




## **Tourism, Economic growth, Environment, Human Capital and Political Instability: Heterogeneous linkages**

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### **ARTICLE INFO**

#### **Article History:**

Received:	May	25, 2023
Revised:	June	29, 2023
Accepted:	June	29, 2023
Available Online:	June	30, 2023

#### **Keywords:**

Tourism  
Economic Growth  
Environment  
Political Instability  
Human Capital

#### **JEL Classification Codes:**

F43, J24, L83, O44, P48

#### **Funding:**

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

### **ABSTRACT**

This study aims to estimate heterogeneous causal linkages among tourism, economic growth, environment, human capital and political instability for all economies in the world. In this study, we used the global panel data, which consists of the world. The study employs the fixed effects model (FEM) to estimate the panel regression model. Results indicate that in all models, economic growth attracts tourism, and tourism increases economic growth. Tourism and CO<sub>2</sub> are negatively related. Tourism and human capital are positively related, and political instability and tourism are also positively related. The study concluded that environmental emissions and economic growth are negatively related. Our research shows a positive connection between economic growth and human capital. Economic growth and political instability are negatively related. Environment emission and human capital are negatively related. Our results have shown that political instability and CO<sub>2</sub> are positively related to each other. Political instability and human capital are negatively related. Results have shown that human capital hurts political instability. Findings suggest that host countries should not only promote tourism but also ensure that the environment is not degraded, so green tourism needs to be promoted in order to ensure that the development process will remain smooth and sustainable. To promote sustainable tourism development and economic growth, governments should concentrate on economic policies and allocate more resources to human capital management. Tourism policymakers need to be aware of the dimensions of political instability and its likely impact on their industry.



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**Citation:** Shahzad, M., & Azam, A. (2023). Tourism, Economic growth, Environment, Human Capital and Political Instability: Heterogeneous linkages. *IRASD Journal of Economics*, 5(2), 546–565. <https://doi.org/10.52131/joe.2023.0502.0145>

## **1. Introduction**

Tourism boosts economies by creating jobs and generating revenue while promoting cross-cultural understanding and preserving heritage. The travel and tourism business are thriving around the world despite the current geopolitical unrest and weak economic growth in both developing and developed economies. It has been asserted that the industry is responsible for a disproportionately high percentage of global GDP. Given the dramatic rise in international

traveler's, approximately 9% of the world's GDP is estimated to be contributed by the tourist industry, or about USD 7 trillion, and also contributes to reducing global unemployment by generating jobs in tourist destinations Koens, Postma, and Papp (2018) The travel and tourism business is projected to expand by around 4% each year WTTC (2015), which is significantly faster than the projections for the manufacturing, financial, and transportation industries combined. Income, jobs, investment, and exports are just a few of how tourism promotes economic expansion. But it also has positive knock-on effects, such as the protection of historical sites and the development of community infrastructure (WTTC, 2015).

International tourism is widely recognized for its capacity to stimulate sustainable economic growth through various means. First, tourism is a major source of international currency, which may be utilized to buy necessary capital equipment or raw materials. Second, tourism is a major driver of both new infrastructure investment and domestic and international business competition. Third, tourism boosts the economy through direct, indirect, and induced benefits in other sectors. Fourth, tourism helps the economy by creating jobs and bringing in more money (Brida, Cortes-Jimenez, & Pulina, 2016; Brida & Risso, 2009; Brida & Risso, 2010). Finally, tourism has a crucial role in promoting the spread of new ideas, the acceleration of scientific inquiry, and the development of human resources. Governments, significant contributors in the economic sector, and the development of infrastructure and rules all play a part in the expansion of the tourism industry. Hotels, restaurants, transportation, tour guides, and entertainment venues are just some of the many examples of small and major, domestic and international businesses that contribute to this sector.

Trauer (2006) found CO<sub>2</sub> and tourism positive relationship. Petroleum, coal, or gas, directly and electricity or indirectly related to tourism activities require energy. The principal greenhouse gas released as a result of this consumption is carbon dioxide. The attractiveness of a place to visit depends in large part on the state of its natural surroundings. However, many aspects of tourism are harmful to the environment. These occur when there is insufficient attention paid to the environment about the amount of use. Many natural regions around the world, especially in less developed countries, are in peril from unchecked tourism. Transportation and lodging of visitors at a community or tourist attraction are examples of tourism activity. For instance, there has been a major increase in the use of automobiles in popular tourist areas, which is causing serious harm to the natural world (Black, 2010; Gössling, 2002).

Environmental emission has become one of the biggest challenges that all countries are handling (Nasreen, Saidi, & Ozturk, 2018). The environmental impact of tourism has been argued to be minimal by several experts. Tourism appears to do significantly less environmental damage than other businesses like manufacturing. It might be claimed that the tourist sector has an interest in protecting the environment on which it depends, as climate, vegetation, animals, and geology all play important roles in luring visitors. However, tourism gives the financial resources to make this a reality. The United States and Europe provide evidence that the rise in tourism has led to the preservation and repair of historic sites. The establishment of national parks and reserves has helped to conserve natural resources in areas like Africa. However, this ignores the fact that these tourist destinations have a finite capacity. Using natural resources beyond their carrying capacity is unsustainable. If the carrying capacity of an ecosystem is exceeded, the ecosystem will no longer be self-sustaining and will "be damaged or destroyed for a long time, if not forever." Most developing nations misused the carrying capacity of their environments because they lacked the infrastructure to regulate or plan for tourism.

According to Hall (1994), political stability is a crucial factor in establishing a prosperous tourism business and luring visitors from abroad to a particular location. War, terrorism, riots, political and social upheaval, and strikes are only a few examples of the many forms of political instability cited by Lea and Small (1988, as reported by Hall, 1994) as factors impacting foreign tourism. As a result, there are several aspects to consider while discussing political instability.

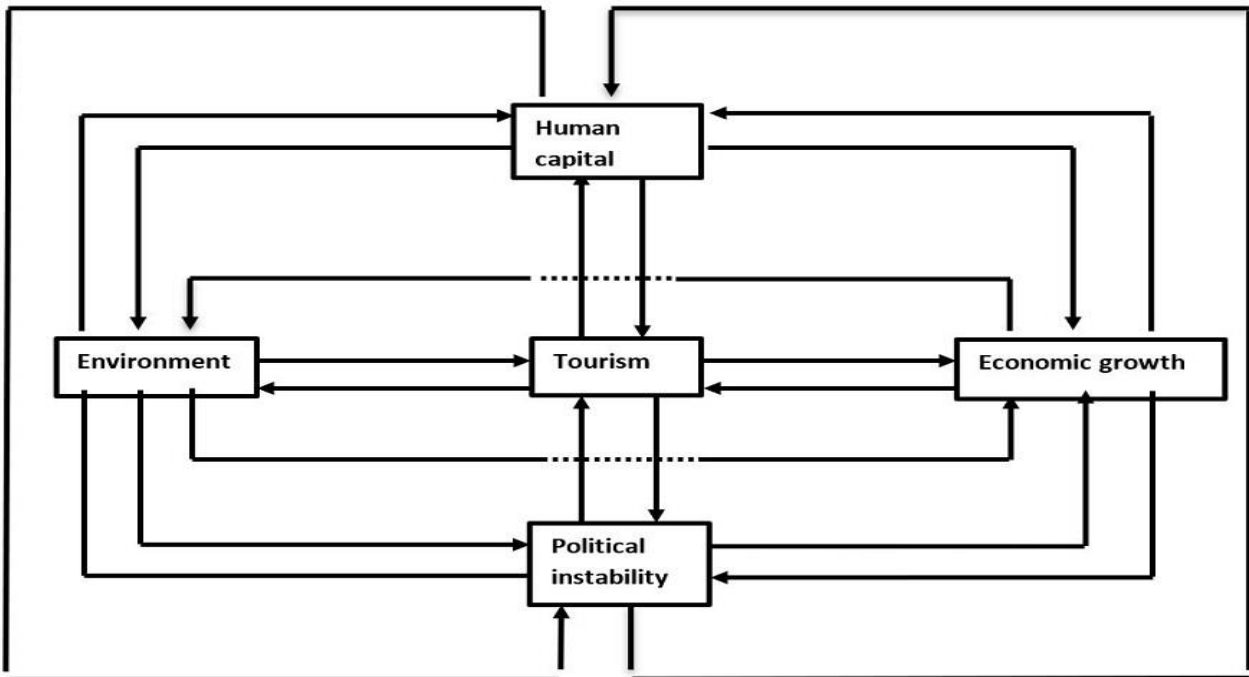
The assessment of the effect of each dimension on the tourism business is complicated by this multidimensionality.

Human capital refers to the monetary worth of a workforce's collective expertise, experience, and education. The largest influence on economic expansion can be seen in the increase and improvement of employee abilities. The educational system helps raise human capital, which in turn boosts the economy. Putting money into people is essential to keeping the tourism industry afloat. The ability to thrive in a dynamic marketplace and secure long-term growth depends on the efficient management of human resources. The level of human capital in a country directly relates to its economic growth. Increases in human capital are linked to higher rates of innovation, social well-being, equality, productivity, and participation, all of which support economic growth. These increases are seen in domains including research, education, and management. A population's standard of living usually rises in tandem with its economy's expansion.

Political stability is essential for a country's economy to develop. Economic expansion can be severely hampered by an unstable government. The idea of political instability was first defined by (Lipset, 1960). Recent politico-economic philosophy, however, has redefined how political instability is approached, breaking with established norms. When a country has been ruled by the same liberal democracy or dictatorship for 25 years, it is deemed stable. Political instability has negative effects on a country's socioeconomic and political climate. Because of the instability in the political system, both domestic and foreign investors are hesitant to contribute to economic progress. Investment drops when people have less disposable income and less food to eat, which has knock-on effects on productivity, savings, and consumption. Uncertainty and social unrest spread among the public as a result of rising inflation and unemployment caused by governmental instability. As a result of this tension, people may become violent towards one another, as well as their employers and the government.

The popular wisdom holds that rapid economic growth reduces the chances of political instability, while slow growth increases them. Brandt and Ulfelder (2011) argue that in democracies, slow economic growth raises the possibility of coup attempts and the degree of civil resistance. Civil unrest, conflict, and efforts to overthrow autocratic governments through coups are all more likely to occur as economies expand. In general, the dangers are greatest during the beginning and end of growth spurts.

Countries struggle to maintain sustainable growth. Most of the developed and developing countries have low growth rate levels. It is important to determine are interlinked which macroeconomic factors cause low economic growth. Hence, this study focused on the five most important macroeconomic indicators: tourism, economic growth, environment, human capital and political instability. These indicators are interlinked with each other. For example, if a country has good economic growth, it expands tourism, which boosts human capital and may improve the environment and the political condition of the economy. There is a need to examine their causal relationship. These indicators are heterogeneous, and the current study examines the causal heterogeneous relationship among them. The empirical literature is comprised of the contradicting relationship between a pair of variables like tourism and economic growth, economic growth and environment, environment and human capital political instability and economic growth and so on. The question arises as to why differing implications of these variables are emerging.



**Figure 1. Graphical Expression of Heterogeneous Causal Linkages**

## 2. Review of Literature

This section will review the studies related to the theoretical and empirical relationship among tourism, economic growth, environment, human capital and political instability. The study aims to assess diverse causal relationships among tourism, economic growth, environment, human capital, and political stability across all global economies. The literature has evidence of different kinds of relationships among tourism, economic growth, environment and political instability.

Khadaroo and Seetanah (2009) examine the significance of transport facilities to the growth of international tourism. The findings demonstrate that transport infrastructure is a major factor in tourist inflows to a site, in addition to tourism infrastructure and other conventional determinants. Lee and Brahmasrene (2013) Studying the environmental and economic impacts of tourism in Sub-Saharan Africa They concluded that economic growth, tourism and energy consumption are positively related. Khadaroo and Seetanah (2009) examine the significance of transport facilities to the growth of international tourism and conclude that economic growth, tourism and infrastructure are heterogeneous linkages. The study of Adamou and Clerides (2009) also found the same results.

Seetanah (2011) analyzed the fluctuating monetary effect that tourism has on Islands and concluded tourism, economic growth and human capital are positively related. Hilmi, Safa, Teisserenc, and Peridy (2015) study on sustainable tourism found that tourism can have a positive impact on economic growth but also noted its negative effects on the environment. As a result, the study recommended the implementation of a sustainable tourism policy to mitigate these environmental issues while still benefiting the economy. The research conducted by Samimi, Sadeghi, and Sadeghi (2011) concentrated on investigating the correlation between tourism and economic development within emerging markets. Their results unveiled a symbiotic association between economic growth and the growth of the travel and tourism industry. Ekanayake and Long (2012) explored the relationship between tourism expansion and economic development in developing countries. According to their findings, there is a bidirectional positive association between tourism and economic growth. Juan and Chen (2012) analyzed how

international tourism demand affects the development of locally based economies and found that tourism provides better income sources for local people through foreign investment and attract tourist through hotels, malls and other services.

Fayissa, Nsiah, and Tadasse (2008) investigated the impact of tourism on Africa's economic growth and development. Their findings show that tourism income, combined with investments in both human capital (e.g., education and skills) and physical capital (e.g., infrastructure), plays a significant role in shaping current GDP and fostering economic growth in Sub-Saharan African nations. Leclerc and Martin (2004) examined the influence of tourism on the growth of Latin American economies. Their findings suggest a mutually beneficial relationship: tourism positively impacts both economic growth and the tourism sector itself. Dritsakakis (2004) how economic growth and tourism industries were connected in seven Mediterranean countries. Results show that tourism and economic growth are heterogeneous linkages. Samimi et al. (2011) also found the same evidence. Marsiglio (2015) the environmental and economic development. According to the research, a sustainable equilibrium can only be reached along a balanced growth path, where consumption increases and environmental quality improves simultaneously. As the growth rates of the economy and the environment both rise with the green preference and fall with the grey preference and the crowding aversion parameters, the preferences of tourists have a significant impact on the final result. Therefore, environmentally responsible tourism must grow if specialized travel is to become an achievable way of progress.

Chien et al. (2021) investigated the role of green energy, eco-innovation, and the environment, concluding that economic innovation and growth adversely impact CO<sub>2</sub>. Lie et.al (2022) tourism's role in environmental emissions and find out tourism has both positive and negative impacts on CO<sub>2</sub>. Nawaz. et al. (2019) economic growth and environment found out environmental emission hurts economic growth. Gill, Viswanathan, and Hassan (2017) resolved that GDP and CO<sub>2</sub> are positively related. Lee and Chang (2008) find out how economic development is connected to its natural surroundings. The results have shown that tourism and economic growth are positively related while negatively related to the environment. (Muhanna, 2006) also found the same evidence.

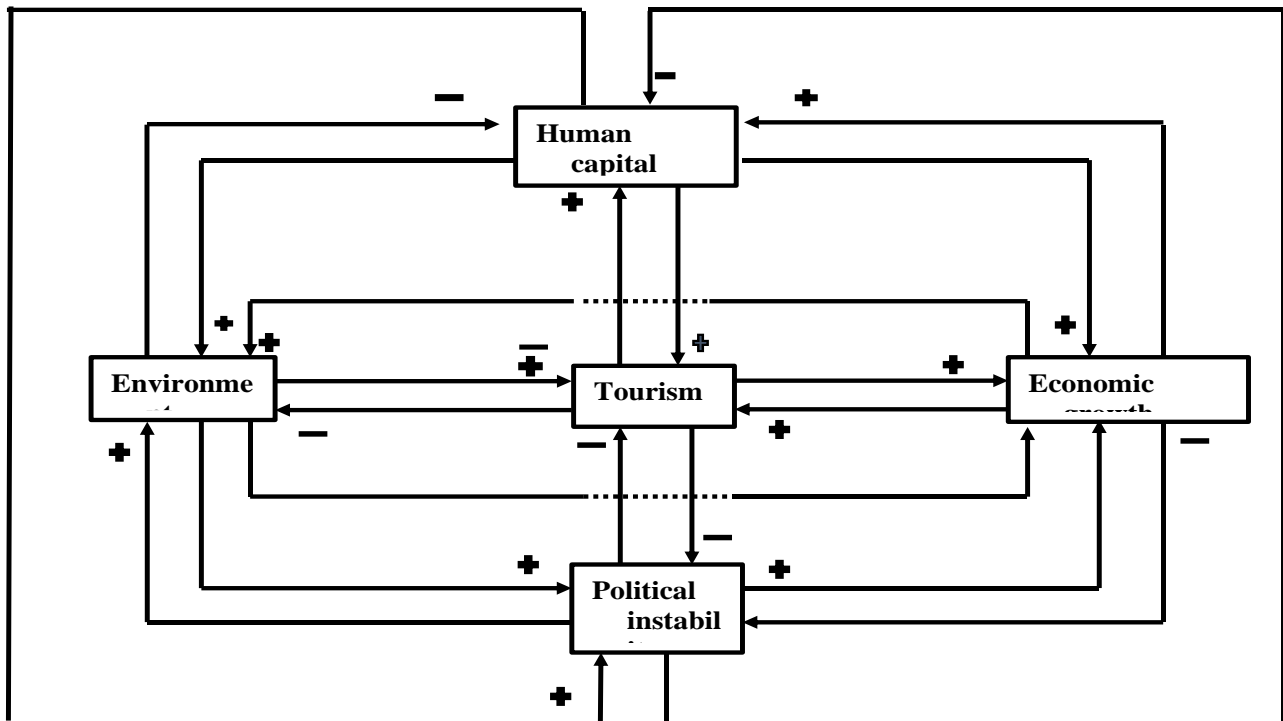
Milovanović (2017) investigated the impact of human capital on tourism and concluded that the quality of tourism is determined by the caliber of human capital. Zhang and Zhuang (2011) found that higher education is positively related to economic growth. Liu, Feng, Zhao, Zhang, and Su (2016) also found the same evidence. Qadri and Waheed (2020) investigated the impact of investment on human capital and concluded that worker education is necessary to increase productivity. Klomp and de Haan (2013) investigated how political institutions may influence the development of human capital. High levels of human capital are positively correlated with effective government, while they are negatively correlated with political instability. They conclude that good governance and democracy increase both forms of human capital via increasing household income. (Bardarova, Jakovlev, & Koteski, 2013); Brida et al. (2016); Xu and Li (2020) found human capital is essential and positive relation with economic development and tourism. Ogundari and Awokuse (2018) examined the impact of human capital on economic growth in Sub-Saharan African nations, concluding that human capital components in health and education are highly associated to GDP growth. Purcel (2019) to determine what percentage of pollution may be attributed to political stability in a group of 47 developing nations from 1990 to 2015. Results show that political stability is negatively related to CO<sub>2</sub>.

Xu and Li (2008) analyzed the connection political stability and economic growth, and drawn the conclusion that there is the positive connection between the two. Jong-A-Pin (2009) found political instability and economic growth are adversely correlated. (Tang & Abosedra, 2014) investigated tourism, political instability economic growth and energy consumption and concluded that political instability attracts more tourists and also has a positive relation with economic growth. Devi (2016) impact of political instability on higher education. Results have

shown that political instability hurts higher education. Altbach (2008) also found the same results. Sabir (2022) concluded political instability hurts economic growth and CO2.

### 2.1. Research Gap

None of the studies have seen the simultaneous interaction of the said variables; theoretically, all of these simultaneous indicators are estimated. It would be better to see the relationship between these variables empirically to estimate the nature of the relationship for policymaking.



**Figure 2. Theoretical Relationship of heterogeneous Causal Linkages**

There is a complex relationship between CO<sub>2</sub> emissions and human capital. High levels of CO<sub>2</sub> emissions can have negative health, economic, and educational consequences that hinder human capital development. However, human capital is also essential for mitigating CO<sub>2</sub> emissions, as it contributes to innovation, awareness, and effective policy implementation in the fight against climate change. Recognizing and addressing this relationship is crucial for achieving sustainable development and addressing the challenges of climate change. Political instability can have profound and negative effects on human capital development. It disrupts education, healthcare, and economic opportunities, leading to reduced human capital accumulation. On the other hand, stable political environments are more conducive to investments in education, healthcare, and skills development, which can enhance human capital and contribute to long-term economic growth and social progress. Addressing political instability is, therefore, crucial for fostering human capital development and sustainable development more broadly. The theoretical linkage between CO<sub>2</sub> emissions and political stability, as well as the absence of violence/terrorism, is multifaceted. High CO<sub>2</sub> emissions can contribute to political instability in several ways. Firstly, the consequences of climate change driven by excessive CO<sub>2</sub> emissions, such as extreme weather events, resource scarcity, and displacement of populations, can exacerbate existing social tensions and lead to conflicts over dwindling resources. Secondly, the economic costs associated with environmental damage and the need to adapt to climate change can strain a nation's finances, potentially leading to economic instability and political unrest.

### 3. Methodology

The current study concentrates on integrating theoretical analysis with econometric techniques and empirical data analysis to explore the diverse relationships among tourism, economic growth, environmental factors, human capital, and political stability. This analysis is conducted using panel data, specifically global panel data that encompasses countries worldwide. The functional form of the model used in this study is:

$$\begin{aligned} \text{TOUR} &= f(\text{EGROWTH}, \text{ENV}, \text{HCAP}, \text{PINSTAB}) & (1) \\ \text{EGROWTH} &= f(\text{TOUR}, \text{ENV}, \text{HCAP}, \text{PINSTAB}) & (2) \\ \text{ENV} &= f(\text{TOUR}, \text{EGROWTH}, \text{HCAP}, \text{PINSTAB}) & (3) \\ \text{HCAP} &= f(\text{TOUR}, \text{EGROWTH}, \text{ENV}, \text{PINSTAB}) & (4) \\ \text{PINSTAB} &= f(\text{TOUR}, \text{EGROWTH}, \text{ENV}, \text{HCAP}) & (5) \end{aligned}$$

**Table 1**  
**Description and Explanation of Variables**

Variables	Operational Definition	Data Sources
Tourism (TOUR)	International Tourism, expenditures (current US\$)	World Development Indicator (WDI) <sup>1</sup> (WDI, 2022)
Economic Growth (EGROWTH)	GDP (current US\$)	World Development Indicator (WDI) (WDI, 2022)
Environment (ENV)	CO <sub>2</sub> emissions (kg per 2015 US\$ of GDP)	World Development Indicator (WDI)
Human Capital (HCAP)	Human capital index, based on years of schooling and returns to education; see Human capital in PWT9.	Penn world Table <sup>2</sup> (2022)
Political Instability (PINSTAB)	Political Stability and Absence of Violence/Terrorism: Estimate	World Bank- Governance Indicator <sup>3</sup> (WGI) (WGI, 2022)

#### 3.1. Data sets

The dataset used in this analysis encompasses the years from 2000 to 2020. We have a total of 21 years annual data of total 89 economies. For whom the data on tourism, economic growth, environment, human capital and political instability are consistently available for the chosen time periods have been considered for the analysis. Some countries are not used in this paper because of their missing data.

#### 3.2. Estimation Techniques

This research employs panel data to analyze the relationships among the variables, encompassing both time series and cross-sectional dimensions. This extensive panel dataset allows for a comprehensive examination of how these variables interact across various entities over time. The study employs the fixed effects model (FEM) to estimate the panel regression model. "Fixed effects" is a statistical technique used in the analysis of panel data, which comprises multiple observations from various units or entities over a specific period of time (Yunitaningtyas & Yolanda, 2019) and (Selimi, Sadiku, & Sadiku, 2017). Panel data sets are common in various fields such as economics, social sciences, and public health, where

<sup>1</sup> World Bank (2022). World Development Indicator Available at <https://dataworldbank.org/data-catalog/world-developmentindicator>, Accessed on May, 15, 2022.

<sup>2</sup> Penn world Table, Accessed on 20 May, 2022.

<sup>3</sup> <https://worldwide-governance.indicator>, Accessed on 10 June, 2022.

researchers want to study the relationship between variables across both time and individual units. The fixed effects model is used to control for unobserved heterogeneity or individual-specific effects in panel data. Unobserved heterogeneity refers to the fact that individual units in the panel may have inherent differences that are not captured by the observed variables. These differences can include things like individual abilities, preferences, or characteristics that remain constant over time. Fixed effects models are useful for controlling for time-invariant unobserved factors (individual-specific effects) that may be correlated with the independent variables, thus helping to reduce endogeneity. In this study we take log of tourism, GDP and human capital.

### 3.3. Hausman Test

In this study, the Hausman test is employed to make an informed choice between using a Fixed Effects Model (FEM) and a Random Effects Model (REM). The null hypothesis associated with this test posits that the FEM and REM estimators do not exhibit substantial differences. If the null hypothesis is rejected, it suggests that REM might not be appropriate, and it may be more suitable to utilize FEM. In such a case, statistical inferences will be conditional on the error term  $\epsilon$  in the sample. Specifically, the choice between REM and FEM may depend on the assumption of whether  $\epsilon$  and the explanatory variables  $X$  are uncorrelated. If  $\epsilon$  and  $X$  are correlated, FEM may be the preferred model, as outlined in (Gujarati & Porter, 2003).

**Table 2**  
**Hausman (1978) Specification Test**

Test	Coef.
Chi-square test value	411
P-value	0.000

### 3.4. Econometrics Model

$$TOUR_{it} = \alpha_1 TOUR_{it-1} + \alpha_2 EGROWTH_{it} + \alpha_3 ENV_{it} + \alpha_4 HCAP_{it} + \alpha_5 PINSTAB_{it} + \epsilon_{it} \quad (6)$$

$$EGROWTH_{it} = \beta_1 EGROWTH_{it-1} + \beta_2 TOUR_{it} + \beta_3 ENV_{it} + \beta_4 HCAP_{it} + \beta_5 PINSTAB_{it} + \epsilon_{it} \quad (7)$$

$$ENV_{it} = \gamma_1 ENV_{it-1} + \gamma_2 TOUR_{it} + \gamma_3 EGROWTH_{it} + \gamma_4 HCAP_{it} + \gamma_5 PINSTAB_{it} + \epsilon_{it} \quad (8)$$

$$HCAP_{it} = \delta_1 HCAP_{it-1} + \delta_2 TOUR_{it} + \delta_3 EGROWTH_{it} + \delta_4 ENV_{it} + \delta_5 PINSTAB_{it} + \epsilon_{it} \quad (9)$$

$$PINSTAB_{it} = \theta_1 PINSTAB_{it-1} + \theta_2 TOUR_{it} + \theta_3 EGROWTH_{it} + \theta_4 ENV_{it} + \theta_5 HCAP_{it} + \epsilon_{it} \quad (10)$$

## 4. Results and Discussion

Table 3 explains the summary statistics of all variables as their total observations, their standard deviation, mean value and minimum and maximum values of all variables that are used for data analysis. While the total observations are 1691 for all variables of global economies.

**Table 3**  
**Descriptive Statistics of Variables**

Variables	Sample size	Mean	Standard deviation	Minimum	Maximum
TOUR	1691	21.221	1.91	15.274	25.995
EGROWTH	1691	27.894	2.571	22.528	34.413
ENV	1691	.49	.397	.047	3.938
GHCAP	1691	.911	.293	.084	1.355
PINSTAB	1691	-.049	.86	-2.81	1.755

### 4.1. Regression Results of Tourism for Global Economies

In this model, the dependent variable is Tourism.



**Table 4**  
**Fixed Effects Model Regression Results (Tourism)**

Variables	Coef.	SE	t-value	p-value	[95% Conf	Interval]	Sig.
EGROWTH	1.725	.058	29.72	0.000	1.611	1.839	***
ENV	-.246	.074	-3.32	0.001	-.391	-.1	***
HCAP	.436	.242	1.80	0.072	-.038	.911	*
PINSTAB	.142	.027	5.28	0.000	.089	.195	***
Constant	-27.158	1.464	-18.55	0.000	-30.03	-24.287	***
<b>Model Diagnostics</b>							
Mean dependent var	21.221		SD dependent var		1.910		
R-squared:	0.597		Number of obs		1691		
F-test	591.927		Prob > F		0.000		
Akaike crit. (AIC)	1091.518		Bayesian crit. (BIC)		1118.683		

**Note:** \*\*\* $p < .01$ ,  $p < .05$ ,  $p < .1$

Results have shown that economic growth measured by GDP positively affected tourism. Several studies found a positive impact of economic growth on tourism. Samimi et al. (2011), Kim and Chen (2006), Durbarry (2004) found positive impact of GDP on tourism. They found that if there is economic growth then better facilities can be provided to the tourism industry. For example, building a new road, hotel and park has proved to be supportive of tourism. Kim and Chen (2006) found that economic growth leads towards tourism. Lee and Chang (2008) Lee and Chang identified a long-term causal relationship between tourism and economic growth. Our study aligns with this evidence, demonstrating that economic growth positively influences tourism. Specifically, when economic growth increases, there is a corresponding rise in the number of tourists. Tourists always want to go to those places where there are more facilities like the structure of the road, number of hotels, better environment and easy ways of communication. The environment proxied by CO2 emissions hurts tourism. In the literature, both types of evidence exist. For instance, Davies and Cahill (2000); Muhanna (2006) and Tisdell (1993) and Marsiglio (2015) found the negative impact of the environment on tourism. They found that the quality of the environment is essential for tourism. A good environment always attracts tourists but not in all cases. The trend was found to be the opposite in our study as CO2 emission in the environment has a positive effect on tourism. Studies also found the positive impact of environmental emissions on tourism. For instance, Jakle (1985) found a positive impact of environmental emissions on tourism. They said urbanization is essential for tourists and when we go to urbanization, environment emission increases. Stern (1992) found that for religious purposes, people move without caring about environmental emissions. Crouch and Ritchie (1999) found that most tourists go for business purposes. They go without caring about environmental emissions. Telfer and Wall (1996) found that people go for a visit to a specific place with a trend. They go there although there are a lot of emissions. Yang et al. (2018), found that in China's economy, there is a lot of environmental emission due to rapid industrialization, population growth and lax environmental oversight. China is the fourth most visited country in the world with 56.9 million people and second in contribution concerning GDP. The environment emission and economic growth are positively related.

Human capital has a positive effect on tourism, numerous studies have affirmed the beneficial impact of human capital on tourism. For instance Stryzhak, Sayar, and Ari (2022), Milovanović (2017). Competencies needed by the tourist industry must be fostered throughout all of a person's educational experiences, from secondary school through university and beyond. Some authors, including Goeldner and Ritchie (2007), argue that effective academic programs in the field of tourism produce graduates equipped with high-quality knowledge and skills that align with the contemporary requirements of the industry. Human and intellectual capital development is essential for the tourism sector. Many businesses in this industry don't have well-developed human resource management systems in place. Human capital development can be encouraged by learning how these practices boost employee productivity and corporate performance. The quality of a country's human capital is a major factor in determining the

attractiveness of a country as a tourist destination. Human capital is the monetary worth of a workforce's collective skill sets, experiences, attitudes, and other intangibles. Effective human capital management is essential for a tourist location to increase its competitiveness. The travel industry is no exception to the pervasive influence of digital technology. It was hypothesized that political instability hurts tourism and our results have shown that political instability has a positive impact on tourism. In literature, both types of evidence exist. Several studies found that political instability hurts tourism. For instance Hall (2003) and (Seddighi, Nuttall, & Theocharous, 2001).

#### 4.2. Regression Results of Economic Growth for Global Economies

In this model, the dependent variable is economic growth.

**Table 5**  
**Fixed Effects Model Regression Results (Growth)**

Variables	Coef.	SE	t-value	p-value	[95% Conf Interval]	Sig.
TOUR	.206	.007	29.72	0.000	.193 .22	***
ENV	-.012	.026	-0.48	.635	-.063 .038	
HCAP	1.929	.069	28.15	0.000	1.794 2.063	***
PINSTAB	-.009	.009	-0.91	.365	-.027 .01	
Constant	21.762	.124	175.35	0.000	21.518 22.005	***
<b>Model Diagnostics</b>						
Mean dependent var	27.894		SD dependent var	2.571		
R-squared:	0.727		Number of obs	1691		
F-test	1065.519		Prob > F	0.000		
Akaike crit. (AIC)	-2498.399		Bayesian crit. (BIC)	-2471.234		

**Note:** \*\*\*p<.01, p<.05, p<.1

Our findings indicate that tourism has a net positive influence on GDP growth. The same evidence has been discovered in a large number of researches. For example, when tourism shows a stimulating influence over the broader economy as externalities, this could lead to tourist-led growth (Figini & Vici, 2012; Khadaroo & Seetanah, 2009). Expansion of tourism should contribute positively to economic growth. According to studies by Durbarry (2004), the significance of the travel and tourism sector for economic growth, job creation, and tax revenue for governments. In reality, the tourist-led growth theory suggests that foreign travel may be a useful strategic component for economic growth.

Findings indicate that CO2 negative impact on Economic growth. Earlier literature provided evidence and supported the same point of view. For instance, Zhang and Cheng (2009) time series analysis for China, Papież and Śmiech (2013) panel data analysis) and Osigwe and Arawomo (2015) time series analysis for Nigeria) found the negative impact of the environment on GDP. Worldwide, pollution of the environment is a serious issue that affects all countries. Since they first learned how to use fire, people have polluted the air, the environment, and the water.

Human capital has been found to have a beneficial effect on GDP. In the literature, such type of evidence is found. In their respective studies, Fang and Chen (2017) discovered a positive correlation between human capital and economic growth. It has also shown a long-term relationship between human capital and economic growth. (Xu & Li, 2020). Our results have shown that political instability hurts GDP. Numerous studies found this type of evidence. The majority of studies came to the conclusion that political instability hinders economic growth in at least two different ways. It first disrupts labor relations and market operations, which has a negative impact on production (Landa & Kapstein, 2001; Perotti, 1996). Second, investment levels will be lower during times when the political climate is unstable (Feng, 2001; Radu, 2015; Svensson, 1998). The presence of widespread violence and attempts or successful revolutions can pose a threat to the rule of law, which in turn challenges established property rights, as noted by Alesina, Özler, Roubini, and Swagel (1996). Kuznets and Murphy (1966) emphasized

the importance of political stability in economic planning and security within a society. His observation highlights the necessity of a stable political environment for individuals and businesses to have confidence in the relationship between their contributions to economic activity and the benefits they receive. Therefore, it can be inferred that stability implies a predictable political climate that attracts both domestic and international investments.

#### 4.3. Regression Results of Environment for Global Economies

In this model, the dependent variable is environment.

**Table 6**  
**Fixed Effects Model Regression Results (Environment)**

Variables	Coef.	SE	t-value	p-value	[95% Conf	Interval]	Sig.
EGROWTH	-.012	.024	-0.48	.635	-.059	.036	
TOUR	-.028	.008	-3.32	.001	-.044	-.011	***
HCAP	-.121	.081	-1.48	.139	-.28	.039	
PINSTAB	.048	.009	5.32	0	.03	.066	***
Constant	1.516	.542	2.80	.005	.453	2.579	***
<b>Model Diagnostics</b>							
Mean dependent var	0.490		SD dependent var		0.397		
R-squared:	0.050		Number of obs.		1691		
F-test	21.103		Prob > F		0.000		
Akaike crit. (AIC)	-2591.158		Bayesian crit. (BIC)		-2563.993		

**Note:** \*\*\*p<.01, p<.05, p<.1

The rise in tourism coincides with an increase in environmental emissions. These theories are supported by prior research as well. It has been noted by numerous researchers, including Marsiglio (2015), Gössling and Hall (2006), Scott et al. (2008), Jones and Wynn (2019), Harbaugh, Levinson, and Wilson (2002), Millimet, List, and Stengos (2003), Coondoo and Dinda (2008), Lee and Chang (2008), and Gössling and Hall (2006), that tourists contribute to greenhouse gas emissions by driving their own cars. The presence of widespread violence and attempts or successful revolutions can pose a threat to the rule of law, which in turn challenges established property rights, as observed by Alesina et al. (1996). In the bottom-up investigation, descriptive data regarding energy consumption and the primary sources of carbon dioxide emissions were gathered. When contrasted to the consequences of energy production, water consumption, waste production, change, and fragmentation of ecosystems, tourism is shown to have significant effects on the environment by Dubois and Ceron (2006).

An adverse effect of economic growth on the natural world has been postulated. This threshold varies depending on the indicator being studied. Several investigations, including Hamilton and Turton (2002) and Dinda and Coondoo (2006), all followed this idea. Over the long term, Soytaş and Sari (2007, time series study for Turkey) discovered a negative relationship between GDP and the Environment. In a time series analysis focusing on India, Acharyya (2022) detected a long-term cointegration between per capita emissions of three pollutants (waste gas, wastewater, and solid wastes) and per capita GDP. This supports the notion that GDP has adverse effects on the environment. Furthermore, regression analysis revealed a negative relationship between human capital and CO<sub>2</sub> emissions in their findings. The impact of technology and the rise in energy efficiency are indications of the negative relationship. These systems are exclusive to the manufacturing industry and do not exist in the domestic market (Yang et al., 2018) and (Salim, Rafiq, & Shafiei, 2017). Several studies, including those conducted by Dasgupta, Laplante, Wang, and Wheeler (2002), GANGADHARAN, JAIN, MAITRA, and VECCI (2016) have indicated that businesses with higher levels of human capital tend to exhibit a more long-term perspective and prioritize sustainable growth. Consequently, industrial firms with substantial human capital resources often implement more stringent pollution control measures and have lower instances of violating external environmental regulations (Blackman, 2010).

Our findings demonstrate that political instability is associated with an increase in CO<sub>2</sub> emissions. Pellegrini and Gerlagh (2005) democracy have a small, positive impact. As a result, the authors argue that less corruption would lead to faster economic growth and more stringent regulations protecting the environment. Political conflicts may affect how the government views environmental concerns through the rules and regulations that apply, but they may also affect how the general people and business organizations view environmental quality. Few studies have been done on the connection between political stability and environmental deterioration, and those that have been done Cole (2007); Gani (2012); Zhang and Chen (2017) have largely concentrated on the effects of corruption and other institutional quality indicators on pollution.

#### 4.4. Regression Results of Human Capital for Global Economies

In this model the dependent variable is economic growth.

**Table 7**  
**Fixed Effects Model Regression Results (Human Capital)**

Variables	Coef.	SE	t-value	p-value	[95% Conf	Interval]	Sig.
EGROWTH	.172	.006	28.15	0.000	.16	.184	***
TOUR	.005	.003	1.80	.072	0	.01	*
ENV	-.011	.008	-1.48	.139	-.026	.004	
PINSTAB	-.01	.003	-3.52	0.000	-.015	-.004	***
Constant	-3.976	.134	-29.73	0.000	-4.238	-3.713	***
<b>Model Diagnostics</b>							
Mean dependent var	0.911		SD dependent var	0.293			
R-squared:	0.577		Number of obs	1691			
F-test	545.812		Prob > F	0.000			
Akaike crit. (AIC)	-6587.330		Bayesian crit. (BIC)	-6560.165			

**Note:** \*\*\*p<.01, p<.05, p<.1

Tourism has a positive impact on human capital. Many countries' economies rely heavily on the tourism industry. The tourism industry's performance also matters for national, regional, and local economic growth. The tourism industry has not only monetary but also social and environmental consequences. Workers are a necessary condition for tourism to contribute positively to the national economy. Stryzhak et al. (2022), Milovanović (2017), Sekulić and Mandarić (2017) also found same evidence. Human capital is said to increase as a country's economy expands. The expansion of the economy has been found to increase human capital. Growth in gross domestic product (GDP) has been shown in several studies to increase the country's human capital. Studies conducted by Esu and Inyang (2009), Fang and Chen (2017), as well as Xu and Li (2020), Dasgupta et al. (2002) have consistently identified a positive relationship between human capital and economic growth. Additionally, these studies have revealed the presence of a long-term association between human capital and economic growth, highlighting the enduring impact of human capital on a nation's economic development. It was hypothesized that CO<sub>2</sub> would reduce the value of human resources. Similar patterns appear in our study. The environmental health risks associated with increased emissions of climate-warming greenhouse gases are becoming increasingly severe. While the negative effects of pollution on health have been widely established, the effects of pollution on other aspects of human capital and well-being are less understood. Research into how environmental degradation affects human health is already extensive. The same evidence has been found in studies conducted by Dasgupta et al. (2002), GANGADHARAN et al. (2016), Jenkins and Yakovleva (2006). This consistent finding underscores the importance of the relationship between human capital and economic growth.

Human capital is significantly impacted by political instability. Democracy and good governance, according to research by Klomp and de Haan (2013), have a salutary effect on the advanced human capital index. In contrast, Baum and Lake (2003) argued that democracy is a

key factor in economic growth. Furthermore, they discovered that democracy indirectly affects human capital through improvements in public health and educational opportunities. The power of democracy has also been investigated by Baum and Lake (2003), who found that democratic governments and public services tend to be superior. The effects of democracy on human capital, as measured by baby and child mortality rates, were, however, shown to be negligible or nonexistent by Feng (2001) and Wood and Ross (2006). Human capital was quantified by government spending on education in studies by Brown and Hunter (2004); Hunter and Brown (2000) who both discovered a link between political instability (democracy) and this metric.

#### 4.5. Regression Results of Political Instability for Global Economies

In this model the dependent variable is political instability.

**Table 8**

##### **Fixed Effects Model Regression Results**

<b>Variables</b>	<b>Coef.</b>	<b>SE</b>	<b>t-value</b>	<b>p-value</b>	<b>[95% Conf</b>	<b>Interval]</b>	<b>Sig.</b>
TOUR	.121	.023	5.28	0.00	.076	.165	***
EGROWTH	-.06	.067	-0.91	.365	-.191	.07	
ENV	.361	.068	5.32	0.00	.228	.494	***
HCAP	-.782	.222	-3.52	0.00	-1.218	-.346	***
Constant	-.388	1.487	-0.26	.794	-3.305	2.529	
<b>Model Diagnostics</b>							
Mean dependent var	-0.049		SD dependent var	0.860			
R-squared	0.040		Number of obs	1691			
F-test	16.445		Prob > F	0.000			
Akaike crit. (AIC)	815.102		Bayesian crit. (BIC)	842.267			

**Note:** \*\*\*p<.01, p<.05, p<.1

The relationship between tourism and political instability is multifaceted. Several studies, including research by Goldman and Neubauer-Shani (2017), and Edmonds (2006), have suggested a positive association between international tourism and political instability. This suggests that tourism may have a role in influencing political stability, and it is not solely that terrorism affects tourism. An increase in terrorism pushes the tourism industry into crisis as the increase in tourist attract terrorist to achieve their missions which is a consequence of political instability. Results have shown that economic growth hurts political instability. Campos and Nugent (2003) and Tabassam, Hashmi, and Rehman (2016) argued that there exists a negative effect of economic growth on political instability. The correlation between economic growth and political instability was also found to be negative by Okabe and Kam (2017)

Our results have shown that environmental emission measured by CO<sub>2</sub> has a positive impact on political instability. The evidence linking climate change and political stability has been less visible, but it is becoming increasingly difficult to ignore. Warmer temperatures and harsh weather increase social stress and deteriorate economic consequences, influencing political behavior Barbier and Homer-Dixon (1999), Schilling, Freier, Hertig, and Scheffran (2012), Deligiannis (2012) and (Butzer, 2012). Environmental factors, for example, sea-level rise or continued droughts, can force people to migrate from their homes in search of better living. In receiving areas, extensive migrations can strain resources and infrastructure which leads to tensions, political instability and potential conflicts between the displaced population and host communities (Alexandre, Bação, & Veiga, 2022; Caselli & Tesei, 2016).

Human capital is harmful to political instability, and this finding lends credence to the idea that improving a country's human capital will stabilize its political climate. This is because more political awareness, brought about by better education, leads to greater political stability. Human capital is not only beneficial to economic growth but also plays a significant role in mitigating political instability. Recent research by Okafor, Ogbonna, and Okeke (2017), and Zallé (2019) supports the notion that enhancing a country's human capital can contribute to stabilizing its political climate. This is attributed to the fact that improved education fosters greater political

awareness among citizens, subsequently leading to enhanced political stability in a nation's governance (Okafor et al., 2017; Zallé, 2019).

## 5. Conclusion

The Study describes heterogeneous casual linkages among tourism, economic growth, environment, human capital and political instability for all economies of the world. The analysis is conducted using panel data. Our study covers the data of 89 countries. The study employs the fixed effects model (FEM) to estimate the panel regression model by using statistical software STATA for estimating empirical suggestions. The findings suggest that there is an interconnected relationship between tourism and economic growth across global economies. This interdependency also exists in different groups of economies. Results of 1st equation of economies proved that tourism benefits from GDP growth. All tourism-related infrastructure has improved as a result of economic growth, attracting more visitors. Environmental emissions hurt tourism. The quality of the environment is essential for tourism. A good environment always attracts tourists. The influence of human capital on tourism is beneficial. The growth of human capital among employees is essential for the tourist sector. Successful tourism academic programs produce graduates with top-notch knowledge and abilities fit for the sector's current needs. Political instability improves tourism.

Results of 2nd equation showed that tourism positively related with economic growth. Tourism stimulates economic growth by creating income, employment, investment and exports. Environmental emissions hurt economic growth. The polluted environment is a big issue that nations worldwide face. Our results have shown that human capital positive impact on GDP. Human capital contributes significantly to economic growth. Human capital, encompassing the knowledge, skills, and expertise of a workforce, is a critical driver of economic growth. When individuals are well-educated and skilled, they can contribute more effectively to innovation, productivity, and overall economic development, ultimately leading to higher economic growth rates. Political instability hurts GDP. Political instability hinders economic growth from two perspectives. Firstly, it reduces productivity by interrupting market activities and worker connections. Second, investment will be reduced during times of increased political instability. Results of the 3rd equation showed that tourism hurts the environment. Results have shown that economic growth hurts environmental emissions. A negative and statistically significant link between human capital and CO2 emissions was shown by the regression analysis. Importantly, the researchers used a set of human capital proxies that ranged by age and qualification to uncover a heterogeneous human capital-CO2 emissions nexus. The negative association reveals itself as a result of the technological influence and the improvement in energy efficiency. Our results have shown that political instability positive impact on environmental emissions measured by CO2.

The results from the 4th equation indicate that tourism has a positive influence on human capital. This underscores the importance of actively recruiting, hiring, and investing in human resources, as the tourism industry is inherently tied to the provision of tourism and hospitality services. Results have shown that economic growth has a positive impact on human capital. Good economic reforms and economic conditions generate human capital, which in turn has far-reaching effects on physical capital. Human capital is negatively impacted by CO2. Inflammation and decreased cognitive performance have been cited as examples of 'adverse health effects' associated with high CO2 levels. Human capital is severely impacted by political unrest. Individuals and governments are more likely to spend money on people if they feel safe politically. As a result, demand for schools and R&D slowed as the economy grew more precarious. The results from the 5th equation suggest that tourism has a positive association with political instability. Tourism is a factor that attracts terrorism and political instability. International tourist arrivals have a positive association with political instability. Results have shown that economic growth hurts political instability. Economic growth troubles political

instability, which means increased economic growth condenses political instability. Our results have shown that environmental emission measured by CO<sub>2</sub> has a positive impact on political instability, the link between climate change and political stability can no longer be ignored. Extreme weather and rising temperatures increase social tension and hinder economic growth, all of which have repercussions for political behaviors. The study's findings indicate that human capital reduces political apathy. Human capital is harmful to political instability, and this finding lends credence to the idea that improving a country's human capital will stabilize its political climate. The results indicate that host nations should not solely focus on promoting tourism but also prioritize environmental conservation. It is essential to promote sustainable tourism practices to ensure that the development process remains both smooth and environmentally sustainable. The governments should focus on economic policies and more resources should be allocated for human capital management leading to sustainable tourism development and economic growth. Tourism policymakers need to be aware of the dimensions of political instability and its likely impact on their industry.

### Authors Contribution

Muhammad Shahzad: Complete the draft and incorporate the comments

Ali Azam: Supervise and proofread the final draft

### Conflict of Interests/Disclosures

The authors declared no potential conflicts of interest w.r.t the research, authorship and/or publication of this article.

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