions rationally, the projections made at the beginning of the period will deviate from the actual outcomes at the end of the period. In the real world, the rationality of human behavior is constrained by institutions that are shaped by rules and norms. Therefore, a decision-making process under bounded rationality can be considered a costly input. This cost not only complicates future projections but also hinders effective decision-making and the desired output levels (Dequech, 2006; Eggertsson, 2013).

3 | LITERATURE ON INSTITUTIONS, PANDEMIC, AND TOURISM

3.1 | Transaction cost and tourism–pandemic nexus

The COVID-19 pandemic has changed global travel risk perception behavior. Even though government responses and restrictions have been relaxed occasionally, most airlines had to reduce or cancel flights due to low demand. Hotels and tourist accommodations have been forced to close temporarily or permanently due to falling occupancy rates. Ensuring safe travel for visitors is critical in shaping travel patterns. The perception of a destination as unsafe and the formation of a negative impression about the destination directly affects the decision to visit. Many studies and forecasts reveal that visitors avoid destinations heavily affected by COVID-19. In general, travel risks encompass a wide range of factors such as health, physical, psychological, performance, financial, equipment, social, and time-related aspects. However, health risks, especially in pandemic conditions, affect the decision to visit. Health risks include factors such as environmental risks, exposure to blood and bodily fluids, exposure to infectious diseases, injury, violence, and psychological health (Chua et al., 2021). Preventive health measures for visitors can reduce the potential risks. Precautions include behaviors to avoid disease (e.g., avoiding crowds and evaluating new case statistics), threat assessment (e.g., considering conditions at the destination and accommodation, pandemic trends), probability of exposure at the destination, reviewing treatment conditions at the destination, and health care and insurance options (Hotle et al., 2020; Rahman et al., 2021; Wilson & Chen, 2020). It is only possible for the visitor to minimize the risk by performing additional operations and bearing these costs. These transactions cover many factors, such as information about the epidemic conditions in the destination, the characteristics of the accommodation, hygiene, and health protocols, the quality of health services in the destination, and the insurance coverage of the health services in the destination. Transaction costs are expected to be lower if the destination is in a country/region with inclusive institutions or is more democratic. A democratic administration, rule of law, and an environment of trust reduce risks and uncertainties and ensure the validity of official transactions and contracts. Research proves that transaction costs are low in countries with democratic institutions (Adams et al., 2019; Dreher et al., 2015; Nawaz, 2015).

3.2 | Property rights and tourism–pandemic nexus

Property rights are not a mere legal term but rather a collection of indicators that measure a society's success in developing an environment in which it forms the basis of fair and predictable rules for economic and social interactions (Ouattara & Standaert, 2020). Effective protection of property rights allows individuals to plan and reduce uncertainties. In societies where property is insecure, people often should pay transaction costs to maintain their rights over physical and intangible resources (Teraji, 2008). A system in which property rights are protected tends to foster cooperation and align the interests of the individuals with those of society (Justesen & Kurrild-Klitgaard, 2013). A strong and inclusive institutional structure is needed to protect property rights. Knack and Keefer (1995) state that the legal system in countries with strong institutions is based on the rule of law, an effective judicial system, and the independence of the judiciary. Disputes between the legal system and various entities within the state, including individuals and other states, are resolved impartially, or it is expected that they will be resolved. The law reveals a compelling sanction power on protecting property rights, security, and implementing contracts. In this way, transaction costs and uncertainties are eliminated. The authority to protect the rule of law is the state and its political regime (especially democracy). The role of the state in creating, defining, and enforcing property rights is crucial. Moreover, it is argued that in the absence of the state, property rights are not well protected (Teraji, 2008).

Theoretically, countries with inclusive institutions create a good social and cultural image to visitors and are often considered high-security destinations (Tang, 2018). In particular, the perception of trust in destinations can form the basis of international tourist arrivals (Ghaderi et al., 2017). Research on trust during pandemics emphasizes that social and political trust contributes to desirable behavior (Tabery & Pilnacek, 2021). Social and political trust is seen as one of the key resources in the development of modern societies. Trust is an important concept for understanding the world, institutions, decision-making processes, and social, political, and community relations and forms the basis of human and social life. Therefore, good governance, government, and social and political trust are the foundation of the tourism development process (Nunkoo et al., 2012). As a result, it is reasonable to expect that destinations where property rights are well protected are preferred by visitors in the travel decision-making process under pandemic conditions.

3.3 | Bounded rationality and tourism–pandemic nexus

Visitors' decision-making behavior has been a popular research area over the past decade. Most of the articles assume that tourists make decisions under the rationality situation by maximizing their utility among alternative options, as proposed by utility theory. Other papers evaluate visitor decisions through psychological theories, such as the theory of planned behavior, which assumes that a person acts through reasoning (Wattanacharoensil & La-ornual, 2019).

New Institutional Economics underlines that individuals make their decisions about the future under the condition of partial understanding or limited rationality due to the limited capacity of the human mind and the unpredictable uncertainty of the future. Therefore, individuals' decisions are as rational as possible within the constraints imposed by institutions governed by rules and norms, a concept known as bounded rationality. Thus, under normal circumstances, visitors have a limited ability to process information, referred to as limited rationality.

In the context of COVID-19, understanding visitors' risk assessment, risk decoding, and decision-making process are valuable efforts in the literature. As the uncertainty of COVID-19 still continues, the epidemic exhibits a dynamic structure. According to behavioral scientists, the visitors' decision-making process is shaped around the expected risk perception. In a world of incomplete and dynamic information, the factors that drive the decision-making behaviors of tourists in case of risk and uncertainty are extensively discussed in the literature (Pappas & Glyptou, 2021). However, research mainly focuses on individual behaviors and attitudes that explain the psychological factors that affect the decision, and the decision-making process is handled in a microframe (Golets et al., 2023; Matiza, 2020; Williams et al., 2022). On the other hand, visitors' information about the external environment or destination is also critical in the decision-making process. The macroenvironment also has important effects on individuals' cognitive and psychological perceptions, attitudes, and behaviors. For example, governments' lack of transparency is one of the most important lessons learned from the failure to combat MERS. Countries that are more successful than others in combating COVID-19 exhibit the following characteristics: (i) Governments increase the awareness and participation of citizens by using active communication channels in the fight against the pandemic. (ii) They share up-to-date statistics and details on cases and mortality rates with full transparency. (iii) Applications have been developed that allow infected patients to keep track of the places they visit. Applications that allow data mining using CCTV images, credit card usage, and Global Positioning System information from infected people's mobile phones are used. (iv) To address the shortage of masks, applications were developed that show the locations of pharmacies and available masks. While transparency initially may cause fear and frustration due to the increasing number of newly infected patients and citizen compliance challenges leading to a decrease in the public's trust in the government, it ultimately increases trust in the government in the long run. After the short-term shock, the public regards the government as a reliable source of information and places trust in every action, statement, and information released by the government (Moon, 2020).

It can be concluded that democratic countries experience higher COVID-19 mortality rates because they adopt less strict policies than authoritarian states. According to the prevailing view, the claim that nondemocratic regimes are more effective at fighting the epidemic is not credible. Authoritarian leaders seem to have underestimated the risk of the new virus and failed to take appropriate countermeasures promptly. Moreover, the idea that the healthcare systems of authoritarian states will outperform those of democratic countries lacks compelling evidence. More importantly, the possibility of data manipulation regarding pandemic statistics in authoritarian governments is pointed out (Annaka, 2021).

In a society with inclusive institutions, the probability of optimal decision-making in conditions of risk and uncertainty will be much higher under the assumptions of incomplete information, limited capacity, and limited rationality. Button (2018) provides empirical evidence that bounded rationality can be effectively addressed in liberal societies with deliberative democracy without violating freedom and restricting pluralism. Therefore, the institutional structure of the destination may be determinant in the decisions of visitors under the risk and uncertainty of pandemic conditions.

4 | MATERIALS AND METHODS

This paper uses a generic tourism demand function, including exchange rate (EXC), travel cost, and income variables, to estimate the interactive effect of inclusive institutions and pandemic-induced uncertainty on demand.

$$\mathrm{TD} = f(\mathrm{INC}, P, \mathrm{EXC}, \mathrm{COST}, \mathrm{INS}, \mathrm{PUI}). \quad (1)$$

To establish a reliable model based on demand theory, we follow an alternative pricing method proposed by Dogru et al. (2017), excluding the simultaneous effects of price (P) and EXC variables. Using the nominal EXC as an independent variable does not provide sufficient information to compare prices between the host destination and the visitor's country of origin. Moreover, inflation rate differences between countries can be offset by changes in EXCs (De Vita & Kyaw, 2013). For this reason, to better capture the price and purchasing power differences between countries and to measure tourism costs in destinations, standardized prices adjusted for the EXC should be used (Martin & Witt, 1988). The real EXC is obtained by multiplying the ratio of the foreign and domestic price levels by the nominal EXC. The logarithmic form is the most common model specification in tourism demand modeling, enabling the estimated parameters to be interpreted as a coefficient of elasticity (Peng et al., 2014). Accordingly, Equation (1) can be reformulated in logarithmic forms as follows:

$$\begin{aligned} ln\,\mathrm{TD}_{it} = {} & \beta_0 + \beta_1 ln\,\mathrm{INC}_{it} + \beta_2 ln\,\mathrm{REXC}_{it} + \beta_3 ln\,\mathrm{COST}_{it} + \beta_4 ln\,\mathrm{INS}_{it} \\ & + \beta_5 ln\,\mathrm{PUI}_{it} + \beta_6 (ln\,\mathrm{INS} \times ln\,\mathrm{PUI})_{it} + \varepsilon_{it}. \end{aligned} \quad (2)$$

In Equation (2), the dependent variable is the number of international tourist arrivals, representing tourism demand. Income, the real EXC (adjusted for relative price), transportation cost, institutions, and pandemic uncertainty are the explanatory variables. $\beta_0,\beta_1...\beta_6$ are the parameters to be estimated, while ε is the error term. The research covers 24 OECD countries and uses annual data from 2008 to 2020. The countries are Australia, Canada, Chile, Colombia, Costa Rica, Czechia, Denmark, Finland, France, Greece, Hungary, Iceland, Israel, Italy, Japan, South Korea, Latvia, Mexico, New Zealand, Poland, Slovak Republic, Spain, United Kingdom, and the United States. We use global GDP per capita to represent the income of international visitors to OECD countries. Transportation costs, including travel expenses and insurance, are another control variable frequently included in tourism demand models. However, obtaining data on travel costs at the country level is not feasible (Buigut et al., 2017). Crude oil prices, or more specifically, jet fuel prices, are used as proxies for travel costs (Tsui & Balli, 2015). In recent years, the global development of air transport, more connection destinations, and increases in flight frequencies have made air transport the most preferred option. Therefore, jet fuel prices are accepted as a useful indicator to represent travel costs (Santos & Cincera, 2018). We proxy inclusive institutions with the democracy index calculated by Freedom House as a combination of political rights and civil liberties. Index scores range from 0 to 100, with an increase in the score implying an increase in the level of democracy. Inclusive institutions are those that provide equal conditions and opportunities to all members of society, creating an environment that showcases the country's capabilities (Acemoğlu and Robinson, 2016). The inclusiveness of the institutions and the encouraging role of the state in this structure are very important in terms of encouraging the public. Inclusive institutions provide a safe and favorable environment for economic and social development that protects property rights, respects the law, creates a competitive environment on equal terms in the economy, and encourages investment and innovation (Acemoglu et al., 2001). The institutional structure is shaped by many formal and informal rules such as political regime, legal system, level of freedom, culture, norms, and beliefs (Bulut et al., 2020). On the other hand, inclusive institutions can only be built and maintained based on formal rules. The key concept is the democratic regime. Inclusive institutions are closely related to the structure of central authority and the political regime. According to Acemoglu and Robinson (2012), institutions with coercive power are necessary for securing property rights, ensuring law and freedom, preventing corruption, enforcing contracts between private individuals, and maintaining order. Also, roads, transportation networks, and public infrastructure systems are required for the development of economic activities. Although some of these services can be provided by the market and private individuals, a central authority is necessary for the wide implementation of these services. This central authority is the state, and the form of government (regime) of the state determines the institutional structure. Therefore, we substitute inclusive institutions with the democratic regime.

The recently developed PUI is considered to explain the effect of pandemic uncertainty on demand. This new index measures the global uncertainties caused by pandemics, allowing researchers and policymakers to assess the social and economic effects of pandemics. The PUI is reformulated by Ahir et al. (2018) based on the economic policy uncertainty (EPU) index calculation method of Baker et al. (2016). Not only COVID-19 but also all outbreak diseases classified as pandemics or epidemics since 1996 are included in the calculation. The index is calculated through text mining, conducted at the global and country level, based on the frequency of occurrence of a word related to epidemics found in the Economist Intelligence Unit country reports. Due to the substantial impact of COVID-19, the scores have been reaching extremely high values since 2020. Relevant data are available from the World Uncertainty Index database.

This paper uses an interactive impact variable (Inst × Pandemic), multiplied by the variables of pandemic uncertainty and inclusive institutions, to explain the moderator effect. In statistical theory, the moderator effect suggests that a variable affects the strength of the connection between dependent and independent variables (Katircioğlu & Taşpinar, 2017). The sign and significance of the coefficient of the interaction variable provide information about the validity of the moderator effect. Table 1 introduces the variables, along with their definitions and sources.

As stated by Song et al. (2009), past visits to a destination and consumer experiences have an impact on current-period tourism

TABLE 1 Summary of variables.

Abbreviation	Definition	Description	Source
TD	Tourism demand	Total international tourist arrivals, millions	OECD statistics
INC	Income	World GDP per capita, US dollars at constant 2015 prices	World Bank
REXC	Real exchange rate	Real effective exchange rate, index 2010 = 100	World Bank
COST	Transportation Cost	Jet fuel wholesale price by refiners, dollars per gallon	US Energy Information Administration
INS	Institutions	Political rights and civil liberties total score	Freedom House
PUI	Pandemic	global pandemic uncertainty index	(Ahir et al., 2018)
INS × PUI	Interaction term	Proxy indicator, representing the interactive effects of institutions and pandemic uncertainty	Calculated by the authors.

demand through perceptions of reputation and word-of-mouth effect. Therefore, due to this dynamic nature of tourism demand, the lagged values of the dependent variable are included in the model as dynamic terms, and an autoregressive (AR[1]) process is followed as in Equation (3).

$$y_{it} = \delta y_{it-1} + \beta' X_{it} + \epsilon_{it}, \quad (3)$$

where $i = 1,2,...N$ and $t = 1,2,...T$.

$$\epsilon_{it} = \eta_i + \upsilon_{it}. \quad (4)$$

Estimation of Equation (3) with methods such as pooled ordinary least squares (POLS), fixed-effects model (FEM), or random-effects model (REM), which are widely used in the literature, may cause econometric problems. Since the dependent variable, y_{it} is a function of η_i, the lagged value of the dependent variable (y_{it-1}) is also a function of η_i. In this case, there is a correlation between y_{it-1}, which is included in the model as an explanatory variable, and the error term ϵ_{it}. This situation, known as the endogeneity problem, causes generalized POLS estimates based on POLS, FEM, and REM to be biased and inconsistent. Nickell (1981) demonstrated that the resulting correlation leads to a large-sample bias that increasing N cannot reduce.

Anderson and Hsiao (1982) propose that the relationship between the lagged dependent variable and the error term can be checked using the first difference transformation and appropriate instrumental variables. However, this implementation does not satisfy all moment conditions. Arellano and Bond (1991) proposed the generalized method of moments (difference-GMM) to overcome this problem. According to this method, all valid lagged variables subjected to the first difference transformation are used as instrumental variables. Although the difference-GMM estimator is more efficient than the Anderson and Hsiao (1982) estimator, it shows a weak tool feature since the lagged values of the variables contain only the first difference information in the models with small-time dimensions and high AR parameters. Against the weak tool problem, Arellano and Bover (1995) proposed the method of orthogonal deviations instead of the first difference transformation. In the orthogonal deviation method, the data loss resulting from the first difference transformation is minimized by taking the difference of the mean of all possible future values of the variables. Blundell and Bond (1998) developed an optimal combination of the estimator and the difference-GMM estimator that considers the importance of the initial where the time dimension is small. Since the estimation for the original and transformed model is obtained by solving two different systems of equations, it is called system-GMM. Monte Carlo simulations and asymptotic variance assessments show that the system-GMM provides significant gains in the efficiency of weak instruments (Blundell et al., 2000). The reliability of GMM estimates should be tested based on the validity of two conditions. The first is the condition for the validity of instrumental variables. The second is the condition that there is no second-order autocorrelation.

5 | RESULTS

Before estimating the parameters, we report the preliminary findings. Table 2 shows descriptive statistics. The value ranges of the variables are close to each other. The coefficients of variation indicate that income has the least relative variability, while the PUI has the highest relative variability among the variables. This high variability of the PUI highlights the significant uncertainty in the index. The size of the standard error values is within the acceptable range for regression analysis. Except for the PUI, none of the variables have a normal distribution.

Table 3 reports the correlation matrix. Tourism demand (TD) is negatively correlated with both the PUI and the real EXC. TD is positively correlated with income ($p = 0.35$), travel cost ($p = 0.47$), and institutions ($p = 0.03$). However, statistical significance differs. No high correlation is observed between the explanatory variables, indicating that there is no multicollinearity in the model.

Table 4 shows the panel FEM and REM results. Columns 1 and 4 show the impact of inclusive institutions and pandemic uncertainty on tourism demand, while columns 2 and 5 show only the moderator effect. Columns 3 and 6 show the impact of all variables (each independent variable as well as the moderator variable) on tourism demand. According to estimates, while institutions affect tourism demand positively in all models, pandemic uncertainty impacts tourism demand negatively. In columns (2–3) and (5–6), the interactive impact of inclusive institutions and pandemic uncertainty on tourism

TABLE 2 Descriptive statistics.

Variable	Mean	Median	Max.	Min.	SD	CV	Jarque–Bera	Obs.
TD	16.533	16.524	19.172	13.243	1.433	8.67%	9.146*	312
INC	9.211	9.212	9.306	9.110	0.060	0.65%	19.961*	312
REXC	4.589	4.596	5.034	4.205	0.114	2.48%	22.114*	312
COST	0.737	0.728	1.124	0.258	0.321	43.55%	26.304*	312
INS	4.489	4.521	4.605	4.077	0.118	2.63%	84.410*	312
PUI	−1.164	−0.941	2.841	−4.045	1.243	−106.79%	3.207	312

Abbreviations: CV, coefficient of variation; INC, income; INS, institutions; PUI, pandemic uncertainty index; REXC, real exchange rate; TD, tourism demand.
*$p < 0.01$.

TABLE 3 The correlation matrix.

	TD	INC	REXC	COST	INS	PUI
TD	1					
INC	0.052	1				
REXC	−0.141*	−0.113**	1			
COST	0.040	−0.485*	0.154*	1		
INS	0.032**	−0.091	0.185*	0.051	1	
PUI	−0.175*	−0.177*	0.024	0.157*	−0.004	1

Abbreviations: INC, income; INS, institutions; PUI, pandemic uncertainty index; REXC, real exchange rate.
**$p < 0.05$; *$p < 0.01$.

TABLE 4 Panel FEM and REM estimation outputs.

	FEM			REM		
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
INC	2.225* (0.00)	1.936* (0.00)	2.224* (0.00)	2.212* (0.00)	1.934* (0.00)	2.206* (0.00)
REXC	−0.036*** (0.07)	−0.139*** (0.07)	−0.035** (0.05)	−0.052*** (0.09)	−0.150** (0.05)	−0.055** (0.03)
COST	−0.391* (0.00)	−0.432* (0.00)	−0.412* (0.00)	−0.414* (0.00)	−0.433* (0.00)	−0.413* (0.00)
INS	1.758* (0.00)	-	1.768* (0.01)	1.689* (0.00)	-	1.683* (0.00)
PUI	−0.127* (0.00)	-	−0.174* (0.00)	−0.128* (0.00)	-	−0.175** (0.05)
INS × PUI	-	0.029* (0.00)	0.014** (0.02)	-	0.029* (0.00)	0.013** (0.05)
Constant	−12.144* (0.00)	−2.187 (0.74)	−12.184* (0.00)	−11.630* (0.00)	−2.058 (0.71)	−11.535* (0.01)
R^2	0.867	0.866	0.867	0.516	0.498	0.511
Adj. R^2	0.864	0.863	0.864	0.508	0.492	0.501
F-statistic	297.782* (0.00)	298.433* (0.00)	286.505* (0.00)	64.277* (0.00)	75.121* (0.00)	52.271* (0.00)
Hausman test	-	-	-	4.736 (0.48)	4.548 (0.33)	12.683** (0.05)

Note: Values in parentheses are probabilities.
Abbreviations: FEM, fixed-effects model; INC, income; INS, institutions; PUI, pandemic uncertainty index; REM, random-effects model; REXC, real exchange rate; TD, tourism demand.
**$p < 0.05$; ***$p < 0.10$; *$p < 0.01$.

TABLE 5 Panel GMM estimation outputs.

	Difference-GMM			System-GMM		
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
TD(−1)	−1.612* (0.00)	−2.128* (0.00)	−1.600* (0.00)	−0.281* (0.00)	−0.015* (0.00)	−0.142* (0.00)
INC	2.483* (0.00)	1.416* (0.00)	1.413* (0.00)	1.150* (0.00)	1.378* (0.00)	1.644* (0.00)
REXC	−0.844** (0.02)	−1.210* (0.00)	−0.165* (0.00)	−0.081** (0.02)	−0.328* (0.00)	−0.052*** (0.06)
COST	−0.063** (0.02)	−0.028* (0.18)	−0.005 (0.32)	−0.373* (0.00)	−0.423* (0.00)	−0.296* (0.00)
INS	1.475* (0.00)	-	1.691* (0.00)	1.991* (0.00)	-	2.067* (0.00)
PUI	−0.105* (0.00)	-	−1.236* (0.00)	−0.127* (0.00)	-	−1.147* (0.00)
INS × PUI	-	0.028* (0.00)	0.470* (0.00)	-	0.029* (0.00)	0.675* (0.00)
Instruments	25	24	24	24	24	24
AR(1)	1.446 (0.69)	0.798 (0.42)	0.435 (0.67)	3.008* (0.00)	2.341** (0.02)	1834*** (0.07)
AR(2)	1.441 (0.14)	0.824 (0.40)	1.392 (0.16)	1.408 (0.15)	1.623 (0.10)	1.222 (0.25)
Hansen	20.457 (0.36)	22.815 (0.24)	20.204 (0.26)	23.433 (0.17)	23.285 (0.22)	21.789 (0.28)

Note: Values in parentheses are probabilities.
Abbreviations: FEM, fixed-effects model; GMM, generalized method of moments; INC, income; INS, institutions; PUI, pandemic uncertainty index; REM, random-effects model; REXC, real exchange rate; TD, tourism demand.
**$p < 0.05$; ***$p < 0.10$; *$p < 0.01$.

demand is positive and significant. The R^2 values of the models are 0.864 and 0.492 in the FEM and REM, respectively. The results of the *F*-test's overall significance confirm the reliability of the models. According to the Hausman test results, the findings in columns 1 and 2 are more consistent with FEM estimations, while the findings in column 6 with REM estimation are more consistent. However, the point estimates from both FEM and REM are very similar, providing good confidence in the results.

Table 5 shows the panel difference-GMM and system-GMM estimation results. Dynamic estimates confirm the panel FEM and REM findings. According to the results given in Table 5, significant positive coefficients of income variable (INC) are found in both GMM models. More specifically, a 1% increase in the per capita income of a visitor results in a 1.150%–2.483% rise in tourism demand. Therefore, the estimated income elasticity of tourism demand is elastic, indicating that tourism demand is a luxury good. This finding is in line with the majority of tourism studies, including those by Crouch (1994), Song et al. (2009), Wang (2009), De Vita and Kyaw (2013), and Kocak and Yucel (2023), in addition to many others. It is also noteworthy that income stands out among all variables as the most dominant factor influencing tourism demand, highlighting the tourism sector's vulnerability to financial crises or other shocks that reduce national income.

The real EXC has two opposing effects on tourism demand: the negative effect of the nominal EXC and the positive effect of price differences between the host and visitor countries. Therefore, the net effect can be either positive or negative depending on which effect predominates. Our results reveal that the estimated coefficient of the real effective EXC (REXC) is statistically significant and negative. Specifically, a 1% rise in the real EXC with adjusted prices results in a 0.052–1.210 fall in tourism demand, suggesting that the negative impact of the nominal EXC surpasses the positive effect of price differentials. This result aligns with the studies by Dritsakis (2004) and De Vita and Kyaw (2013).

The travel cost (COST) is also statistically significant and negative in all the models, with an elasticity as low as 0.005 and as high as 0.423. This result is in line with numerous tourism studies, including those by Dritsakis (2004), Song et al. (2009), Fuleky et al. (2014), and Kocak et al. (2023), which indicates that higher travel costs lower tourism demand.

Looking at the primary variable of interest in the study, the estimated elasticities of institutions (INS) range narrowly from 1.683% to 1.768%, with a median value of 1.723%. This finding suggests that tourism demand is highly elastic to institutions proxied by political rights and civil liberties. This finding is supported by the studies of Balli et al. (2016), Kim et al. (2018), Haseeb and Azam (2021), Mushtaq et al. (2021), López-Gómez et al. (2022), among others. This result indicates that international visitors prefer destinations with inclusive institutions in their travel plans. Therefore, inclusive institutions can be regarded as another determinant of tourism demand.

Looking at the other variable of interest of the study, the PUI coefficient is negative and statistically significant, irrespective of the model specifications applied. The estimated elasticities of PUI range from −0.105 to −1.236, with a median value of −0.637. Therefore, heightened uncertainty stemming from pandemics decreases the number of tourist arrivals. This finding is supported by limited and recent studies of Uzuner and Ghosh (2021), Kocak et al. (2023), and Zhao et al. (2023).

Finally, the moderator effect, which is the interaction term between institutions and pandemic uncertainty, is significant, with a positive elasticity varying between 0.028 and 0.675. This result is very important because the negative impact of uncertainty due to the pandemic is mitigated in countries with inclusive institutions.

According to diagnostic tests (i) AR (2) statistics confirm that there is no second-order autocorrelation. (ii) Hansen statistics verify the validity of the instrument set. These results confirm the robustness of GMM estimators. On the other hand, GMM estimators are more consistent than panel FEM and REM estimators when the cross-section size of the sample ($N = 24$) is larger than the time dimension ($t = 13$). In addition, GMM estimators have the advantage of considering the dynamic nature of tourism demand. Finally, the system-GMM estimator, on the other hand, provides more robust results compared with difference-GMM due to its advantages, such as endogeneity control and efficient estimation against weak instrument problems.

6 | CONCLUSION AND DISCUSSION

This paper estimates the relationships between inclusive institutions, pandemic-related uncertainty, and tourism demand in 24 OECD countries by using both static and dynamic panel data analysis spanning from 2008 to 2020. Inclusive institutions are those that provide equal opportunities to all members of society to create the conditions in which the country can best demonstrate its potential. It is important that the institutions have an inclusive structure and that the state encourages its people in this inclusive structure. In this context, we use democratic institutions to proxy inclusive institutions. Our findings provide three critical practical implications. First, our results confirm that pandemic uncertainty has a dampening effect on tourism demand. Second, we show that tourism destinations with inclusive institutions or a democratic regime stimulate tourism demand. Finally, more importantly, we provide evidence that inclusive institutions have a moderator role in the impact of pandemic uncertainty on tourism demand. In other words, inclusive institutions play a role in enhancing tourism's resilience to pandemic-related vulnerabilities. These results suggest important policy implications. First, due to the mitigating effect of democratic institutions during pandemic-related uncertainty, policymakers should prioritize transparency in communication and decision-making processes to prevent any misinformation. Also, governments should provide timely and clear information about the status of pandemics and public health guidelines.

To discuss the impact of pandemic uncertainty on tourism, we consider the New Institutional Economics. According to this approach, individuals in the real world make their decisions under conditions of incomplete information, limited cognitive capacity, and limited rationality. Individuals incur a certain transaction cost to obtain

information in conditions of risk and uncertainty. Therefore, people and societies build formal institutions such as constitutions, conventions, and laws and informal institutions such as norms, beliefs, behavior, and thought habits to reduce transaction costs under risk and uncertainty. Inclusive institutions, on the other hand, are possible with a political regime that protects fundamental rights and freedoms, an independent judiciary, a transparent government, and a system where property rights are guaranteed (Acemoglu et al., 2019; Justesen & Kurrild-Klitgaard, 2013). The structure that best meets such a system is the democratic regime. Therefore, in destinations with inclusive institutions, the ability of the tourism industry to reorganize, transform, and renew according to changing conditions may be higher after the pandemic. The probability of optimal decision-making behavior of tourists with incomplete information under risk and uncertainty is closely related to institutional dynamics such as the trust, image, and democratic and transparent structure of the country. In short, the institutional and macroenvironment can affect tourist behavior. Numerous papers well document the positive effects of democratic institutions on tourism development (Antonakakis et al., 2016; Bulut et al., 2020; Haseeb & Azam, 2021; Lee, 2015; Pagliara et al., 2021). However, none of them theoretically discuss the intermediary role of institutions in the tourism–pandemic relationship and provide empirical evidence.

The theoretical results of New Institutional Economics can be useful in understanding tourism demand in the post-COVID era. Factors such as transaction costs, bounded rationality, incomplete information, property rights, an independent judiciary, democracy, quality governance, and transparency can enhance our understanding of tourism demand during pandemic-related uncertainties. The perception of trust provided by destinations with inclusive institutions may positively affect tourist behavior and moderate the negative effects of pandemic-induced uncertainties. Institutions can reduce transaction costs and facilitate access to information for the optimal decision-making behavior of tourists. Under the assumption of bounded rationality, tourists can make more optimal decisions in destinations with inclusive institutions.

Finally, this research is the first attempt to examine the tourism–pandemic relations within the framework of the New Institutional Economics approach and provide empirical evidence. Despite its contribution to the literature, the study has some limitations. First, this paper focuses only on selected OECD countries. For further evidence, future research may include non-OECD countries or top tourism destinations such as the United States, France, Italy, or China. Second, researchers can examine the relationships between institutions, pandemics, and tourism using methods such as cointegration, causality, vector autoregression (VAR) analyses, or regime change models to obtain more robust results. Researchers can provide new evidence with nonlinear time series and panel data. Third, the theoretical consequences of New Institutional Economics need to be discussed in depth within the context of tourism. While this paper initiates research at the macroscale, future research may explore the microscale aspects. They could examine how concepts of transaction cost, property rights, and bounded rationality influence visitor behavior. Finally, future research can explore the relationships between institutions, tourism, and the pandemic, using indicators such as the legal system, governance, freedom of the press, and economic freedom, which are the fundamental components of the institutional structure. In addition to the formal elements of the institutional structure, informal elements such as traditions, customs, and culture can also be considered. Also, dynamics such as authoritarianism, undemocratic regimes, and corruption can be evaluated within the context of tourism and uncertainty.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data sets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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