

THE IMPACT OF ECONOMIC FREEDOM ON INBOUND TOURISM IN MENA REGION FROM 2000 TO 2018: A PANEL DATA ANALYSIS USING R SOFTWARE.

Hamza Benmessaoud ¹, Kamel Hachemaoui ²

1- Mustapha stambouli university, SMEs innovation and research,
benmessaoudhamza89@gmail.com

2- Mustapha stambouli university, SMEs innovation and research
k_hachemaoui@hotmail.com

Received:17/03/2021 Accepted:01/01/2022 Published: 14/12/2022

Abstract:

The Purpose Of This Paper Is To Investigate The Relation Between The Freedom Of Economy And The Performance Of Inbound Tourism In MENA Region. Using R Software, A Panel Data Analysis Was Performed Over The 18 Mena Region Countries From 2000 To 2018. The Results Shows That Judicial And Monetary Policies Have Both An Impact On Inbound Tourism, In Fact, International Tourism Performance Rises When Property Rights Are Better Secured And The Legal System Is More Autonomous. In Addition, Stable Money And Higher Level Of Freedom To Own Foreign Currency Accounts Impacts Positively Inbound Tourism. The Study Also Found That The Inbound Tourism Performance In North-African Countries Is Related To The Freedom To Trade Internationally, While In The Middle-East Region, Government Size Is Reported To Have An Impact On Incoming Tourism.

Keywords: Inbound Tourism, Economic Freedom, Panel Data Regression,

1. Introduction

Many economies have turned to tourism as a stable source of revenue. Developed countries, as well as developing ones, with varying degrees of tourism potential, are aiming to enhance their destination attractiveness by conducting policies and making decisions. Policymakers are conscious that the tourism industry is as important as quite vulnerable and susceptible to a variety of influencing factors in different contexts, as socioeconomic status, healthcare, safety, business and entrepreneurial climate, degree of economic freedom, press freedom, and others.

Many researches in the past took the lead to investigate the impact of the above-mentioned factors within many others, on tourism. (Demir and Gozgor 2019) found that a higher level of press freedom promotes inbound tourism, (Lau, Zeng, and Lin 2019) investigated the relation between the quality of legal system and tourism, the study showed that the effectiveness of legal system has a positive impact on tourism inflows. Safety and geopolitical risks are also significant factors according to (Neacșu, Neguț, and Vlăsceanu 2018).

Questions always arise, whenever it comes to the tourism industry, about factors to consider and keep in mind, and which could be important for governments who looks to strengthen the sector. Various investigations have particularly shed light on institutional and political factors (saha et al, 2017). Economic freedom is one of the research topics that have been addressed recently, and which has yielded considerable results in different regions, however, as per our knowledge, no prior study has tested the given topic relationship in MENA region. Extending within two continent, from Morocco in northwest Africa, to Iran in southwest Asia, the region contains a group of countries, which, many of them are well-known figures in the tourism industry. The region has generated more than 148 billion US \$ in 2019 (The World Bank), which represents 10% of the global

tourism receipts in the same year (according to the world tourism organization Database and the World Bank).

Following the latter, we have decided to investigate the area in order to provide an answer to the question: Could sustaining economic freedom help Mena countries improve their inbound tourism performance? To respond to that question, the study has proceeded to an empirical analysis, assessing the effect of economic freedom on the inbound tourism performance in MENA region, from 2000 to 2018. In order to quantify the freedom of economy, studies have referred to some reliable indexes, as the Canadian Fraser institute EFI index and the index of economic freedom, published in yearly basis by the Heritage foundation (Bengoa and Sanchez-Robles 2003).

2. Previous literature

Several studies have reported that the freedom of economy has a significant impact on tourism sector. (Kubickova 2016) has found that governments could play an important role in developing tourism by enhancing economic freedom degree. In addition, (Ozcan, Aslan, and Nazlioglu 2017) has examined the causal relationship between economic freedom, foreign tourist arrivals and economic growth over 17 post-socialist transition countries from 1996 to 2012. A particular section of the research revealed that there is a causal relationship between the two variables in the case of Albania, Croatia, the Czech Republic, Georgia, Lithuania, and Romania. Considered as a sub-component in measuring EFI index, the effectiveness of legal system and property rights was assumed to have a positive impact on tourism in a study by (Lau, Zeng, and Lin 2019), the results show that higher level of legal system quality and better protection of property rights promote inbound tourism. Using the heritage foundation EF index among other variables (Saha, Su, and Campbell 2017) examined the effect of political and economic freedom on inbound tourism over 110 countries during the period of 1995 to 2012. The study found that the economic freedom is positively associated with inbound tourism. From a different but related aspect, Furthermore, (Bulut, Kocak, and Suess 2020) have investigated the impact of freedom on international tourism, using two factors which are political rights and civil liberties

for the eight countries with the highest tourist arrivals in 2016 (France, the United States, Spain, China, Italy, the United Kingdom, Germany, and Mexico). The results shows that the level of freedom may play an important role in explaining the volume of international tourist arrivals. As well as the previous studies, (MUSLIJA, Satrovic, and COLAKOVIC n.d.) have explored the dynamic relationship between economic freedom and the tourism industry by collecting a panel data for 87 countries over the period 2002-2015. The findings have evidenced that economic freedom should be considered as an important factor in the sake of attracting foreign tourists.

3. Introducing concepts

3.1.1 Tourism

Since the appearance of the word "tourist" in the English dictionary in the 1800s, tourism has proved difficult to define. It is a multidimensional, multifaceted activity, which touches many lives and many different economic activities. Until now, all the definitions remain problematic, as a reflection of the complexity of tourism, but it is also indicative of its youth as a field of study. (Cooper 2020)

Among the definitions that exists, we were drawn to one description in particular, which defines tourism from two opposing aspects:

Demand side definition and supply side definition.

Demand-side definition explain tourism as the actions of people who travel to and remain in places outside of their usual surroundings for less than a year for leisure, business, or other reasons.

Supply-side definition introduces tourism as the industry that includes all businesses, organizations, and facilities that cater to the specific wants and needs of tourists. (Cooper 2020)

3.1.2 Tourist

According to Neil Leiper, a tourist can be defined as a person making a discretionary temporary tour, which involves at least one overnight stay away from the normal place of residence, excepting tours made for the primary purpose of earning remuneration from points en route.

Tourists are the focal human element of tourism. From the circular pattern of their behavior it is possible to isolate the geographical elements fundamental to the system. (Leiper 1979)

3.1.3 Outbound and inbound tourism

Outbound tourism or departures refer to the number of residents who travel abroad from their country of residence to another destination country for leisure or business purposes.(Gholipour, Tajaddini, and Al-Mulali 2014)

There has been multiple works on inbound tourism in particular. According to (Korol and Skutar 2018), inbound tourism flow is considered as a totality of individual trips that are formed over a period of time from one country of origin and have a common destination country. Usually, for a particular country, not only one, but a plurality of flows that go to it from different countries of origin.

In most of empirical studies on inbound tourism, several variables have been used in order to implement statistical models, such as international arrivals, international tourism receipts, and foreign tourist expenditures. Since this study focuses on MENA countries, Table -1- and -2- shows tourism results of the region over the last decade:

Table 1. Inbound tourism receipts in MENA region

Country	Inbound tourism receipts (million US \$)							
	2010	2011	2012	2013	2014	2015	2016	2017
Algeria	300	295	326	316	347	246	172	-
Bahrain	1766	1752	1875	1913	2827	4021	4380	3834
Egypt, Arab Rep.	9333	10823	6747	7979	6897	3306	8636	12704
Iran, Islamic Rep.	2489	2483	3306	4197	4771	3914	4632	-
Iraq	1557	1640	1682	1938	2833	3120	2959	1986
Jordan	4351	5123	5145	5518	4968	4943	5549	6221
Kuwait	644	780	619	615	931	831	643	919
Lebanon	6797	7361	7032	6835	7087	7373	8086	8694
Libya	-	-	-	-	-	-	-	-
Morocco	9101	8491	8201	9070	7765	7922	9086	9523
Oman	1515	1723	1888	1971	2247	2390	2717	2975
Qatar	4463	7220	8452	10576	12131	12593	15757	15239

Saudi Arabia	9317	8400	8690	9263	11183	13438	15020	16975
Sudan	179	772	773	967	949	1009	1029	1043
Syrian Arab Republic	1816	-	-	-	-	-	-	-
Tunisia	2529	2931	2863	3042	1869	1706	1782	2320
United Arab Emirates	9204	10924	12389	15221	17481	19496	21048	21390
Yemen, Rep.	910	1005	1097	1199	116	116	-	-

Source: The world bank website

Table -1- demonstrates inbound tourism receipts in million \$, over the period of 2010 - 2017. It is obvious that some countries are much better than others in term of tourism receipts, this is due to several reasons, destination attractiveness (Vengesayi, Mavondo, and Reisinger 2009) and competitiveness (Kubickova 2016), country status regarding geopolitical risk, safety, healthcare service, political conflicts and more. Some countries data as Libya, Syria and Yemen, couldn't have been completely provided due to a lack of information from the source.

The following Table -2- explain the previous one's results by showing international tourist arrivals, a variable that could be highly correlated to tourism receipts:

Table 2. Inbound tourism receipts in MENA region

	International tourist arrivals (thousand)								
	2010	2011	2012	2013	2014	2015	2016	2017	2018
Algeria	2070	2395	2634	2733	2301	1710	2039	2451	2657
Bahrain	11952	6732	8062	9163	10452	9670	10158	11374	12045
Egypt, Arab Rep.	14051	9497	11196	9174	9628,3	9139	5258	8157	11196
Iran, Islamic Rep.	2938	3354	3834	4769	4968	5237	4942	4867	7295
Iraq	1518	1510	1111	892	-	-	-	-	-
Jordan	4207	3960	4162	3945	3990	3761	3567	3843,5	4150
Kuwait	5208	5574	5729	6217	6528	6941	7055	7407	8508
Lebanon	2168	1655	1366	1274	1355	1518	1688	1857	1964
Libya	-	-	-	-	-	-	-	-	-
Morocco	9288	9342	9375	10046	10283	10177	10332	11349	12289
Oman	1441	1018	1241	1392	1611	1909	2335	2316	2301
Qatar	1699,5	2056,7	2323,5	2611,9	2839,2	2941,1	2938,2	2256,5	1819,3
Saudi Arabia	10850	14179	16332	15772	18260	17994	18044	16109	15334
Sudan	495	536	575	591	684	741	800	813	836
Syrian Arab Republic	8546	5070	-	-	-	-	-	-	-

Tunisia	7828	5746	6999	7352	7163	5359	5724	7052	8299
United Arab Emirates	-	-	-	-	16232	17472	18967	20394	21286
Yemen, Rep.	1025	829	874	990	1017,5	366,7	-	-	-

Source: The world bank website

According to the results above, it is evident that countries with high annual foreign arrivals have consequently the largest shares in term of receipts.

3.2. The economic freedom

The heritage foundation defines the economic freedom as follows: The freedom of economy is the fundamental right of every human to control his or her own labor and property. In an economically free society, individuals are free to work, produce, consume, and invest in any way they please. In economically free societies, governments allow labor, capital, and goods to move freely, and refrain from coercion or constraint of liberty beyond the extent necessary to protect and maintain liberty itself. (The heritage foundation, 2020).

In the other hand, the Fraser institute, based in Canada, has designed the EFW index to measure the extent to which the institutions and policies of a nation are consistent with this protective function and the freedom of individuals to make their own economic decisions. (The Fraser institute, 2020).

The EFW index was first implemented by Gwartney Block and Lawson and has been updated since in yearly basis. It has been used as an independent variable in nearly 200 empirical study. The majority of them found that the economic freedom is associated with positive outcomes such as rapid development, higher living standards, and many other positive aspects. Only few cases reported the economic freedom as a bad outcome such in increasing income inequality. (Hall & Lawson, 2014). The EF index is determined by averaging the scores of five different components, each of which is scaled from zero to ten. The components are demonstrated below :

3.2.1 Size of government

The first sub-component is composed several indicators, it demonstrates how much a country relies on the political process to allocate resources and goods and services. The first two indicators, government consumption, transfers and subsidies, discuss the problem of increased government expenditure in comparison to the spending of individuals, households, and corporations.

The next indicators, which are government enterprises and investment and State ownership of assets, assess how much private investment and companies are used to direct resources rather than government investment and corporations.

The top marginal income tax rate, as well as the top marginal income and payroll tax rates, and the income threshold, at which these rates begin to apply, make up the fourth component. The top marginal tax rate is calculated by averaging these two sub-components. High marginal tax rates applied to relatively low income levels are also suggestive of government dependency. Individuals are denied the benefits of their labor because of such rates. As a result, countries with high marginal tax rates and low-income thresholds get a lower rating.

3.2.2 Legal system and property rights

Includes judicial independence, impartial courts, protection of property rights, military interference in rule of law and politics, integrity of the legal system, legal enforcement of contracts, regulatory costs of the sale of real property, reliability of police, business costs of crime and gender disparity adjustment.

3.2.3 Sound money

This aspect is used to assess monetary policy consistency in terms of price stability, as well as the ease with which other currencies can be utilized through domestic and international bank accounts. To get a good ranking, a country must pursue policies and establish institutions that result in low or steady inflation, as well as avoid legislation that restrict the use of alternative currencies.

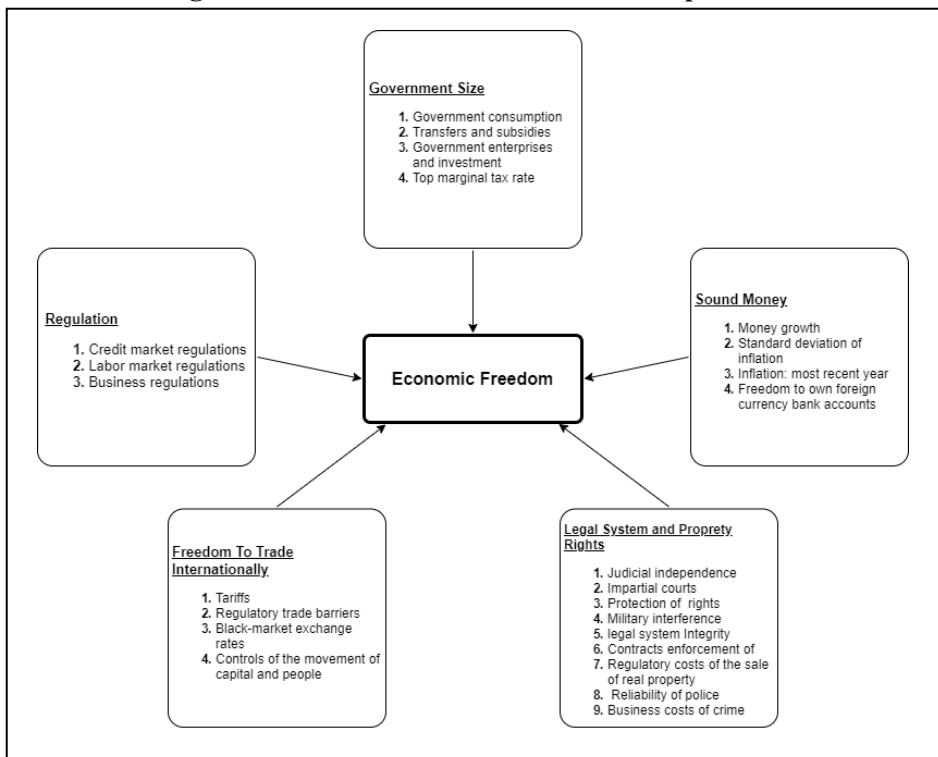
3.2.4 Freedom to trade internationally

The components in this category are designed to measure a wide range of limitations on international trade, including tariffs, quotas, hidden administrative barriers, and currency rate and capital movement controls. A country must have low tariffs, simple clearance and effective customs administration, a freely convertible currency, and few constraints on the flow of physical and human capital to obtain a better degree in this area.

3.2.5 Regulation

Economic freedom is impacted when policies restrict entry into markets and interfere with the right to engage in voluntary transaction. The index's fifth component focuses on regulatory limitations that affect credit, labor, and product market freedom of trade. To reach a high score in this section of the ranking, governments must trust markets to determine prices and refrain from regulatory activities that limit business entry and raise the cost of production.

Fig 1. FRASER INSTITUTE'S EFW components



Source: a conceptual diagram representing the economic freedom components, illustrated by the author, information gathered from The Fraser institute website.

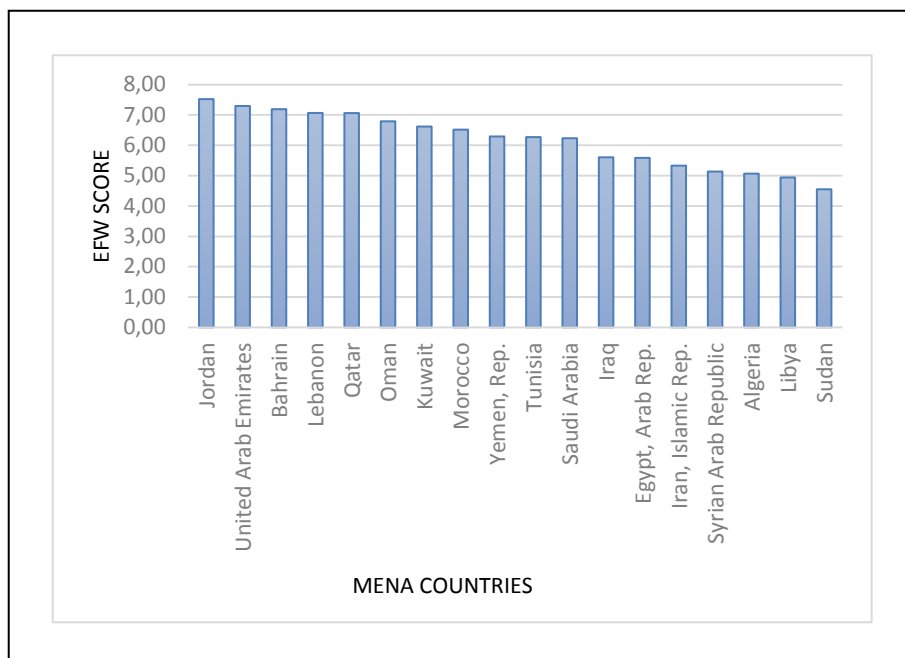
3.3. Economic freedom in MENA countries

The table -3- below represents a descriptive Data regarding the economic freedom in MENA countries. Through the last decade, the region has recorded the average score of 6.24, which is quite low comparing to other groups of countries as in Asia, Europe or North America:

Table 3. EFW index in MENA region

Country	EFW index									Average
	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Algeria	5,13	5,12	4,95	5,16	5,08	4,94	5,26	4,98	4,97	5,07
Bahrain	7,18	7,29	7,14	7,18	7,22	7,23	7,13	7,18	7,16	7,19
Egypt	6,18	6,12	6,07	5,74	5,5	5,24	5,12	4,91	5,38	5,58
Iran	5,54	5,4	5,26	5,42	5,14	5,4	5,51	5,49	4,8	5,33
Iraq	-	-	-	-	-	-	5,63	5,57	5,61	5,60
Jordan	7,46	7,48	7,47	7,61	7,49	7,54	7,49	7,54	7,62	7,52
Kuwait	6,68	6,64	6,72	6,69	6,6	6,43	6,64	6,56	6,6	6,62
Lebanon	7,13	7,23	7,07	7,12	7,08	7,06	7,07	6,95	6,88	7,07
Libya	-	-	-	5,09	5,11	5,1	5,02	4,6	4,72	4,94
Morocco	6,46	6,55	6,46	6,48	6,4	6,48	6,5	6,61	6,7	6,52
Oman	6,8	6,76	6,87	6,86	6,95	6,58	6,71	6,79	6,79	6,79
Qatar	7,13	6,94	7,11	7,14	7,28	7,03	7,09	6,96	6,88	7,06
Saudi Arabia	6,46	6,28	6,13	6,23	6,19	5,93	6,29	6,27	6,31	6,23
Sudan	-	-	-	-	-	-	4,95	4,49	4,21	4,55
Syrian	5,67	5,91	4,95	4,6	4,87	4,83	4,88	5,05	5,45	5,13
Tunisia	6,23	6,5	6,28	6,34	6,41	6,29	6,2	6,11	6,07	6,27
U A E	7,43	7,49	7,49	7,4	7,29	7,14	7,27	7,1	7,05	7,30
Yemen	6,33	6,36	6,49	6,47	6,66	6,29	6,4	6,11	5,51	6,29
Mena EFW average score										6,17

Source: Fraser institute website

Fig 2. Average EFW index 2010 – 2018 MENA region

Source: Fraser Institute website.

4. Hypothesis, Data and methodology

4.1. Hypothesis

The central question in this paper is whether by increasing economic freedom level, Mena countries could enhance their inbound tourism performance. In order to answer the question, an empirical study is conducted, with in-depth analysis of the relation between the economic freedom index, their sub-component and inbound tourism receipts. Following that, the hypotheses to be tested are as follows:

- High level of economic freedom leads to increase the inbound tourism performance in MENA region.
- Each sub-component of the economic freedom positively affect the inbound tourism performance in MENA region.
- Some of the economic freedom components have a positive impact on the international tourism in MENA region.

4.2. Source of data

Data was gathered from reliable source as the World Bank for inbound tourism receipts, which is the dependent variable, to be employed as a proxy for the international tourism performance. Furthermore, EFW index is collected from the original source, which is the Fraser institute website, providing the data annually since 2000.

As mentioned before, the study is conducted over the period of 2000 to 2018 on the 18 MENA countries. The timeframe was favored due to availability of data, despite the fact that there are a few holes in the data, making the panel unbalanced.

Three control variables are introduced to the study model in order to avoid biased results, number of world heritage sites, exchange rate and exports of goods and services, respectively WHS, EXR and EXP.

The study refers to the number of WHS as a control variable because of his causal relationship regarding inbound tourism, which was evidenced in previous studies. In fact (Lin yu and all, 2020) proved the existence of a notable influence of WHS on tourism receipts with a 1-year impact lag.

WHS variable is generated by accumulating in yearly basis the total number of sites that were certified as World heritage item by UNESCO, during the period 2000 – 2018 over the 19th MENA countries.

Because of the scarcity of studies in the area, as we know so far, MENA countries were chosen as our subject for the study. Moreover, tourism Industry has flourished over many MENA countries such as Egypt, UAE, Morocco and Bahrain, regardless the situation of crisis, wars and conflicts in the area in the last two decades.

As previously stated, the study employed a panel data analysis. Initiated in the late 60's, the application of panel data modeling was first used by (Balestra and Nerlove 1966) to estimate a model for natural gas demand in the united states. The use of panel data analysis hasn't been particularly noteworthy during the 70's to 80's with only

few publications. However, during the 90's, panel data analysis started to gain reputation among researchers as data sets increased by number and remarkably became easy to access, especially extended times series data. (Henningesen and Henningsen 2019).

The estimation procedures were carried out using R software. Known by its efficiency in treating and analyzing data, R is one of the most important and used software in econometrics. Many publications have shown interest to this latter, attempting to summarize its basic features and utilities as an initiation guides for beginner users. See (Croissant and Millo 2008), (Christopher H. Jackson 2011).

4.3. Estimation model

Baseline model

In The empirical model we used is as follow :

$$\ln \text{Tour} = f(\text{EFW}, \text{WHS}, \text{EXR}, \text{EXP}) \dots\dots\dots (1)$$

$$\ln \text{Tour} = f(\text{SG}, \text{LSPR}, \text{SM}, \text{FTI}, \text{REG}, \text{WHS}, \text{EXR}, \text{EXP}) \dots\dots\dots (2)$$

$\ln \text{Tour}$ represents international tourism receipts, EFW refers to the economic freedom score of Fraser institute.

SG , LSPR , SM , FTI and REG represents the economic freedom index sub-components.

WHS , EXR and EXP are control variables and refer to number of world heritage sites, the exchange rate and the level of exports, respectively.

In order to avoid numeric scale difference among variables and simplify calculations, we apply the natural logarithm over the dependent variable and some of the control variables, which we will introduce below in this chapter. Variables of interest (independents) are kept in the initial form regarding their index nature.

As a first part, the relation between inbound tourism receipts and the economic freedom will be estimated using the main economic freedom of the world index.

The estimation equation will be as follows :

$$(1) \quad \log \mathbf{Intour}_{it} = \beta_1 \mathbf{EFW}_{it-1} + \beta_2 \mathbf{WHS}_{it} + \beta_3 \mathbf{EXR}_{it} + \beta_4 \mathbf{EXP}_{it} + \varepsilon_{it}$$

Where, $i = 1, \dots, 18$ indicates the country , $t = 1, \dots, 18$ indicates the time period.

$\mathbf{Intour}_{it}$ represents international tourism receipts, $\mathbf{EFW}_{it-1}$ refers to economic freedom score of the last year (lag of the independent variable EFW) as we are assuming that the effect can be observed with one year delay, taking in consideration word of mouth effect and the fact that tourists are used to prepare their trips a year before.

Secondly, as per our main purpose of the study, we estimate the relation between the dependent variable Intour and the five sub-components of the economic freedom, which are: Size government, legal system and property rights, sound money, freedom and trade internationally and regulation .

Thus, the estimation equation is as bellow:

$$(2) \quad \log \mathbf{Intour}_{it} = \beta_1 \mathbf{SG}_{it-1} + \beta_2 \mathbf{LSPR}_{it-1} + \beta_3 \mathbf{SM}_{it-1} + \beta_4 \mathbf{FTI}_{it-1} + \beta_5 \mathbf{REG}_{it-1} + \beta_6 \mathbf{WHS}_{it} + \beta_7 \mathbf{EXP}_{it} + \beta_8 \mathbf{EXR}_{it} + \varepsilon_{it}$$

Where, $i = 1, \dots, 19$ indicates the country, $t = 1, \dots, 18$ indicates the time period.

SG, LSPR, SM, FTI, REG represents Size government, legal system and property rights, sound money, freedom and trade internationally and regulation, respectively.

4.4. Methodology

In order to determine the most appropriate approach for our panel data model, we conducted a series of estimations taking into account each proposed techniques in the panel analysis framework, which are:

- Pooled OLS method
- Fixed effect method
- Random effect estimation

First, the variables will be tested for unit root to determine whether they are stationary or non-stationary, by performing the augmented dickey fuller test, using **adf.test** command on R software. In order to provide a result, the panel will be reshaped to avoid missing data, as the unit root tests for panel data are particularly sensible when it comes to data shortages.

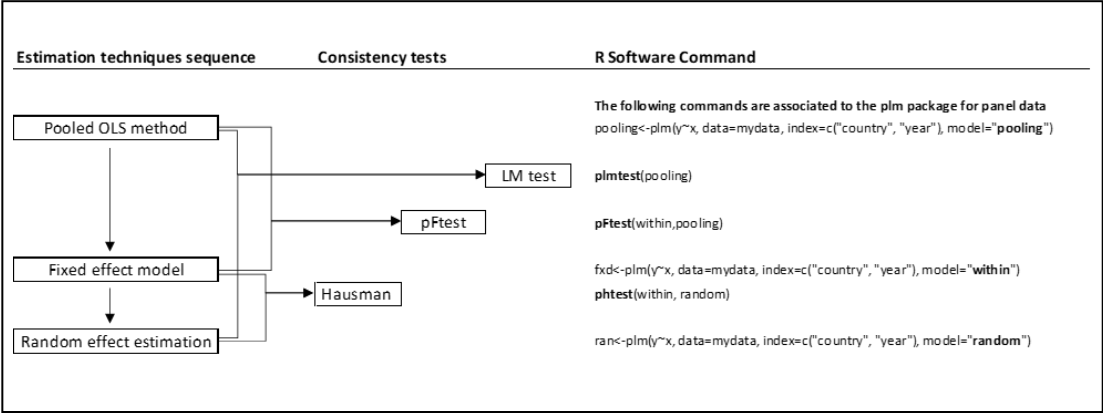
Secondly, a multi-collinearity test will be performed among the independent variables. Despite the fact that in panel data analysis, with the presence of heterogeneous entities (countries), multi-collinearity is not a serious issue. Panel data give more informative data, more variability, less collinearity among the variables, more degrees of freedom and more efficiency (Baltagi 2008). Correlation matrix or VIF tests, on the other hand, are important for confirming any problems of multi-collinearity.

Due to the difficulty of performing a VIF test on R Software, because of the complexity of the method and the absence of specific command that fits our panel model, we decided to run correlation matrix tests for each explanatory variable, using **COR** command. This method consider every independent variable's variation through as a time serie. The result will shows 18 matrix correlation, relative to each country. If any high degree multi-collinearity is frequently observed on a variable through countries, It will be excluded from the model.

It is known in advance that there is a high chance that the pooled OSL results will be rejected, due to the nature of our panel data. According to (Damodar Gujarati, 2011) pooled method considers all the observations as one similar data set, neglecting in consequence, the dual nature on time series and cross-sectional data, which is not appropriate to our model and could causes a biased estimation.

The analytical approach is demonstrated in the following figure -3- and the section that follows (Croissant and Millo 2008):

Fig 3. Estimation techniques sequence and R commands



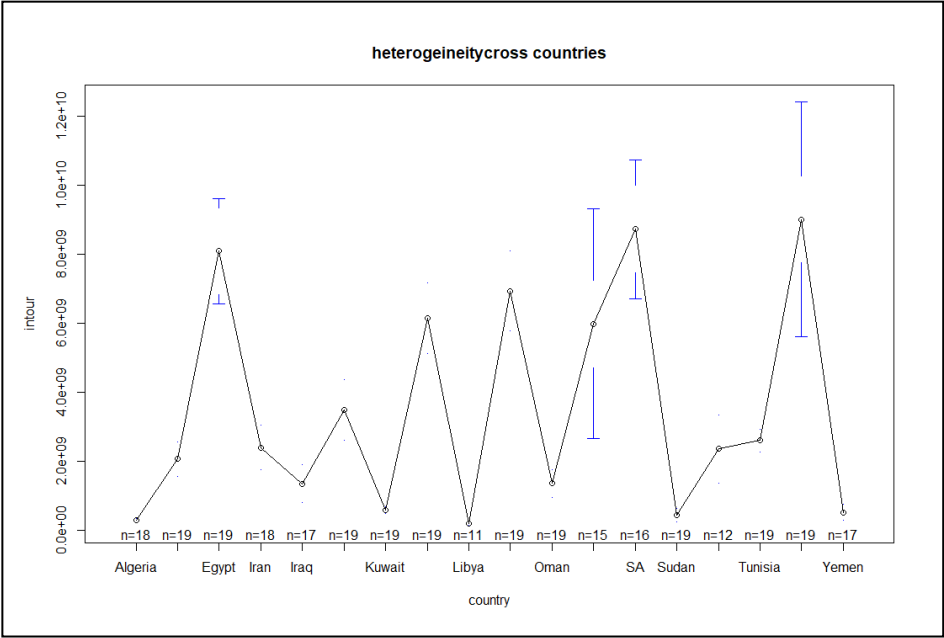
Source: illustrated by the author, informations gathered from the article “Panel data econometrics in R: The plm package” by Y.Croissant, G.Millo, 2008, Journal of statistical software, volume 27 (2)

For both (Intour ~ EFW) and (Intour ~ EFW sub-component) relationship estimation we proceed as follows:

1. Conduct Pooled OLS, Fixed effect and Random effect estimations, and observe outputs.
2. Application of LM Test (Pooled OLS vs. Random effect) in order to determine which one is consistent.
3. Application of pF Test (Pooled OLS vs. Fixed effect) in order to determine which one is consistent.
4. Hausman Test to compare Random effect and Fixed effect.
5. Interpreting the outputs.

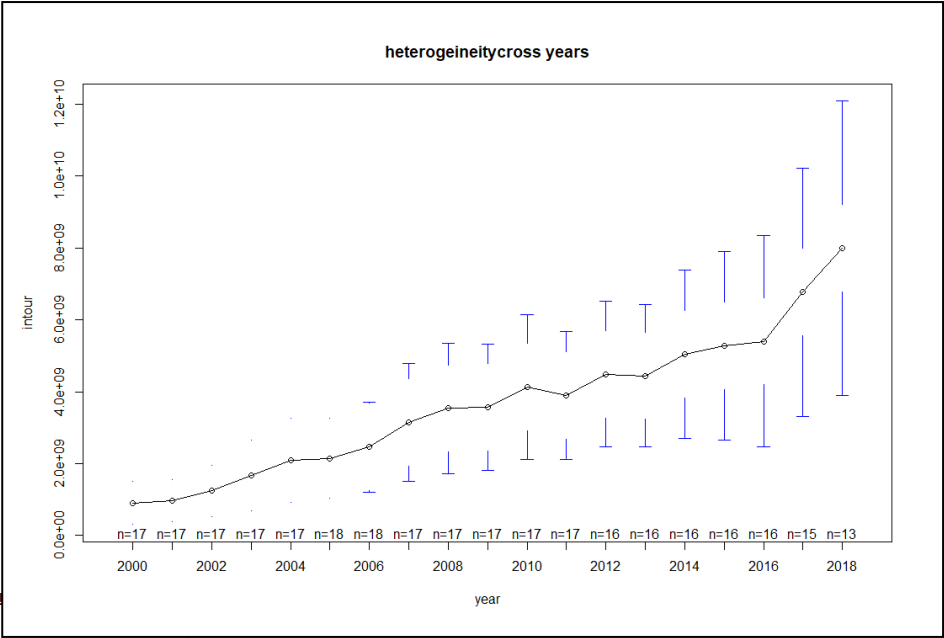
We may also visually examine the dependent variable means over countries and years, as R software allows plotting data in visual graph form. Using “Plotmeans” command, we generate both country and years means distribution graphics, which will allows us to identify unobserved heterogeneity:

Fig 4. Heterogeneity cross countries of the dependent variable Logintour



Source: R software output illustrating means of logintour by countrie

Fig 5. Heterogeneity cross years of the dependent variable Logintour



Source: R software output illustrating means of logintour by years

As reported by the two figures above, it is noticed that Logintour average in both cross-sectional (countries) and time (years) distributions is varying, which leads us to the fact that Pooling OLS method is not recommended as the model assume that the dependent variable have the same mean.

5. Empirical findings

Augmented dickey fuller unit root test

All the variables are found to be stationary at level with constant and trend, as it is shown in table -4- :

Table 4. Unit root test results

Augmented dickey fuller test

Level form (with constant and trend)

Consttucts	ADF t-stat	Lag order	P-value	Null : non stationary	Result
intour	-7.7893	5	0.01	Rejected	Stationary
logIntour	-5.4213	5	0.01	Rejected	Stationary
efw	-8.334	5	0.01	Rejected	Stationary
sg	-8.5306	5	0.01	Rejected	Stationary
lspr	-12.753	5	0.01	Rejected	Stationary
sm	-10.282	5	0.01	Rejected	Stationary
fti	-9.8655	5	0.01	Rejected	Stationary
reg	-8.8956	5	0.01	Rejected	Stationary

Source: R software outputs, unit root test using ADF.TEST command.

Correlation matrices for Multi-collinearity observation

Several matrices were found to be irrelevant due to a lack of data, as the panel is unbalanced (Iraq, Lebanon, Lybia, Qatar, Saoudi Arabia, Soudan and Yemen). However, there is no evidence of multi-collinearity except for Algeria which the independent variable Sound money is highly correlated with Regulation at 81% and Morocco with 79% correlation between Legal system and property right and Regulation. And also 81% of correlation between the freedom to trade

internationally and Regulation. Outcomes are demonstrated in the tables below :

Table 5. Multi-collinearity test (Algeria)

Multi-collinearity test (Algeria)					
	SG	LSPR	SM	FTI	REG
SG	1	-	-	-	-
LSPR	-0.040	1	-	-	-
SM	-0.385	0.634	1	-	-
FTI	-0.722	-0.175	0.333	1	-
REG	-0.597	0.606	0.813	0.449	1

Source: R software outputs, Cor () command for multi-collinearity

Table 6. Multi-collinearity test (Morocco)

Multi-collinearity test (Morocco)					
	SG	LSPR	SM	FTI	REG
SG	1	-	-	-	-
LSPR	-0.216	1	-	-	-
SM	-0.462	0.588	1	-	-
FTI	-0.635	0.480	0.319	1	-
REG	-0.515	0.791	0.597	0.812	1

Source: R software outputs, Cor () command for multi-collinearity

Then, the empirical analysis is implemented according to the methodology we stated above. The effect of economic freedom on inbound tourism in Mena region is tested, as well as in both north African countries and middle east countries, side by side, the results are described in table -7- and -8- :

Table 7. Effect of economic freedom of inbound tourism in Mena countries

Independent variables	Mena countries		North african countries		Middle east countries	
	FE (1)	RE (2)	FE (3)	RE (4)	FE (5)	RE (6)
efw _{t-1}	0.055 (0.45365)	0.081 (0.264459)	1.898 *** (7.327e-06)	1.381 *** (8.255e-06)	0.402 ** (0.001)	0.625 *** (1.174e-07)
whs	0.080 *** (0.000006)	0.072 *** (0.000006)	-0.375 *** (0.000006)	-0.322 ** (0.000006)	-0.0369 (0.000006)	0.0486 (0.000006)
exp	0.732 *** (2.2e-16)	0.720 *** (2.2e-16)	0.808 * (0.021)	0.6967 ** (0.002)	0.129 . (0.057)	0.358 *** (1.692e-09)
exr	0.217 * (0.0307)	0.119 (0.03307)	0.303 (0.000006)	0.402 ** (0.000006)	0.127 *** (0.000006)	0.091 ** (0.000006)
Source: R software outputs, fixed effect and random effect estimation of equation (1).						
Table 8. Effect of economic freedom sub-components on inbound tourism in Mena countries						
Independent variables	Mena countries		North african countries		Middle east countries	
	FE (1)	RE (2)	FE (3)	RE (4)	FE (5)	RE (6)
R ²	0.677	0.806	0.681	0.639	0.210	0.374
adj R ²	0.647 (0.922)	0.803 (0.545)	0.551** (2.346e-11)	0.519** (5.374e-16)	0.069 (0.161)	0.217* (0.007)
Hausman Test	0.214 * (0.02)	0.210 * (0.022)	0.241 (0.414)	0.186 (0.475)	0.001 (0.994)	0.107 (0.628)
chisq	6.884 (0.02)	4 (0.022)	5.516 (0.414)	4 (0.475)	24.509 (0.994)	4 (0.628)
df	4	4	4	4	4	4
P-value	0.122 ** (0.002)	0.142 (0.001)	0.220 (0.184)	0.074 (0.556)	0.376 ** (0.004)	0.570 *** (7.774e-07)
The dependent variable is the natural logarithm of the inbound tourist receipts. ***, **, and * indicate the statistical significance at 1, 5, and 10% levels, respectively						
reg _{t-1}	-0.065 (0.115)	-0.060 (0.144)	-0.398 . (0.057)	-0.424 * (0.016)	0.065 (0.610)	0.101 (0.365)
whs	0.061 *** (0.000)	0.056 *** (0.00)	-0.104 (0.468)	-0.095 (0.444)	-0.031 (0.298)	0.016 (0.546)
exp	0.760 *** (2.2e-16)	0.742 *** (2.2e-16)	1.054 * (0.013)	1.099 *** (3.672e-06)	0.292 ** (0.007)	0.542 *** (3.911e-12)
exr	-0.140 (0.176)	-0.0757 (0.254)	-0.227 (0.117)	-0.348 ** (0.004)	0.077 . (0.090)	0.009 (0.813)
R ²	0.704	0.837	0.840	0.785	0.261	0.50608
adj R ²	0.670	0.831	0.757	0.760	0.099	0.47724
Hausman Test						
chisq	32.097		24.663		6.9563	
df	8		8		8	
P-value	8.949e-05		0.001		0.5414	

The dependent variable is the natural logarithm of the inbound tourist receipts. ***, **, and * indicate the statistical significance at 1, 5, and 10% levels, respectively

Source: R software outputs, fixed effect and random effect estimation of equation (2).

Columns (1) and (2) of table -7- display estimates obtained from fixed and random effect respectively. According to the results of Hausman test (p-value = 0,142 > 5%), fixed effect is rejected, we consider the random effect estimates.

Columns (3) and (4) present the results of the estimation in north African countries (Algeria, Morocco, Tunisia, Libya, Egypt, Sudan and Yemen). Hausman test indicates that the random effect is convenient.

Columns (5) and (6) provides outputs of fixed and random effect estimation in middle east countries (Bahrein, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saoudi Arabia, Syria and United arab emirates). Fixed effect is considered according to Hausman test, otherwise, R² is very low (0,210) which mean that the estimations could not explain more than 21% of the population.

Columns (1) and (2) of table -8- shows the fixed and random effect estimation results of equation (2), which assess the impact of economic freedom sub-component on inbound tourism receipts in Mena countries. We reject Random effect as per the Hausman test.

Columns (3) and (4) reveal outcomes of the estimation in north African countries, fixed effect is taken in consideration. Finally, columns (5) and (6) represent the estimates of the random effect as the most consistent, when Middle East countries are tested.

6. Discussion and analysis of results

The aim of the study was to see whether the economic freedom has an effect on inbound tourism in MENA countries. The study has been also taken in consideration geographic variations in order to analyze any difference between North African countries and Middle East countries, which had led us to test the relationship by regions.

According to the empirical results, there is no evidence that the economic freedom directly affects the inbound tourism in Mena countries. However, there is a significant relationship between the economic freedom and the inbound tourism in north African countries, in fact, a rise of 1% of economic freedom level would lead to 1,38 % increase in tourism receipts. In addition, we observe a statistical significance in the relation between the economic freedom and inbound tourism in Middle East, which indicates that if the level of

economic freedom increases by one degree, it will result a rise of 40% of inbound tourism receipts.

The findings have also demonstrated the existence of a relationship between some economic freedom sub-components and the inbound tourism in Mena countries. Sound money and legal system and property right components positively affect inbound tourism receipts with 0,12 and 0,21 coefficients, respectively. This means that if the score of legal system and property rights of a country increases by one degree, it will result a 21 % increase in inbound tourism performance in the few next years. In addition, improving sound money level by one degree might result in a 12% increase in tourism receipts.

In the case of North African countries, the size of government and freedom to trade internationally were found to be strongly associated to inbound tourism, a rise of one level in both of SM and FTI will respectively extend tourism receipts by 94% and 52%.

In the Middle East, size of government and sound money level positively affect inbound tourism. A rising of one degree in these two indicators will, in return, improves the tourism receipts by 21% and 57%, respectively.

7. Conclusion

The legal system and the protection of property rights, as well as sound money level, are two critical areas on which economic freedom is measured. The first area is about how well the government's security roles is carried out in order to insure the law. The second section focuses on monetary policies and actions that lead to lower inflation rates and protect economy.

Following the results of this study, countries who want to boost their tourism industry must strengthen their judicial institutions, protect the persons and give more independence to the judicial system; legal reinforcement of contracts and the integrity of the system are also recommended. In the same way, monetary policy must be adapted in

order to give access to sound money to individuals and assure more freedom to own foreign currency accounts.

The study has also evidenced that size of government level, which is an important indicator that reflects the degree of involvement of a government in allocating resources, goods and services, seemed to have an impact in North African countries in particular. In light of this latter, countries of the area should adopt a flexible taxation policies regarding the private sector and relies on private investments rather than government investments in tourism development, this will strengthen their infrastructure and promote their tourism destination. Furthermore, the majority of economists and policymakers believe that private investment is more efficient and productive in terms of contributing to growth than governmental investment. Governments, on the other hand, should constantly step forward and build the necessary infrastructure for the tourism industry's sustenance and expansion in order to instill trust in the private sector, particularly in emerging countries.(Nawaz and Hassan 2016)

Moreover, the freedom to trade internationally is also a factor that North African countries should consider, as it is reported in the study that the performance of the inbound tourism could be 50% boosted by promoting international trade and providing more opportunities in favor of individuals and private investors to operate in international markets. In general, trade growth, mainly in imports and tourism based investment will stimulates growth in international tourist arrivals.(Katircioglu 2009)

Governments in the Middle East, on the other hand, should take into account the role of the private sector, particularly in terms of tourism investments. Furthermore, implementing a monetary strategy that stabilizes prices and protects the currency market from illicit actions will boost inbound tourism in this group of countries.

As our third hypothesis stated, the study found that various factors of economic freedom have a beneficial impact on the performance of inbound tourism. Furthermore, the study revealed a geographic

difference in the relationship between economic freedom and tourism performance, which is related to the differences in each set of countries' characteristics.

It is suggested to undertake more research on this topic, in order give more clearance to the subject. In fact, many investigations could be established. We advise as further work, to use other inbound tourism indicators such as international tourism arrivals, the heritage foundation index as an indicator regarding the freedom of economy. In addition, we suggest examining the Fraser Institute's quartile classification of countries in terms of economic freedom to see if the effect has been behaving differently among MENA countries. There is also an option to go further in the analysis of the freedom of economy by using the indicators that compose the sub-components of both the heritage and the Fraser index.

References

- Balestra, Pietro, and Marc Nerlove. 1966. 'Pooling Cross Section and Time Series Data in the Estimation of a Dynamic Model: The Demand for Natural Gas'. *Econometrica: Journal of the econometric society*: 585–612.
- Baltagi, Badi Hani. 2008. *4 Econometric Analysis of Panel Data*. Springer.
- Bengoa, Marta, and Blanca Sanchez-Robles. 2003. 'Foreign Direct Investment, Economic Freedom and Growth: New Evidence from Latin America'. *European Journal of Political Economy* 19(3): 529–45.
- Bulut, Umit, Emrah Kocak, and Courtney Suess. 2020. 'The Effect of Freedom on International Tourism Demand: Empirical Evidence from the Top Eight Most Visited Countries'. *Tourism Economics* 26(8): 1358–73.
- Christopher H. Jackson. 2011. 'Multi-State Models for Panel Data: The Msm Package for R'. *Journal of statistical software* 38(8): 1–29.
- Cooper, Chris. 2020. *Essentials of Tourism*. SAGE.
- Croissant, Yves, and Giovanni Millo. 2008. 'Panel Data Econometrics in R: The Plm Package'. *Journal of statistical software* 27(2): 1–43.

- Demir, Ender, and Giray Gozgor. 2019. 'Does Freedom of the Press Enhance Inbound Tourism?' *Current Issues in Tourism* 22(20): 2550–65.
- Gholipour, Hassan Fereidouni, Reza Tajaddini, and Usama Al-Mulali. 2014. 'Does Personal Freedom Influence Outbound Tourism?' *Tourism Management* 41: 19–25.
- Henningsen, Arne, and Géraldine Henningsen. 2019. 'Analysis of Panel Data Using R'. In *Panel Data Econometrics*, Elsevier, 345–96.
- Katircioglu, Salih. 2009. 'Tourism, Trade and Growth: The Case of Cyprus'. *Applied Economics* 41(21): 2741–50.
- Korol, Oleksandr, and Tetiana Skutar. 2018. 'Comparative Analysis of International (Inbound) Tourism Development within Ukraine and Poland'. *Studies of the Industrial Geography Commission of the Polish Geographical Society* 32(2): 338–55.
- Kubickova, Marketa. 2016. 'The Role of Government in Tourism: Linking Competitiveness, Freedom, and Developing Economies'. *Czech Journal of Tourism* 5(2): 73–92.
- Lau, Chi Keung Marco, Yan Zeng, and Zhibin Lin. 2019. 'The Effectiveness of the Legal System and Inbound Tourism'. *Annals of Tourism Research* 76: 24–35.
- Leiper, Nell. 1979. 'The Framework of Tourism: Towards a Definition of Tourism, Tourist, and the Tourist Industry'. *Annals of Tourism Research* 6(4): 390–407.
- MUSLIJA, Adnan, Elma Satrovic, and Namik COLAKOVIC. 'Dynamic Panel Data Analysis of the Relationship between Economic Freedom and Tourism'. *Çankırı Karatekin Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi* 9(2): 1–17.
- Nawaz, Muhammad A., and Sallahuddin Hassan. 2016. 'Investment and Tourism: Insights from the Literature'. *International Journal of Economic Perspectives* 10(4): 581–90.
- Neacșu, Marius-Cristian, Silviu Neguț, and Gheorghe Vlăsceanu. 2018. 'The Impact of Geopolitical Risks on Tourism'. *Amfiteatru Economic* 20(12): 870–84.

Ozcan, Ceyhan Can, Murat Aslan, and Saban Nazlioglu. 2017. 'Economic Freedom, Economic Growth and International Tourism for Post-Communist (Transition) Countries: A Panel Causality Analysis.' *Theoretical & Applied Economics* 24(2).

Saha, Shrabani, Jen-Je Su, and Neil Campbell. 2017. 'Does Political and Economic Freedom Matter for Inbound Tourism? A Cross-National Panel Data Estimation'. <https://core.ac.uk/display/42584620?recSetID=> (January 11, 2020).

Vengesayi, Sebastian, Felix T. Mavondo, and Yvette Reisinger. 2009. 'Tourism Destination Attractiveness: Attractions, Facilities, and People as Predictors'. *Tourism Analysis* 14(5): 621–36.

Websites

The World Bank website,
API_ST.INT.RCPT.CD_DS2_en_excel_v2_1689463,
<https://www.worldbank.org/> (Consulted On 10/12/2020)

The World Bank website,
API_ST.INT.RCPT.CD_DS2_en_excel_v2_2764004,
<https://www.worldbank.org/> (Consulted On 01/03/2021)

The united nations world tourism organization website,
<https://www.unwto.org/global-and-regional-tourism-performance/>,
(Consulted On 14/03/2021)

Fraser institute website, economicdata1970-2018,
<https://www.fraserinstitute.org/economic-freedom/dataset?geozone=world&page=dataset&min-year=1970&max-year=2018&filter=0&date-type=range> , (Consulted On 08/01/2021)

UNESCO website, whc-sites-2019.xlsx ,<http://whc.unesco.org/fr/list>,
(Consulted on 14/03/2021)