Determinants of tourism in African countries: The market value of the economy, financial factors and country risk

Md. Rubel Khondoker

M00232196

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Department of Accounting and Finance

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ABSTRACT

This thesis identifies new factors that significantly affect inbound tourism flows in African countries. In order to examine tourism flows, we employ a gravity model which is based on Newton's law of gravitation and takes into account the push and pull factors that influence inbound tourism flows. The majority of the empirical studies on tourism analysis use the gross domestic product (GDP) or GDP per capita as a proxy for tourism income, but GDP is an imperfect measure of economic performance and is generally not effective when it comes to cross-country comparison. GDP is a flow variable gross of depreciation and provisions for loss that does not distinguish between production costs and value of output, while the market value of the economy from financial theory is a stock variable that incorporates the effects of production costs, output value, depreciation and expected losses. Hence, the market value of the economy from financial theory is employed as a proxy for tourism income. The global financial market index is then introduced into the model as a proxy for the effect of financial assets. We then investigate the effects of financial assets, financial development and financial risk (based on the Black–Scholes option pricing formula), on a country's tourism inflow. Financial risk is largely ignored in the tourism literature where most of the research concentrates only on economic or political factors. Next, we examine the effect of composite country risk, which includes economic, financial and political risks as they all play a significant role in determining inbound tourism flows. Therefore, the overall country risk that comprises all three of these risk components may be a better measure rather than focusing only on political or economic risks.

The main findings that emerge from this thesis indicate that the market value of the economy from financial theory may be a more appropriate proxy for measuring income from tourism countries of origin. The results also suggest that the global financial equity market index is a significant factor that influences inbound tourism flow. The findings also indicate that financial

risk, financial assets and financial development are important factors in determining inbound tourism flows. The results of the thesis also reveal that country risk has a significant influence on inbound tourism flows and political instability has an adverse effect on tourism. Above all, the results indicate that inbound tourism flows are not only driven by the factors mentioned in the tourism literature but that there are also other factors that may improve the efficiency of the tourism demand model. Developing better tourism models requires identification of new variables. The specifications of Chapters 4, 5 and 6 can easily be stretched, without loss of generality, to more countries of origin and destination, and can be adapted to alternative contexts such as the demand for specific regions in the world or specific regions within a country.

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List of acronyms and abbreviations:

AIC	Akaike information criterion
ADF	Augmented Dickey-Fuller
ARDL	Autoregressive distributed lag
ARIMA	Autoregressive integrated moving average
BOP	Balance of payments
CAPMAS	Central Agency for Public Mobilization and Statistics
CEPII	Centre d'Etudes Prospectives et d'Informations Internationales
CPI	Consumer price index
CUSUM	The cumulative sum of recursive residuals
CUSUMSQ	The cumulative sum of squares of recursive residuals
ECM	Error components model
FDI	Foreign direct investment
FEM	Fixed effect model
FGLS	Feasible generalised least squares
FRP	Financial risk premium
GDP	Gross domestic product
GMM	Generalised Method of Moments
HQC	Hannan-Quinn criterion
ICRG	International Country Risk Guide
ILO	International Labour Organization
IMF	International Monetary Fund
IPI	Industrial production index
IRTS	International Recommendations for Tourism Statistics
IV	Instrumental variable

LSDV	Least squares dummy variables
MVECON	The market value of the economy
OLS	Ordinary least squares
PCSE	Panel-corrected standard errors
PP test	Phillips-Perron Test
REM	Random effect model
RPEX	Relative price standardised by the bilateral exchange rate
SARS	Severe acute respiratory syndrome
SIC	Schwarz information criterion
STATS SA	Statistics South Africa
System GMM	System Generalised Method of Moments
TSA	Tourism satellite account
UNWTO	United Nations World Tourism Organization
VECM	Vector error correction model
WB	World Bank
WTO	World Trade Organization
WTTC	World Travel and Tourism Council
XGS	Export of goods and services

Chapter 1: Introduction

Tourism is one of the largest and fastest growing sectors of the world economy (UNWTO, 2017). It generates a substantial amount of foreign exchange earnings that contribute to the economic growth of developed countries. However, this growth ingredient has not been effectively harnessed in Africa (Fayissa et al., 2008). Despite the increasing importance of tourism in African economies, it has attracted relatively little attention in the empirical literature on economic development (Naudé and Saayman, 2005). Africa possesses most of the assets and attractions that are required for tourism to flourish. Tourism has the potential to generate prosperity across all the countries in Africa. It creates employment opportunities, drives exports, reduces trade deficits, increases foreign exchange earnings to finance imports, attracts investment and contributes to the overall economic growth and development of destination countries.

As tourism has emerged as a vital contributor to many African countries, it is important to identify the factors that influence inbound tourism flows. It is necessary to estimate the economic benefits that tourism can bring to a destination. Tourism literature has developed substantially over the years in response to the rapid global growth in tourism flows. Research on various perspectives on the issue of tourism has assumed a new significance. The recent literature primarily concentrates on the factors affecting tourism demand in certain countries, following theoretical background and applying econometric methods. However, despite the extensive research being conducted on tourism, there are still several fundamental questions that we attempt to address in this thesis.

Objectives of the thesis

This thesis aims to empirically provide answers to the following key research questions:

i. What impact do the market value of the economy and global financial assets have on the inbound tourism flow of a destination country?
ii. How do financial risk, financial assets and financial development influence the inbound tourism flow of a destination country?
iii. What role does country risk play in determining tourism flows?

The first question refers to the single most important determinant of tourism demand, which is income. We examine whether there is a positive relationship between income and tourism demand. The market value of the economy from financial theory, developed by Clark (2002) and then Clark and Kassimatis (2011), is employed as a proxy for income rather than using conventional proxies such as GDP or GDP per capita. This is particularly important because flow[1] data gross of costs, such as GDP and its derivatives, are incomplete measures of economic performance. Then, we examine whether global financial assets have an impact on tourism inflows. The countries for which this hypothesis is tested are Egypt, Morocco and South Africa.

The second question refers to the significance of the financial risk in tourism countries of origin and destination has in determining tourism flows. Most of the research concentrates on the political and/or economic risks, but the financial risk is somewhat neglected in the tourism literature. We examine whether financial risk plays a role in determining tourism flows. Then

[1]A flow can be defined as quantity that is measured with reference to a period of time. GDP have a time dimension, i.e., The magnitude of GDP can be measured over a period of time. The distinction between a stock and a flow is very significant. Traditional measure of national income such as GDP is a flow.

we examine whether the financial assets (equity market index) and financial development indicators (ratio of bank deposit to GDP) of tourism countries of origin have an influence on the tourism destination countries of Egypt, Morocco and South Africa.

The third question refers to the impact of composite country risk on the tourism flows of selected North African countries those affected by the Arab Spring revolution while providing adequate controls for income and price. Most of the research focuses on the political and/or economic risks, but composite country risk includes economic, financial and political risk components, thus providing overall risk assessment and a better understanding of the risk associated with a country. We also examine whether one country benefits at the cost of others. The countries in our sample are Egypt, Morocco and Tunisia as we are focusing on the Arab Spring countries of North Africa.

The contribution of the thesis

The existing literature on tourism lacks a comprehensive study of African countries that investigates the dynamics behind inbound tourism flows. This thesis aims to fill this gap in the literature by making a contribution to the existing knowledge in this area.

A major shortcoming of the existing empirical studies is that they agree that income is the single most important determinant of tourism demand, but they have mostly employed GDP or GDP per capita as a proxy for income.[2] However, GDP is a very imperfect proxy, it is a flow variable gross of depreciation and provisions for loss that does not distinguish between

[2] See for instance, Crouch (1994), Lim (1999), Kim et al. (2012), De Vita (2014), Peng et al. (2014) and Dogru et al. (2017).

production costs and the value of output.[3] Thus, GDP is backwards-looking and provides incomplete measures of economic performance.[4] On the other hand, the forward looking market value of the economy from financial theory is a stock variable that incorporates the effects of production costs, output value, depreciation and expected losses.[5]

The main contribution that this thesis makes to the existing knowledge is, therefore, that it fills this gap in the tourism literature by investigating the impact of the market value of the economy from financial theory on the inbound tourism flow of a destination country. The global financial asset, which has not been included in the previous tourism literature, is then introduced in this thesis to investigate the influence of the wealth effect on tourism demand. For this purpose, the thesis employs a gravity model and rigorous econometric analysis by applying the System Generalised Method of Moments (System GMM) estimation technique.

The next contribution to the literature is to investigate whether financial factors have an influence on tourism. This is motivated by the consideration that financial factors play an important role in development and can affect tourism growth significantly. For this purpose, the thesis employs financial factors such as financial risk premium (FRP),[6] financial assets and a financial development indicator.

This thesis makes a further contribution to the existing literature by investigating the effect of composite country risk on tourism flows. Most of the existing studies include economic and/or political risks but ignore financial risk.[7] This analysis is motivated by the consideration that it is not only economic and political risks but also the financial risk that plays a significant role

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[3] See Clark and Kassimatis (2015).
[4] See Clark (2002).
[5] See Clark and Kassimatis (2011).
[6] Following Clark (2002), the financial risk premium is constructed by using the Black–Scholes call option formula.
[7] See Sequeira and Nunes (2008).

in influencing tourism flows. It would be misleading to rule out financial risk. Therefore, the composite country risk, comprising economic, financial and political risks, is more appropriate for analysing inbound tourism flows in North African countries affected by the Arab Spring revolution.

Organisation of the thesis

This thesis is organised as follows. Chapter 2 reviews the core concepts of tourism and examines some definitions of tourism. An overview of global tourism as well as in the African region, Egypt, Morocco, South Africa and Tunisia is discussed. We focus on tourism trends, tourism contribution to GDP and the economic significance of tourism.

Chapter 3 empirically analyses the determinants of inbound tourism flows in Egypt, Morocco and South Africa by employing a gravity model. The market value of the economy from financial theory is employed as a proxy for income of tourism origin country and the global stock market index is employed as a proxy for financial wealth effect. System Generalised Method of Moments (System GMM) estimation technique is employed to investigate the determinants of inbound tourism flow.

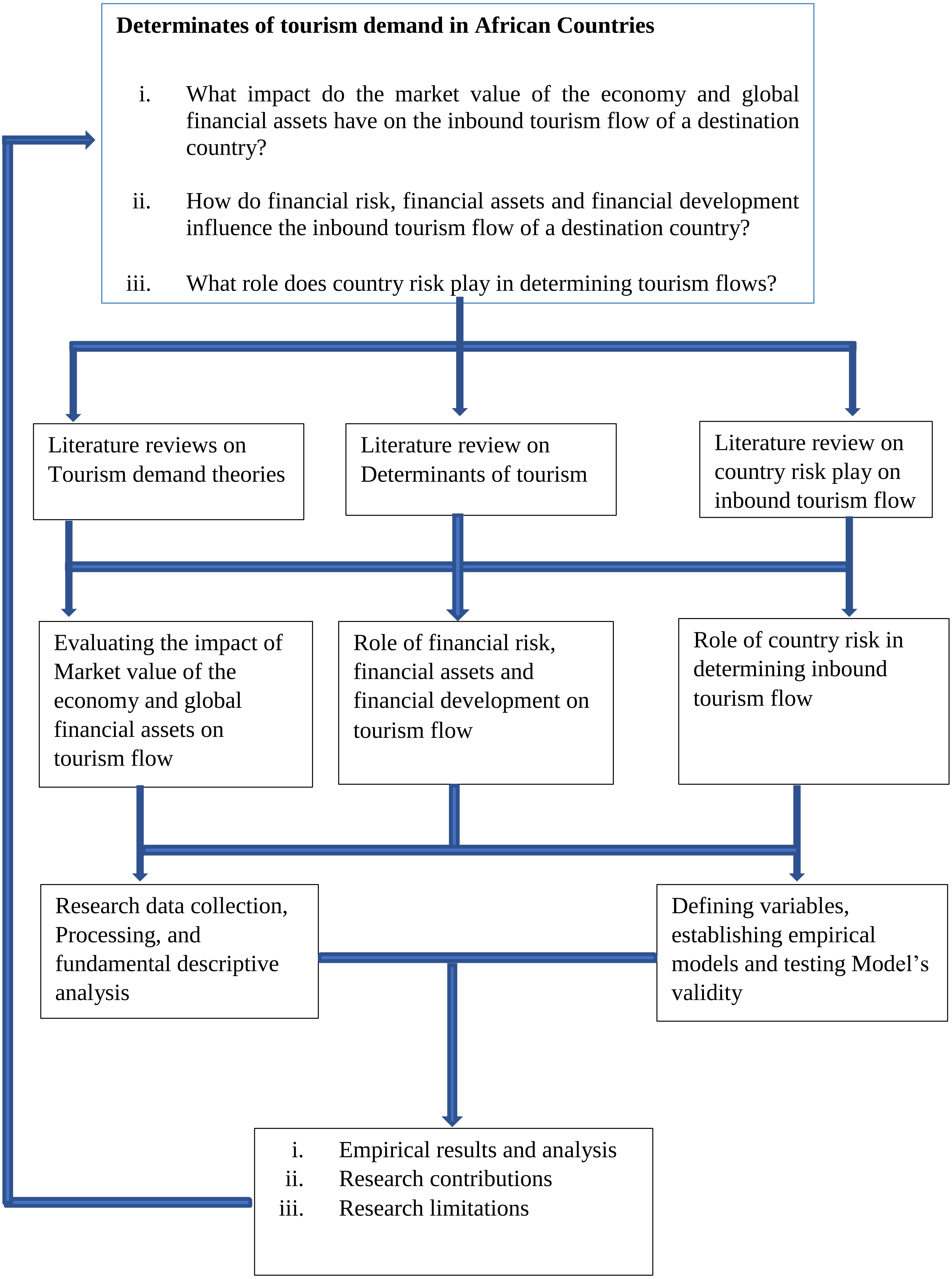
Chapter 4 investigates whether financial risk, financial assets and financial development have an impact on inbound tourism flows when given adequate controls for income and price in Egypt, Morocco and South Africa. Following Clark (2002), we construct a financial risk premium based on the Black–Scholes call option. Feasible generalised least squares (FGLS) and panel-corrected standard errors (PCSE) estimation techniques are employed for the investigation.

Chapter 5 investigates whether inbound tourism flows are influenced by country risk in the three North African countries of Egypt, Morocco and Tunisia, using monthly time series data from January 2008 to December 2014 as monthly data contains richer information. An Autoregressive distributed lag (ARDL) model is employed to identify the long-run relationship between inbound tourism flow and country risk.

Finally, Chapter 6 summarises the findings of this thesis, discusses the policy implications that emerge, identifies the limitations of this research and provides direction for future research.

Research structure

Table 1.1: Thesis Structure and research process



Chapter 2: Tourism specific literature and its critical evaluation

Introduction

In this chapter we aim to build up the theoretical and empirical foundations of tourism demand. In the spirit of encouraging and improving our knowledge about tourism demand, tourism demand studies can primarily be categorised into two approaches. They are qualitative and quantitative approaches (Law et al., 2019). The qualitative approach, such as the Delphi technique, is one of the most popular for tourism studies[8], but then again theoretical and empirical developments in this area have been slow (Lin and Song, 2015). Another technique is a consensus, which is usually dependent on the qualitative intuition, experience and insight[9] into a specific tourism market. Nevertheless, these techniques do not perform well in terms of generalisation and are considered "artistic in nature" (Witt and Witt, 1995). On the other hand, the quantitative approach estimates the quantitative relationships among different observations in tourism data that is based on the past or historical data of factors and tourism volume, and the constructed model can be used to predict future tourist arrival volumes. In order to improve the performance of the quantitative approach the strategy is to incorporate more relevant factors that potentially have an impact on tourist motivations for travel, and another strategy is to adopt more sophisticated models that offer a better generalisation capability of tourism trends (Law et al., 2019). The neoclassical economic theory presumes a multi-stage budgeting process for every choice for a certain product or service and each stage corresponds to a utility maximisation problem where the consumer subconsciously intends to maximise their utility of

[8] See for example Robinson, 1979; Seely et al., 1980; Kaynak and Macaulay, 1984; Var, 1984; Liu, 1988; Yong et al., 1989; Moeller and Shafer, 1987; Taylor and Judd, 1989; Lin and Song, 2015.

[9] This technique intends to capture an expert point of view about future prospects through questionnaire surveys of a group of experts in the field.

choice within the given budget constraint (Smeral and Weber, 2000). The traditional economic theories of consumption behaviour and utility theory suggest that quantitative and qualitative economic factors, such as income, price and advertising, influence tourism demand (Goh and Law, 2003). One of the most important studies to underpin tourism demand theory was conducted by Morley (1992) who criticises typical demand studies since they omit utility theory to describe the decision-making process. Economic utility theory has steered economists to specify demand as a function of determining variables. Subsequently, Morley (1992) recommended a different approach to estimate demand based on the expected utility driven by the characteristics of the product. Contrary to the "traditional demand theory",[10] the concept that the characteristics of a good are more important to the consumer than the actual good itself was originally developed by Lancaster (1966) when he demonstrated that how these characteristics are perceived will determine the expected utility from the consumption of the goods. Lancaster (1971) explains the formulation of theory:

> Originated from the simple observation that traditional demand theory was ignoring highly pertinent and obvious information – the properties of goods themselves.[11]

However, Law et al. (2019) point out that qualitative economic factors are not frequently incorporated into tourism demand models because quantification is usually difficult. On the other hand, quantitative economic factors are frequently employed because they are measurable and can be applied as features for a tourism demand model. As it stands, given the changing nature of tourism demand, models require more than just inclusion of economic factors. Therefore, the inclusion of non-economic factors that could reflect travel motivations and affect

[10] Traditional demand theory is defined as the analysis of consumer choice under budget constraints, and the consequent prediction of the changes in a consumer's chosen collection of goods when prices change (Lancaster 1971: p.2).
[11] See Lancaster (1971: p.2),

the choice of destination is necessary. In this regard, Goh et al. (2008) concentrated on the inclusion of non-economic qualitative factors and introduced two new measures, namely the climate index and leisure time index.

The determinants of tourism demand can be divided into push, pull and resistance factors depending on the association the tourism destination country has with the tourism origin country (Frechtling, 2001). The pull factors are attributes of the destination country that attract tourists, such as the quality of the natural resources, social and cultural ties, special events, complimentary destination and commercial ties (Meleddu and Pulina, 2016). However, push factors are attributes related to the origin country that include income trends, population size, income distribution, demography, leisure time, family structure, etc. In contrast, resistance factors include those variables that constrain travel from the origin country to the destination county, such as war, crime, civil unrest, natural and human-made disaster, physical barriers, distance, prices (product prices, prices of substitutes, price of complements, price of necessities, exchange rate, taxes and fees), supply capabilities, competitors' actions (Poprawe, 2015).

With the plethora of potential independent variables arrayed before us, some guidance on which variable is appropriate to employ would aid us in the development of a tourism demand regression model. Witt and Witt (1992) point out that the set of explanatory variables that influence international tourism demand varies significantly from one origin-destination pair to the another. This underpins the assumption that each tourism demand time series tends to have its own characteristic and there is no single standard measure of tourism flows that is accepted universally.

A theoretical framework for tourism demand.

According to economic theory, three sets of theories can be applied to the tourism demand industry: traditional consumer theory; international trade theory; and Lancaster's consumer demand theory 'Characteristic Approach' (Nosier, 2012). The majority of studies of tourism demand analysis fail to incorporate the theoretical basis and methodological tools fundamental in the construction of accurate and reliable models for explaining and predicting tourism phenomena.

2.1.1 Traditional consumer theory

Tourism represents a special form of economic demand directed towards consumption of specific types of services and commodities that include food, entertainment, accommodation and transportation among others (Schulmeister, 1979). Most studies about tourism demand are based on the traditional consumer behaviour theory which is regarded as the most appropriate modelling framework to estimate the international tourism flow among countries. In tourism literature, consumer theory is concerned with how a rational tourist would make consumption decisions. The aim of consumer theory is to demonstrate the decisions that individuals make about what and how much to consume are among the most important factors that shape the evolution of the overall economy. Therefore, analysing these decisions in terms of their underlying preferences is important. The demand for tourism in Egypt, Morocco, Tunisia and South Africa is mainly for vacation and entertainment, and, as a result, tourism expenditure consists primarily as a part of private and household consumption. The way a consumer allocates his or her expenditure (budget) among various goods and services in order to maximise utility can be explained by consumer theory. Let q be the vector of quantities of n finite number of goods and services, let p be the vector of the prices per unit of these goods and services, and the consumer's expenditure (budget) be x, with m(q) the utility function that aims to maximise consumer utility subject to budget constraint conditions could be written as:

$$max\, m(q)\; subject\ to \sum_{i=1}^{n} p_i q_i = x \qquad\qquad i = 1, \dots \dots, n$$

(2.1)

Solving the above maximisation problem represents a system of Marshallian demand functions as follows:

$$qi = g_i(x, p) \qquad i = 1, \dots \dots, n$$

(2.2)

Where, qi quantities demanded, to budget x and prices p is subject to the conventional budget constraint.

Now, by employing the dual approach to demand theory which is based upon the fact that consumer preferences can be represented in two forms (Krishna and Sonnenschein, 1990). One is a utility maximisation for a given cost and other is cost minimization to reach a certain level of utility (Syriopoulos, 1990). In this circumstance, minimising the expenditure required to reach a certain level of utility $m*$ is the consumer's core objective, at a given price P.

$$min \sum_{i=1}^{n} p_i q_i = x \qquad subject\ to\ m(q) = m^*$$

(2.3)

Solving the above minimization problem represents the Hicksian or compensated demand functions as follow:

$$q_i = h_i(m\ , p)$$

(2.4)

Therefore, the optimal choice depends not on the Marshallian demand function that represents income but prices and utility.

Following De Mello (2001) a simultaneous solution to the two problems namely, minimization of the cost and maximisation of the utility, can be defined as a cost function as below:

$$c(p, m) = \sum_{i=1}^{n} p_i h_i(p, m) = x$$

(2.5)

Solving the above equation for *m*, an indirect utility function can be derived as: $m = \psi(p,x)$, Where, $\psi(p,x)$ represents the maximum attainable utility function and given cost *x*, and the price *p*. An alternative definition can be written as:

$$\Psi(p, x) = {}^{max}_{\ q}[m(q); p\ q = x]$$

(2.6)

The function *c(p, m)* is the minimum cost of the attainable utility m at price *p* which is the cost function and can be given, alternatively by,

$$c\ (p,m) = {}^{min}_{\ q}[p\ q; m(q) = m^*]$$

(2.7)

which is the solution to the dual problem. Marshallian demand functions can be generated from the cost function, by using substitution as below:

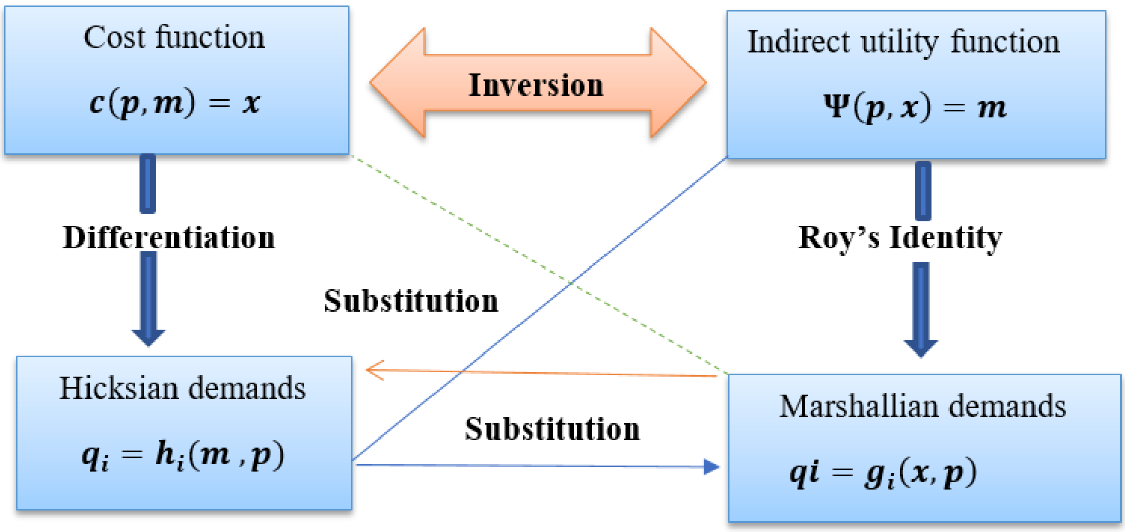


Figure 2.1 Demand, cost and indirect utility function

(reproduce from Deaton and Muellbauer (1980:P.41))(Deaton and Muellbauer, 1980)

> The important contribution of the duality concept in the theory of demand is that any function c(p, m) that satisfies certain properties can be regarded as a cost function that represents some underlying preference ordering; therefore, it is not necessary to be able to express m(q) explicitly. This convenience is of great importance for empirical work in particular, since, fairly easily specified c(p, m) and ψ(p, x) functions can be converted into demand functions by differentiation or use of 'Roy's identity'[12]

(Syriopoulos, 1990: p.161)

[12] This illustrates Marshallian demand function and indirect utility function association.

At this stage it is worth noting that a well-behaved Marshallian and Hicksian demand function should satisfy the following conditions:

i) Adding up or budget balancedness: The sum of the individual expenditures is equal to the total expenditure and can be represented as:

$$\sum_{i=1}^{n} p_i h_i(p,m) = \sum_{i=1}^{n} p_i g_i(p,x) = x \tag{2.8}$$

Demand must not exceed budget set; therefore, the total expenditure constraint ensures that the value of goods and services add up to the total budget. Expenditure is not identical to income, as Deaton (1975) stated, “an income constraint would not necessarily satisfy the adding up property”. However, empirical data are constructed in a way that generally guarantees that the assumption will be fulfilled.

ii) Homogeneity:

The Hicksian demand function is homogeneous of degree zero in prices. On the other hand, the Marshallian demand function is in expenditure and prices.

$$h_i(p,m) = h_i(\theta p, m) = g_i(p,x) = g_i(\theta p, \theta x) \tag{2.9}$$

Where the scalar $\theta > 0$. According to Preston (2006), in the Marshallian demand function, demand is determined by income and prices as budget set depends on these. Therefore, a proportional change in all expenditure and prices does not affect the purchased quantity because the consumer is not affected by the money illusion.

iii) Symmetry:

The cross-price derivatives of the Hicksian demand function are symmetric which can be represented by:

$$\frac{\partial h_i(p,m)}{\partial p_j} = \frac{\partial h_j(p,m)}{\partial p_i} \quad \text{Where,} \forall \text{ i} \neq \text{j}$$

(2.10)

This allows the compensated price derivatives matrix to certainly be symmetric. The symmetry can be viewed as a guarantee of consistency of consumer's choice. The complementarity and substitutability concepts are in line with the demand equation if using compensated demand since income effects are not symmetric (Preston, 2006).

iv) Negativity

The n-by-n matrix formed by the elements $\partial h_i / \partial p_j$ is negative semidefinite, that is for any n-vector $\boldsymbol{\xi}$ and quadratic form[13] it can be represented by:

$$\sum_i \sum_j \xi_i \xi_j \frac{\partial h_i}{\partial p_j} \leq 0$$

(2.11)

Deaton and Muellbauer (1980: p. 44)

This implies that, inter alia, compensated price increases lead to lower demand levels for the good or service involved. This condition refers to the "law of demand".

The first and second propositions are driven from the specification of a linear budget constraint, on the other hand the third and fourth propositions are driven from the requirement for consistent preferences. As Deaton (1975) explains:

[13] If $\boldsymbol{\xi}$ is proportional to P, the inequality becomes an equality and the quadratic form is zero.

> The validity of these four propositions, deduced from the theory, also guarantees, at least locally, the validity of the theory itself.[14]

Furthermore, in regard to the duality approach, Deaton and Muellbauer (1980: p. 50) emphasise that "the symmetry of the Slutsky substitution matrix is the fundamental inerrability condition of demand theory".

To sum up, utility maximisation leads to demand functions that add up, are homogeneous of degree zero and have symmetric, negative semidefinite compensated price responses; contrarily it leads to a consistent preference ordering.

Another pillar of the assumption is the separability of preferences theorem states that preferences within one bundle can be described independently of those in another one (Smeral and Weber, 2000). This means that a tourist will, firstly, allocate their total budget over some time periods. Secondly, they will separate the goods into leisure goods and other consumer goods. Finally, they will choose among domestic trips, international trips and other activities within the leisure goods bundle. Furthermore, Smeral and Weber (2000) point out that, the decision at each stage can be thought of as corresponding to a utility maximisation problem of its own.[15]

Marshallian consumer theory suggests that the main determinants of tourism demands are income, relative tourism prices in a particular destination and prices in the competitor's destination. There are some advantages with tourism demand equations that are driven by the consumer demand theory. Firstly, theoretical conditions such as adding up, symmetry and

[14] Deaton 1975: p. 13.
[15] Where income and price effects are implicated in empirical models.

homogeneity can be imposed on the estimated parameters, and that could lead to more efficient and parsimonious models. Secondly, consistency between each equation and the total expenditure can be obtained for the aggregated models. Furthermore, by imposing constraints across equations interdependence of related destinations can be tested (De Mello, 2002). Up until early 1990, tourism demand models relied entirely on a single equation to estimate individual countries[16], lacked an explicit foundation in consumer demand theory and had virtually no application to tourism demand as the system of equation models had arisen from consumer theory (Syriopoulos and Sinclair, 1993).[17] According to Eadington and Redman (1991) single equation estimation cannot analyse the interdependence of budget allocations for different consumer goods and services. In the context of tourism, a tourist would make his or her decision about whether to visit a particular destination after carefully taking into account a number of alternative destinations. The price of a destination can influence his or her decision to travel to an alternative destination. Since the single equation model lacks an explicit basis in consumer demand theory, it is unable to adequately model the influence of a change in tourism prices in a particular destination on the demand for alternative destinations. Furthermore, a single equation model cannot be employed to investigate the adding-up and symmetry hypothesis associated with existing demand theories (Li et al., 2004). The AIDS (almost ideal demand system) model can be employed to test key properties of consumer demand. This model has the benefit of an explicit basis in consumer expenditure theory and provides new information by modelling the changes in the budget share of expenditure among destinations unlike the single equation model. Although the original AIDS model assumes that budget share can be explained by prices and aggregate expenditure, and price and expenditure elasticities are the main focus in order to study tourism demand, O'Hagan and Harrison (1984), De Mello

[16] See, for example, reviews by Archer, 1976; Johnson and Ashworth, 1990; Sheldon, 1990.
[17] The exceptions are White (1982) and O'Hagan and Harrison (1984).

(2002), Durbarry and Sinclair (2003) and Syriopoulos and Sinclair (1993) employed the AIDS model. However, while the AIDS model has a strong theoretical underpinning for tourism demand estimation, and is admirable for testing economic theories, it is technically inflexible, since each estimation equation must include the same explanatory variables, functional form and lag structures for the equations to be estimated simultaneously (Lee, 2011). Furthermore, the AIDS model, or other systems of equation models that are based on consumer theory, are more appropriate for outbound tourism demand models that aim to allocate the expenditure of tourists from a specific origin country to many destinations. In sharp contrast, we are focusing on analysing inbound tourism (tourism from different countries of origin to a specific tourism destination), or export, which is more important for a developing African country's economy than import, which is outbound tourism.[18] Furthermore, the application of conventional consumer theory on tourism has a few drawbacks. Uniqueness and certain characteristics of a tourism destination's product are ignored by conventional consumer theory. Additionally, the quality of the tourism experience differentiation among destinations is also disregarded in spite of the fact that it is an important part of the tourism product (Papatheodorou, 2001).

According to Zhang and Jensen (2007), it is pragmatic to assume all tourists would treat all destinations as undifferentiated. Nevertheless, each tourism destination is unique, and their products are heterogeneous. The comparative advantage of tourism destination countries, and the role they play by actively looking for ways to attract inbound tourism flow, is ignored by the conventional demand model. Furthermore, the demand model is static and assumes all destinations are equal, and disregards their stages of development. However, over time, new

[18] Most of the studies in tourism demand literature also focus on inbound tourism.

tourist destination countries emerge, and previously popular destinations may lose attraction, so tourism in individual countries can be very dynamic.

To sum up, a Marshallian demand function shows the quantity of a good demanded depending on its price and overall income, and Hicksian demand shows the quantity of a good demanded depending on its price when all other prices and the level of utility to be attained are kept constant.

However, Seddighi and Theocharous (2002) point out that traditional models ignore measures of tourists' attitudes and perceptions about alternative destinations, and, consequently, traditional models are not sensitive to the vast number of factors that can change or influence consumer travel behaviour. Furthermore, Papatheodorou (2001) argued that traditional neoclassical models neglect the importance of the supply side entirely, which results in an identification problem in the empirical study. As a result, the real usefulness of traditional neoclassical analysis casts serious doubts as important determinants of tourism are neglected (Athiyaman, 1997). Therefore, neoclassical demand models have solid theoretical underpinnings but ignore many features of tourist flow. A framework that focuses not only on the demand side of tourism, but also has the flexibility to consider supply-side factors as well is necessary. The gravity model has the capacity to address the aforementioned shortcomings described in neoclassical demand model. With its basis in the physical sciences, the gravity model is designed to simultaneously handle both demand and supply sides of tourism flows. Lorde (2014) demonstrated the strong theoretical foundations of the gravity model. The gravity model's flexibility allows it to be augmented with additional variables grounded in the conceptual model of gravity (Lorde, 2014). Nevertheless, neoclassical demand theory is still the most popular to estimate tourism demand and cannot be ignored. As Crouch (1994) and

Lim (1994) argued, a tourism demand model that focuses only on demand-side factors had prevailed in the literature as the appropriate modelling framework to estimate the tourism demand, therefore we have also employed this model in our second empirical chapter.

2.1.2 International trade theory

The traditional theory of international trade emphasises that trade takes place between nations as a result of the differences in factor endowments and relative costs (Heckscher, 1919). In the context of tourism it can be conceptualised as a country endowed with attributes, such as a warm climate, sunny beaches, heritage and unique natural or man-made wonders, will export tourism services, and countries lacking those resource endowments will import tourism services (Divisekera, 2011). International trade theory and the international trade flow of goods and services have been studied predominantly by considering only supply-side factors (Zhang and Jensen, 2007). Relating the tourism demand model to the traditional theories, it is possible to explain international trade flows to a certain degree. Tourism literature generally employs demand-side factors to explain tourism flows. On the other hand, traditional trade theory, such as the comparative advantage, suggests international trade flows can be explained by the supply-side factors. In this regard, Zhang and Jensen (2005) argue that tourism flows are similar to trade flows but in the form of individuals travelling to get the goods and services from the tourism destination countries. Ricardo (1817) developed the most significant theories on trade that illustrate that international trade is largely driven by the differences in countries' resources. Eli Heckscher and Nobel laureate Bertil Ohlin developed a theory that highlights the relationship between the proportion in which different factors of production are available in different countries and the proportions in which they are used in producing different goods (Krugman et al., 2018). Ricardo and Heckscher-Ohlin's theory explains flows in terms of relative productive efficiency. Zhang and Jensen (2007) relate trade theories and their application to tourism. The main explanation for trade from Ricardo's theory on technology and productive efficiency related to tourism's price competition among other tourism destination countries; while Heckscher-Ohlin's theory on natural endowments (capital, labour and land) related to tourism's sun, sand, sea and cultural heritage. The absolute advantage theory of Adam Smith (1776) explains that a country has an absolute advantage in the production of a product when it is more efficient than any other country producing it. With regards to tourism, Burke and Resnick (1991) point out that some tourism destination countries have unique tourism resources that create monopoly positions, for example, Egypt's Pyramids, India's Taj Mahal and China's Great Wall.

In order to understand more fully and deeply the competitiveness of tourist destinations, it is important to consider more advanced components of competitive advantage on top of the basic components of comparative advantage. Porter (1990) presented a new comparative advantage theory that incorporates spatial differences to make effective use of the factor-based comparative advantage. The factor categories are human, physical, knowledge, capital and infrastructure resources. From the tourism perspective, it is reasonable to include historical and cultural resources and expand on the infrastructure resources to incorporate the tourism superstructure.

Furthermore, Nobel laureate economist Paul Krugman's new trade theories explain efficiency differences by increasing returns.[19] He stresses the role of neo-technology in enhancing the destination's efficiency. Thus the role of agglomeration or industry clusters in building long-run competitiveness is through enhancing the role of superior learning and infrastructural improvements that lead to improved technology.

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[19] Paul Krugman was awarded the Nobel Memorial Prize in 2008.

To summarise, international trade theories are mostly driven by supply-side factors, which are of great importance for tourism movement to reflect the unique attractions in the destination. Nonetheless, tourism a very complex industry with no traditional production functions, and tourism activities traverse a number of traditional economic sectors, which makes it unpractical to specify the supply-side accurately. Besides, demand-side factors are equally important for international tourism.

Tourism demand models that focus only on demand-side factors prevailed in the literature as the appropriate modelling framework to estimate international tourism demand (Crouch, 1994; Lim, 1997; Sinclair, 1998). The usefulness of international trade theory in tourism demand gives rise to doubts, as from a theoretical point of view tourism has traditionally been viewed as a demand- rather than supply-driven industry (Zhang and Jensen, 2007). Neoclassical trade theories, and the new trade theory, emphasise the role of a country's tourism related resources to explain tourist flows. However, these theories focused on the supply side are not able to completely explain the international tourism flow. To model inbound tourism flow, a framework with the flexibility to consider both supply-side and demand-side determinants is required. The theoretical framework, therefore, needs to go beyond the traditional economic determinants of income and prices.

2.1.3 Lancaster's consumer theory

Lancaster theorises that goods are consumed because of the characteristics they possess and they are the objects of consumer utility, with the:

Number of characteristic ≥ or ≤ than the number of goods available to the consumer

Hence, the characteristics possessed by a good or a combination of goods are objective and the same for all the consumer. On the contrary, utility driven by the consumer is subjective and depends on his or her preference function. Therefore, given the units of measurement, any good contains the same amount of any characteristic for all consumers, but each consumer may derive a different level of utility from consuming those characteristics (Lancaster, 1966a; 1971).

> The chief technical novelty lies in breaking away from the traditional approach that goods are the direct objects of utility and instead supposing that it is the properties or characteristics of the goods from which utility is derived.
>
> Lancaster (1966a: p.133)

Furthermore, Lancaster (1966a) explains that the theory was premised on the assumptions below:

1. The good per se does not give utility to the consumer; it possesses characteristics, and these characteristics give rise to utility.
2. In general, a good will possess more than one characteristic, and many characteristics will be shared by more than one good.
3. Goods in combination may possess characteristics different from those pertaining to the good separately.[20]

Figure 2 illustrates The Lancaster model where *A*, *B* and *C* are three goods and *X* and *Y* are the choices set of two characteristics. As Lancaster (1966b) describes:

[20] See Lancaster (1966a : p.134),

Each good gives rise to a vector of the two characteristics, and the consumption technology consists of the activities consuming each of the goods separately and consuming them in linear combination.[21]

The imposition of the budgetary constraint on goods results in characteristic vectors that confront consumers (Handler, 1975). Given the income-price situation, a consumer may obtain points *d, e* or *f* by spending his total income on *A*, *B* or *C* respectively. The points inside and on the triangle *def* represent the bundles of characteristics which are attainable by a linear combination of A_1 B_1 and *C.* Therefore, an efficient consumer will choose combinations on def_1 which is the consumer efficiency frontier.

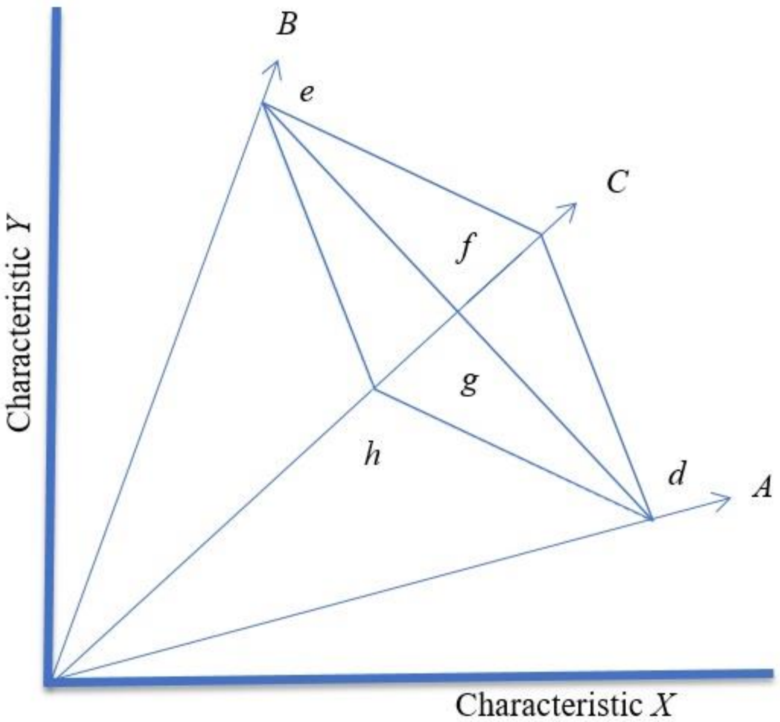

Figure 2.2. The Lancaster model reproduced from Hendler (1975, p.194)

[21] See Lancaster (1966b: p.16).

To sum up, the theory of consumer behaviour is more applicable for explaining tourism demand compared to Lancaster's theory of consumer demand since the utility maximisation assumptions of Lancaster's theory depends on choosing a basket of goods that produces the optimum bundle of characteristics. On the other hand, consumer behaviour analyses the relationship between income and price on demand for goods and services that impact consumers utility maximisation.

Tourism uncertainty has been examined within the framework of Lancaster's theory by Gravelle and Rees (2004) and Giacomelli (2006). Consumer's choice of journey destination, when analysed by Rugg (1973), presumed that destinations' characteristics per day of stay are known in advance due to accessibility of knowledge, hence tourists are able to maximise their utility. In sharp contrast, it can be argued that tourists can evaluate their utility of tourism products after consumption, so tourists can get information by real experience. Hence, tourism choice can be categorised as an uncertain process. Similarly, Giacomelli (2006) points out that tourism uncertainty can be greater if all the information about a specific destination is not obtainable and the probability of choosing this destination is small. Moreover, lack of information, political instability and natural disasters in the destination are a significant basis for uncertainty. Consequently, tourism choice will be affected by the uncertainty of the destinations.

The expected utility theory complements Lancaster's analytical framework in a useful way. In this study, we empirically test what effect income, price, wealth effect, financial factors and country risk have on inbound tourism. This study is not aimed at capturing and analysing the impact of a tourism destination's characteristics on international tourism demand using Lancaster's (1966) characteristics theory, as earlier studies were conducted (see, for example, Rugg, 1973; Morley, 1992; Papatheodorou, 2001; Seddighi and Theocharous, 2002; Tussyadiah et al., 2006).

Moreover, although in Lancaster's characteristics theory consumers derive utility from the characteristics of goods and services rather than from the goods themselves which does capture several important nuances which the neoclassical model is not able to capture, the approach also has several limitations. As Lorde (2014) points out, the model is difficult to empirically apply and interpret. The model does not deliver a tourism demand function directly exploitable in empirical applications because it tends to be in an unwieldy non-linear form (Stabler, 2013). Similar to most tourism demand models, it implicitly assumes the tourism supply curve is perfectly elastic. Thus, it does not give appropriate attention to the tourism supply.

2.1.4 Gravity in tourism

Gravity was originally discovered by Isaac Newton in his law of universal gravitation in 1678. Newton's law of universal gravitation, which states that the force between two physical objects increases with their mass and reduces with their distance, finds applicability in economics in the form of the gravity model of trade. Although this empirical law is well documented and reproduced widely in econometrics literature, the question exists if it still holds in today's world.

The use of a gravity model was pioneered by Ravenstein (1885) to study migration flow. The first Nobel laureate in economics, Jan Tinbergen (1962), introduced the gravity model to explain international flows in his *Shaping the World Economy*. Tinbergen (1962) linked politics and diplomacy with international trade by including colonial ties in a gravity type model. The gravity equation is now considered the empirical workhorse for studying trade patterns (Head and Mayer, 2014). Bergeijk and Brakman (2010) stated that typically 70-80% of the variance in bilateral trade flows can be explained by the gravity model.

The gravity equation to describe trade flows first appeared in the empirical literature without much serious attempt to justify it theoretically (Deardorff, 1998). Although a significant number of papers employ gravity equations as an empirical model in order to model tourism demand, the need for a theoretical background remains. Sheldon and Var (1985) argue that the gravity model predicts that the tourism flows from country *i* to country *j* are identical to those from country *j* to country *i*, which is unusual in the case of tourism flows. Smith and Brown (1981) realised this issue of directional bias in travel and added a component in the traditional model called the 'vacation wind'. Anderson (1979) laid down a theoretical foundation for the gravity equation based on constant elasticity of substitution, which has since been recognised as the first formal conditional general equilibrium model of the gravity equation for trade. His model is based upon three assumptions[22] but price terms were absent. Subsequently, Bergstrand (1985) proposed another condition that included price terms. Bergstrand (1985) argues that gravity equations have enormous empirical success but theoretical justification is still needed to underpin them strongly.

> Despite the model's consistently high statistical explanatory power, its use for predictive purposes has been inhibited owing to an absence of strong theoretical foundations.
>
> (Bergstrand, 1985, p. 474)

Morley et al. (2014) point out that trade involves the flow of merchandise whereas tourism flow is a transnational movement of humans. For that reason, the mechanism and pattern of international flows between tourism and trade would not be the same. They further mentioned

[22] First, assume each country specialises completely in the production of its own good, and there is one good for each country produced exogenously. Second, assume identical, homothetic preferences and finally assume a frictionless world with zero transport costs, tariffs, and distribution costs.

the lack of theoretical underpinning to interpret the estimated parameters in the model for bilateral tourism flows. Consequently, their use for the policy is badly hampered by their unidentified properties (Morley et al., 2014).

Economists recognised the fact that international trade can be supported by Heckscher-Ohlin models[23], models on differences in technology across countries and models that present returns and product differentiation (Deardorff, 1998).

Most importantly, however, Head and Mayer (2014) propose a toolkit approach rather than sole reliance on any specific method. Sophisticated formulations of spatial dependency can be employed as an alternative to gravity specification (Marrocu and Paci, 2013). They also estimated linear gravity models as this is the usual starting point for analysing tourism flow. In order to underpin the gravity model for tourism, Morley et al. (2014) provided a theoretical underpinning for the gravity equation to tourism. They illustrated that international tourism flows in line with the theory of trade and is derived from consumer utility theory. They made certain assumptions using the augmented version of the traditional economic demand model with the role of the structural factors in tourism to evaluate. Huang et al. (2012) found that explanatory variables in contemporary gravity models were influenced by the consumer economics model.

The specification of a tourism demand model in empirical studies is based on two primary theoretical frameworks, namely the microeconomics-based demand model and the gravity model of trade (Xu et al., 2019). Theoretically, on the aggregate level, tourism demand was driven on the basis of both the gravity and microeconomics-based tourism demand models (Morley et al., 2014). However, Xu et al. (2019) argue that a general specification of the gravity

[23] See for example Bergstrand (1989, 1990), Deardorff (1988).

model for international tourism should include typical factors that consist of both theories while conducting empirical studies.

In order to systematically investigate the determinants of international tourism flows to Egypt, Morocco, Tunisia and South Africa, we need to consider whether the theoretical model is valid for generally describing tourism flows, and, in the context of an extended gravity model, what the specific factors or forces are that drive the tourism pattern to these countries. In this regard, Prideaux (2005) demonstrated a framework for tourism flows, arguing that in the era of globalisation, the political and economic situation and the relationship between tourism origin and the destination country is significantly important.

In the beginning, the traditional economic demand model concentrated on demand-side factors such as income and price. However, Marrocu and Paci (2013) argue that tourism demand models, based on consumer economics models, are simply correct for supply-side factors with a specific constant for each tourism origin and destination pair.

We focus on the estimation and interpretation of the gravity equation for tourism. This essentially involves a rigorous consideration of the theoretical underpinnings, as naïve estimation methods produce biased and misinterpreted results.

One of the most successful empirical models in economics is the gravity model (Anderson, 2011). Incorporating deeper theoretical foundations of the gravity model in trade has led to the reemerging of tourism demand literature. The gravity model has been employed for modelling and analysing international tourism demand to identify the main determinants and factors by characterising tourism flow as a trade in service. In tourism demand literature, the gravity model has been successful in explaining international tourist flow and its determinants. As Morley et al. (2014) stated: “fuelled by the success of international trade exercises, the gravity equation has reemerged within the tourism demand literature during the last decade".[24] Kimura and Lee (2006) demonstrated that trade in service is better predicted by gravity equations than the trade in goods. Keum (2010) illustrates the patterns of international tourism flow and investigates the validity of the gravity equation to explain tourism flows. The empirical evidence supports the gravity model for applicability and robustness for the flow of trade and tourism (Morley et al., 2014). Khadaroo and Seetanah (2008) and Morley et al. (2014) provided a theoretical foundation for the gravity equation for tourism.

Witt and Witt (1995) who explains the gravity model as:

> The degree of interaction between two geographic areas varies directly with the degrees of concentration of persons in the two areas and inversely with the distance separating them
>
> (Witt and Witt, 1995: p.459)

The distance here can be physical, cultural, psychological, language, etc. Despite the success of the gravity model, it was not mentioned explicitly in the tourism demand model by Lim (1997) or Crouch (1995). On the contrary, Wilson (1967) argues that the validity of gravity models depends on whether a homogeneous person or trip purpose category is being considered or not. Moreover, if the area of interest expanded to trips made by people with differing incomes, then more sophisticated travel demand theory would be needed to underpin the point. Nevertheless, he points out that gravity models can still provide a partial explanation and starting point for more complex models. On the other hand, gravity models are by and large accepted to explain bilateral trade flows as long as the theoretical background is provided. In that circumstance, model specifications are stable over time and samples. Although Anderson and Wincoop (2004) developed a gravity model that provides consistent and efficient estimates

[24] See Morley et al. (2014: p.2).

while considering bilateral and multilateral trade resistance, whether a gravity model is appropriate in the tourism context is open to discussion (Morley et al., 2014).

Considering the gravity model, Eilat and Einav (2004) examined the determinants of bilateral tourism movement across time. They found that price elasticity, tourism destination risk, common border, common language and distance are important determinants of tourism. Gil-Pareja et al. (2007) study the role of embassies and sharing a common currency. Santana et al. (2010, 2011) and De Vita (2014) analyse the effect of different exchange rate regimes on tourism flow. Fourie and Santana-Gallego (2011) explored mega-events and tourism. Fourie and Santana-Gallego (2013) analyse the effect of cultural affinity on the ethnic reunion. Khadaroo and Seetanah (2008) study the role of transport infrastructure on international tourism movement. Most recently Okafor et al. (2018) examined the use of a common unofficial language and tourism flows. Ghlia et al. (2019) determined the effect of institutional quality and political risk on tourism.

Nobel laureate Krugman (1997) demonstrate gravity equations as illustrations of 'Social Physics' which are the relatively few law-like empirical regularities that characterise social interactions.

Gravity models have been used widely in the empirical study, predominantly in the arena of international trade. The gravity model of international trade is built upon Newton's law of universal gravitation in the following equation form:

$$F = G\frac{m_1 m_2}{r^2}$$

Where F represents the gravitational force between two masses, being directly proportional to m_1 (first mass) and m_2 (second mass), and negatively proportional to the square of the distance between the r^2(masses), and G represents the gravitational constant.

An analogy for international trade is that the amount of trade between the two countries is directly proportional to their economic sizes and inversely proportional to the distance between them.

Following Morley et al. (2014), the basic form of the gravity equation is as follows:

$$T_{ij} = G \frac{(GDP_i)^{\alpha}(GDP_j)^{\beta}}{(Dist_{ij})^{\lambda}} \varepsilon_{ij}$$

Where T_{ij} indicates tourism flow from origin *i* to destination country j. GDP_i and GDP_j refers to the gross domestic product of the countries origin and destination. $Dist_{ij}$ is the geographic distance between countries, and, G, α, β and λ are parameters to be estimated and ε_{ij} is the error term.

The key fundamental feature of tourism data that mirrors the physical gravity equation is that tourism outflow rises proportionately with the economic size of the destination, and tourism inflow rises in proportion to the size of the tourism origin country's economy. Tourism continues to be a leading catalyst for economic growth. It is important to identify and assess the relevant determinants of tourism as these have significant implications for decision-makers, economic operators and policy authorities alike. However, the reliability of the estimation of the gravity model is debatable given the deficiency of a strong underpinning, which leads to an ad hoc choice of explanatory variables (Che, 2004).

This study examines the effect on tourism of the market value of the economy from financial theory and global financial assets in the context of the gravity model, which has become a standard tool for analysing trade flows (Head and Mayer, 2014). The gravity model is often augmented to examine the nature of the relationship between countries, such as contiguity, common language and the presence of preferential relations (Ghalia et al., 2019). The current study employs the gravity model as, conceptually and theoretically, it provides a framework for modelling international tourism flows and examining the distance puzzle in tourism. We expect the gravity model will demonstrate and explain inbound tourism flow in all our destination countries.

In order to model inbound tourism flow to a destination country, a framework with the flexibility to consider both supply-side and demand-side is necessary. A framework that goes beyond the traditional economic determinants of income and prices is needed. The gravity model has the capacity to address the aforementioned and the shortcomings described previously. With a basis in the physical sciences, the gravity model is designed to simultaneously handle both the supply and demand sides of tourism flows. The strong theoretical foundations of the gravity model have been demonstrated by Lorde (2014). The gravity model's flexibility allows it to be augmented with additional variables grounded in the conceptual model of gravity (Lorde, 2014). Therefore, the gravity model has been employed in this study. Further, as neoclassical demand theory is still the most popular to estimate tourism demand and cannot be ignored, as Crouch (1994), Lim (1994) and Peng et al. (2014) point out a tourism demand model that focuses only on demand-side factors has prevailed in the literature as the appropriate modelling framework to estimate the tourism demand; hence we have employed this model in our second empirical chapter.

Tourism supply and identification problem

Supply and demand interaction is the most fundamental concept of economics. Hence, it may not be appropriate to estimate a tourism demand model without taking the supply side into consideration, because the supply side is more likely to affect the prices of tourism. Therefore, demand and supply should theoretically be estimated simultaneously to avoid potential bias in the estimates of demand elasticities due to the identification problem. In order to illustrate the identification problem, Working (1927) originally analysed a case of the supply and demand curve for some goods. According to Syriopoulos (1990), in a system of equations whether any specific equation has a unique mathematical representation within this system or not is the question associated with the identification problem. If a model is not formulated appropriately then estimation can produce biased parameters. Economic theory and prior information can be used in the model to impose restrictions on the set of simultaneous equations. In this regard Kennedy (2003) illustrates numerous ways restrictions can be imposed (e.g. the use of extraneous estimates of parameters, knowledge of exact relationships among parameters, prior knowledge of relative variances of disturbance or no correlation between disturbance in different equations, and so on).[25]

Stabler et al. (2009) and Zhou et al. (2007) employed tourism demand models by taking the supply of tourism into account. However, a significant number of studies in consumer demand literature ignore the identification problem. Tourism supply is a complex phenomenon because of both the nature of the product and the process of delivery (Stabler et al., 2009). Therefore, it is complicated to provide a precise definition of tourism supply since the tourism sector consists of various products and services. Phlips (1983) stated, "Indeed it is entirely unpractical to specify supply equation for several commodities, the more as solid theoretical underpinning as well as appropriate data are often lacking on the supply side."[26]

Subsequently, Eilat and Einav (2004) point out that, there could be reasons that make the supply side infinitely elastic. In the tourism sector, the most important factors of production are non-substitutable or non-rival, so uniqueness is an important element. To illustrate, Egypt's Pyramids, India's Taj Mahal and China's Great Wall are good examples of non-substitutable good as they are unique. Moreover, the weather could also be counted as a non-rival tourist

[25] See Kennedy (2003: p.183).
[26] See Phlips (1983: p.95).

product, because tourists can enjoy good weather without wasting this resource for others. Besides, the quality of the tourism experience differentiation among destinations also has an important role in the tourism product. Consequently, these factors determine the level of demand, but their supply does not respond to prices. Furthermore, both non-tourist goods and services are consumed by tourists, which causes supply of these commodities to be elastic with respect to the tourism sector. This therefore makes tourism prices impossible to separate from the general price level of the destination country.

In light of the insight offered by the earlier discussion, it is noteworthy that in general identification problems have been ignored in the studies of consumer demand, and particularly in tourism demand studies, and only the tourism demand function has been estimated. Nonetheless, a reasonable and valuable result is often delivered by the empirical studies of consumer demand. In this regard, Phlips (1983) argued that the appropriate econometric applications in the arena have indicated that the gain to be expected from empirical work on the identification problem area is likely to be small. It appears that demand is key in the tourism market and supply adjusts to the demand levels. As a result, estimation of only the demand for tourism is justifiable and can produce unbiased estimates because the identification problem is not held. In this study, it is assumed that the supply side of tourism in Egypt, Morocco, Tunisia and South Africa is elastic.

Factors determining inbound tourism flow

2.1.5 The impact of MVECON and global financial assets on inbound tourism flow

Theoretical perspective

Tourism demand based on consumer theory argues that the pivotal factors shaping a tourist's budget line are the income of the consumer and the price of the tourism product or service (Song et al., 2012). The majority of past studies on tourism agree that income is the single most important factor for inbound tourism flow (e.g. Oliver 1971; Bechdolt, 1973; Jud and Joseph, 1974; Bond, 1978; Gunadhi and Boey, 1986; Crouch, 1992, 1994, 1996; Syriopoulos, 1995; Lim 1997, 1999; Brons et al., 2002; Saayman and Saayman, 2008; Song et al., 2010; Peng et al., 2014). However, Sinclair and Stabler (1997) point out that measuring an income proxy is tricky and puzzling. Typically, international tourism involves large expenditure and is influenced not only by current annual income but also by tourists' expected future income. However, most of the previous studies focusing on fundamentals of inbound tourism flow have had relied on current year's income (e.g. proxies such as GDP or GDP per capita) to measure income and ignored changes in tourist's expectations of future income. As Lee (2011) argues the assumption about employing current income variables reflected the behaviour of only those tourists who were not forward looking in making travel decisions. Therefore, the major use of the current year's income variable in tourism demand may not be empirically appropriate particularly for the estimation of international tourism demand. Moreover, although GDP is associated with the market value of a country's income apparatus or productivity, it can be argued that it is not a perfect proxy in the sense that it is a flow concept, Furthermore, GDP is a flow variable gross of depreciation and provisions for loss, and does not make a distinction between production costs and the value of output. On the other hand, the market value of the economy from financial theory incorporates the effects of production costs, output value, depreciation and expected losses, hence, most importantly it is stock[27] variable and forward looking and incorporates expected future income (Clark and Kassimatis, 2015). In a similar vein, Smeral (1988) stated that:

> The main tenets of macroeconomic consumption theory provide the basis for a simple model to analyse the relationship of income, expectations, total consumption and travel demand. In the long run, total consumption will depend on that part of income on which the individual can rely on a regular basis. However, in the short run, total consumption will also depend on the future economic expectations of the individual.

(Smeral, 1988: p.38)

In contrast to the traditional current income hypothesis, Ando and Modigliani (1963) put forward the life cycle hypothesis, and Friedman (1957) developed the permanent income hypothesis that suggests consumption depends largely on expected rather than current earnings. Lee (2011) provided comprehensive evidence that the permanent income variable, based on the permanent income-life cycle hypothesis, was superior to the conventional income variable in a tourism demand model.

The economic theories that can be applied to tourism demand are consumer behaviour theory and Lancaster's theory of consumer behaviour. Lancaster's characteristics theory allows us to overcome the limitations of neoclassical theory by facilitating the understanding of the dimensions function of use linked to consumer behaviour (Ferri, 2015). According to the theory

[27] A stock is a quantity that is measurable at a specific point of time, e.g., 9 a.m., Monday, 3 February 2019. Capital is a stock variable of how much a country owns on a specific date (say, 3 February 2019). Like a balance sheet, stock references a specific date on which it shows stock position. Therefore, a stock has no time dimension, but a flow has time dimension.

of Lancaster, the consumer of tourism considers characteristics essential for him or her first and then decides on the destination that would be able to provide the most desired features possible (Van Der Borg, 2009).

The theory of consumer behaviour is, therefore, more applicable to illustrate tourism demand than Lancaster's theory of consumer demand. The consumer behaviour theory evaluates the relationship between income and price on demand for goods and services which impacts how consumers can maximise their utility. Meanwhile, assumptions of Lancaster's theory based on maximising utility depends on choosing a basket of goods that generates the optimum bundle of characteristics.

Empirical perspective

Empirical models of tourism demand borrow heavily from consumer theory (Varian, 1992). The empirical evidence suggests that consumer decision-making does not necessarily always accord with the axioms of consumer choice indicating that assumptions regarding consumer decision-making might need adjustment. As Simon (1957) points out, consumers may make a decision that provides them with satisfactory, rather than maximised utility. In tourism demand studies the explanatory variables are subject to different definitions and measurement criteria. As mentioned earlier, income is usually measured by GDP or GDP per capita, however in the quest to find a better proxy for consumer income Oliver (1971) and Bechdolt (1973) employed total personal income; Jud and Joseph (1974), gross national product; Bond (1978), permanent income; Gunadhi and Boey (1986), per capita national income; Syriopoulos (1995), per capita real disposable income; Papadopoulos and Witt (1985) and Tremblay (1989), total national income; and Song et al. (2003) presented an income variable using the tourism origin country's current real private consumption expenditure per capita. The real disposal income can be seen as an appropriate measure because tourism is considered as a final good or services. Whether total or per capita income is more applicable hinges on the equation specification and restriction imposed (Mello, 2001).

According to Smeral (2014) tourism income elasticities can differ across the business cycle due to loss aversion, in addition to liquidity constraints, precautionary savings, and increases in indebtedness of households due to debt modification. Nevertheless, business cycles are common in modern economics with regular growth fluctuation and shifting from stages of expansion and recession in economic activity (Krugman, 2009). These fluctuations can have a significant impact on economies. For example, the global financial crisis of 2008 and the COVID-19 pandemic have had a devastating effect on tourism flow, thus tourism flow cycles can be synchronised with business cycles.

In the tourism demand model, attempts have been made to employ a permanent income index compiled from the geometric average of past income. However, Lee (2005) pointed out that the quantitative measurement of a permanent income index employs weighting factors in the construction of the permanent income index which appears to be somewhat arbitrary and does not necessarily indicate any economic or statistical justification.

Song and Wong (2003) employed GDP instead of personal disposable income to represent the effect of income because tourist arrivals data contains a relatively large proportion of business travellers. As Song and Witt (2000) point out, if the research focuses on business tourism demand then a more general income variable, such as GDP, should be used. However, demand for tourism destinations such as Egypt, Morocco and Tunisia is predominantly from private households, and business travellers comprise only a small proportion of total tourism flow.

In contrast to other tourism studies, Gonzalez and Moral (1995) focused on examining the effect of economic determinants and the effect of an unobservable variable. They employed an industrial production index as a measure for income but found this statistically insignificant in the estimation. This could be partly explained by the problem of model specification bias because disposable income was not used as a measure for income. Moreover, it is important to consider whether a country is more of a service provider or actual goods producer in order to capture the effect of income. Since a service economy is where the primary economic activity is the provision of services rather than the production of goods, it is necessary to distinguish between them.

As mentioned earlier, the tourism demand model in empirical studies is based on two primary theoretical frameworks, namely the microeconomics-based demand model and the gravity model of trade (Xu et al., 2019). In this regard, Morley et al. (2014) stated that on the aggregate level tourism demand was driven based on both gravity and the microeconomics-based tourism demand model. Nevertheless, Xu et al. (2019) argue that a general specification of the gravity model for international tourism should include typical factors that consist of both theories while conducting empirical studies. The income of both tourism origin and destination countries and distance between them should be included in the model.

Demand for international tourism can be influenced by the wealth effect from financial assets and real estate. The rationale for this argument, according to Kim et al. (2012), is that "although movements in real discretionary income will undoubtedly increase international tourism demand, demand may also shift based on adjustments in adaptive expectations for future earnings or total wealth regardless of whether the potential gain is actually realized".

Therefore economic theories predict that consumption depends largely on the expectation of future earnings rather than current earnings (Fereidouni et al. 2017). Prideaux (2005) illustrated the framework for tourism flows, pointing out that in the era of globalisation, the political and economic situation and the relationship between the tourism origin and destination country is significantly important.

Thus to summarise, the existing research on the inbound tourism demand flow shares an implicit assumption that the demand is a function of real disposable income. Fundamentally, international tourism is the consumption of a luxury good rather than a normal good (Lim, 1997). International tourism involves committing large expenditure on non-necessity goods, like airfare and hotels, so depends on the discretionary income of consumers (Crouch, 1992). Therefore, whether the predominant use of current year's income to measure the income, is appropriate, ultimately remains a question that needs to be explained.

2.1.6 The effects of financial risk, financial assets and financial development on influencing tourism flow

Theoretical perspective

Consumer theory on international tourism demand often shares the implicit assumption that demand is a function of real disposable income (Park et al., 2011). According to Mayer (1972), the income theory of Friedman (1957) and Ando and Modigliani (1963) is 'wealth theory' that argues about expected income. In wealth theory, wealth and expected earnings, as well as current earnings, are entered into the total resources available to support current and future consumption. The contemporaneous income alone is not sufficient to explain consumers' spending behaviours. As Shea (1995) points out, if consumer spending is not guided by extreme myopia and liquidity constrains then at various stages of the consumers' life the distribution of wealth consumption should depend on current income and expected future income. Consequently, the potential demand for international tourism will shift the aggregate consumption, and demand is also subject to the changes in expectations on future earnings.

Empirical perspective

Since Friedman's (1957) permanent income hypothesis and Ando and Modigliani's (1963) life cycle hypothesis theories on consumption have guided the expectations on future earnings of aggregate consumer demand, financial and housing assets have been employed to measure the wealth effect, and this has been validated empirically to some extent (Case et al., 2005). However, Attanasio et al. (2009) reported mixed results. Thus, the relationship between consumption and unrealised wealth is still under examination. Park (2006) points out that the influence of the wealth effect on the tendency of a consumer may also be different for various wealth stages and products. Starr-Mcluer (1988) reported that only those who own a considerable amount of equity investments were affected by the movements in capital asset prices. Moreover, Poterba (2000) found that the consumption affected by a gain in stock market wealth is for luxury goods or products.

It is broadly observed that stock prices are linked with national consumption (Case et al., 2005). With the objective of emphasising the significance of asset wealth in tourism demand, Lee (2011) examined the role of asset wealth, such as stock and housing wealth. Kim et al. (2012) illustrated that wealth from financial assets could be an important factor and used the stock market index as a proxy for financial assets to determine tourism flow.

Financial risk is an important factor that can have an impact on tourism demand, financial risk rating and provide a means of assessing a country's ability to finance official, commercial and trade debt obligations. The financial risk rating can serve as a measure for a systemic crisis in the private sector in the event of a complete breakdown in public confidence (Ramady, 2014).

Financial risk is a factor that can influence inbound tourism flow. Financial risk takes into account currency and financial crises which can significantly affect the economy. There are consequences of devaluation on relative prices, incomes and composition output and consumption (Clark, 2002). If there is devaluation there are winners and losers. Devaluation not only affects the current year's income but affects the following year's income as well.

The money supply cycle in the tourism origin country can affect tourism demand cycles in the destination country (Ridderstaat and Croes, 2017). They illustrate that money supply, which can be referred to as the quantity of money available in an economy at a given point of time, could have a relationship with economic growth, consumer spending and, ultimately, tourism demand. Ridderstaat and Croes (2017) found that money supply cycles in Canada, the United Kingdom and the United States affect tourism demand cycles for Aruba and Barbados. Money supply data are generally more easily available than business cycle data (GDP) and have the potential to influence the tourism demand cycle. In their famous paper, Friedman and Schwart (1963) illustrated that the business cycle is linked to developments in the money supply and financial development related to the performance and long-run economic growth of a country. (Schumpeter 1934; Mckinnon 1973; Shaw 1973; Shahbaz et al. 2017). Additionally, Ridderstaat and Croes (2017) established a link between money supply and tourism demand cycles. Certainly, global tourism was severely affected by the financial crisis of 2008 (Papatheodorou et al., 2010). Basarir et al. (2018) investigate the bidirectional relationship between tourism and financial development. They argue that tourism might contribute to financial development and financial development may positively contribute to tourism. They have also pointed out that a tourism environment that has a positive climate for investment is more likely to be financed by foreign capital. Therefore, tourism can develop because of investment from abroad. According to the pecking order theory, if the environmental conditions are favourable for the growth of firms, the firms are likely to use more equity than debt to fund their growth, and well-performing firms in terms of profitability are like to use less leverage (Barton and Gordon, 1987; Chen, 2010). These business conditions will attract international and domestic investors, which will lead to the development of financial markets in the economy. On the other hand, in the literature the contribution of financial development to income has been studied extensively.

Basarir and Cakir (2015) investigated the causal relationship between tourism and financial development, energy consumption and carbon emissions. They found a causal relationship between tourist arrival and financial development. However, Katircioglu (2009) did not find a relationship between tourism and economic growth in the long term. Some studies considered the indirect links between tourism and financial sectors (e.g. Ohlan, 2017; De Vita and Kyaw, 2016; Shahbaz et al., 2017, Basarir and Cakir, 2015) but none of these papers focused on the direct links between tourism growth and financial development.

In a related study, Zhang and Jensen (2007) illustrated that multinational tour operators and hotel chains have led over others, with regard to reputation, branding and product recognition, in the case of attracting tourists to the countries they invest in. The influence of the financial sector on the tourism sector can be considered by the supply-leading hypothesis that states that change in financial markets will lead to change in the tourism sector. This contribution can be attributed to the pecking order theory: better financial and market conditions will attract tourism entrepreneurship because firms will be able to use more capital instead of being forced to use leveraging (Chen, 2010). Therefore, a properly functioning system will lead to investment in the tourism sector and attract foreign investment and tourist visits for business purposes. Consequently, financial development might contribute to tourism growth.

As it stands, the empirical literature on the relationship between financial factors and inbound tourism flow is not conclusive. In light of the above findings, it can be summarised that, despite the widely-held belief that financial risk, financial development and financial wealth have a role to play in the inbound tourism flow, empirical evidence does not collectively support such a view. Therefore, as yet, little is known concerning how and why financial factors on tourism demand vary across countries in the literature so there is a need to consider the roles of financial factors. Besides, considering financial factors would permit the construction of a more comprehensive understanding of tourism determinants of financial factors.

2.1.7 The impact of country risk rating in determining tourism flow

Theoretical prospect

The expected utility theory introduced by Gravelle and Rees (2004) is critically important if the characteristics provided by destination are uncertain. Giacomelli (2006) adopted this theory of tourism and defined tourism risk as "the whole factors making individuals uncertain about the possibility of enjoying a good tourism experience".[28] The perception of a destination's dangers can increase if not enough information about the destination is available. Thus, the expected utility theory complements Lancaster's analytical framework in a useful way. The uncertainty analysis presents tourism choice in a more realistic way and concentrates on new

[28] See Giacomelli (2006: p.31)

tourism determinants. It also offers useful strategies embraced by tourists to minimise destination’s risk.

Tourism demand can be analysed from a different perspective. Regardless of which characterisation is adopted, tourism analysis remains complex. Tourism demand involves heterogeneous goods and services, on the supply side there are many different industries, production processes and cost structures, and, on the demand side, the consideration of a diversity of determinants influencing tourists’ behaviour. Besides, as a result of the unavoidable dislocation process that tourism undertakes to consume the goods and services of their choice, tourism demand is much more sensitive to non-economic influences, such as political instability, natural disaster and other factors, than the majority of other demand behaviour (De Mello, 2001).

Empirical perspective

Country risk has been anecdotally accepted as a determining factor for inbound tourism flow. An empirical study by Sequeira and Nunes (2008) investigated the relationship between tourism-specialising countries and country risk. Nevertheless, their study was restricted to aggregate international level analysis and ignored how individual country’s dynamics differ from other countries. Hence, individual country-by-country analysis is necessary to improve the resilience of these countries’ tourism policies. Hoti and McAleer (2004) defined country risk as being driven by several country-specific factors and events. There are three fundamental components of country risk, i.e., economic, financial and political risk. Country risk literature argues that all three components are interdependent and their interactions determine the risk associated with a particular country. There is a linkage between a country’s economic policies and their impact on quantifiable economic variables such as inflation risk, exchange rate risk, interest rate risk and investment risk that international investors face. It is important to attempt to forecast as many of these risks as possible to understand their causes. Measuring precise country risk can be a problematical endeavour given the socio-political content that can influence other parameters. Political risk can arise from war, terrorism and military coups (Ramady, 2014).

According to country risk theory, there is an association between country risk ratings and the cost of borrowing. Countries that have a good risk rating, ceteris paribus, can borrow money cheaply (at a lower rate of interest) compared to country's with a poor risk rating, ceteris paribus, who can borrow money only at a higher rate of interest. The international financial market is essential for countries that want to raise money by selling government bonds, or to attract foreign investment. When a country issues a bond or coupon with a face value denominated in their own currency, then it is more likely they will be able to pay without a default as they can always print the money regardless of what that money is actually worth or the purchasing power it would have. However, it is not the same when a country issues bonds with a face value or coupon denominated in foreign currency (e.g. U.S Dollar, Euro) not in their own currency. In theory, the only way a country can get foreign currency is by exporting goods or services. Therefore, when a country wants to pay for its foreign currency debt obligation they will have to earn it by exporting goods or services. In a perfect world, the government would pay all their bills using taxes and investments; however, a country can default on its foreign debt. Although in economic terms it saves them money which would have been paid in debt repayment, the country would lose credibility in the international capital market. Sometimes a default on foreign debt can enable a country to recover and consequently repay its debt. Although a county can repay its debt it might not repair its reputation in the international capital market as a defaulted country would be treated with some suspicion on the international capital market for many years.

Country risk rating agencies offer qualitative and quantitative information about arbitrary measures of economic, financial and political risk ratings. Large multinationals and international corporations use country risk rating agencies for their strategic investment decisions (Hoti et al., 2007). The political instability of a country affects its neighbouring countries and detrimental effects on tourism are likely to spill over into neighbouring countries (Richter and Waugh, 1986). However, if neighbouring countries are not directly affected by a country's political instability it may benefit from the events (Drakos and Kutan, 2003). More recently, Perles-Ribes et al. (2016) examined the effects of the Arab uprisings on tourism destinations along the Mediterranean coastline. Their findings suggest that the Arab uprising had a positive impact on Morocco and Turkey and, conversely, that this political event harmed Egypt and Tunisia. They concluded that economic and political risk can be a good measure to gauge county risk ratings. Special events related to political, economic, social and cultural factors may affect tourism demand favourably or adversely. In order to account for these factors, previous studies included dummy variables. The special factors seemed to have substantial explanatory power and demonstrated that tourism demand can be sensitive to their changes.

As it stands, therefore, empirical literature on the relationship between country risk and inbound tourism flow is scant as the majority of studies only take political risk into account when determining tourism flow. Although the political risk is a very important factor, by itself it is not sufficient to explain inbound tourism flow. Therefore, other factors such as economic and financial risk should also be considered. Country risk that encompasses economic, financial and political risk would be a better measure to determine tourism flow.

Conclusion

This chapter has discussed first the theoretical tourism demand literature. Three sets of theories have an important implications for the tourism demand model, which are traditional demand theory, international trade theory and Lancaster's consumer theory. A small number of studies have attempted to construct a new theoretical model to be applied specifically to the tourism demand sector within the framework of Lancaster's consumer theory to take into consideration the heterogeneity of the tourism sector and the ambiguous nature of this industry. Subsequently, the factors determining inbound tourism flow were examined, beginning with the impact of the market value of the economy and global financial assets, then assessing the effects of financial risk, financial wealth and financial development and finally the impact of country risk in determining inbound tourism flow. Prior to this comprehensive review, a brief description of the underlying theories used in this study is presented.

> In the spirit of Sherlock Holmes, one important issue is not only to find the malefactors of tourism demand but also to take the right actions afterwards. Discovering new determinants for tourism demand is only part of the whole expedition. One must also be able to understand what types of policy measures are needed (if they are needed!), and in what quantity. Policy application in tourism demand management requires discovery of methods

to counter or stimulate anticipated developments in tourism in order to best reap the benefits of tourism development.

(Croes and Ridderstaat, 2018)

The overall discussion raises a number of unresolved questions:

1. Does the current year's income (e.g. GDP or GDP per capita) only truly reflect tourist's income as demonstrated in tourism demand theory? Does the tourist's expectation of future income matter while making a decision about international tourism? Is the market value of the economy from the financial theory which is forward looking and incorporates expected future income a better measure than those suggested by traditional tourism demand theory? Does global financial wealth have an impact on international tourism demand?

2. How do financial factors affect inbound tourism demand? Do the financial risk rating of the tourism origin and destination country have an impact on inbound tourism flow? Does the tourism origin country's financial wealth matter for the inbound tourism flow of a destination country? Does financial development of the tourism origin country have an impact on the demand for inbound tourism of a destination country?

3. Does country risk, comprising of economic risk, financial risk and political risk, have an impact on tourism demand? What are the consequences of political risk on demand for tourism? Can one tourism destination country benefit at the cost of others in the event of political risk?

2.1.8 Theoretical foundation and hypothesis development for the first empirical chapter

In this section, the main hypotheses to be tested in the first empirical chapter are developed. These hypotheses are as follows:

2.1.9 The income of tourism origin country

Empirical evidence indicates that inbound tourism flow in the past has been associated with the economies of the tourist origin countries and a consequent increase in income. Theoretically, therefore, an increase in income is expected to have a significant positive effect on the demand for tourism (ceteris paribus). In this regard, Davis (1968) pointed out that after a certain threshold income level has been reached tourism expenditure is likely to increase rapidly. However, Schulmeister (1979) argued that marginal utility appears to diminish slowly because each purchase seems to "whet the appetite" for more travel and tourism compared to the consumption of most other goods. Empirical evidence suggests that tourism is becoming an almost essential part of consumer expenditure, at the expense of other forms of consumption, and holidays in a foreign destination are no longer the privilege of the upper class. The empirical analysis of consumer behaviour holds a central position in economic analysis, and the underlying theory of consumer behaviour provides the structure for model formulation and data analysis (Deaton, 1986). The theory of consumer behaviour postulates that consumers choose goods and services to maximise utility subject to their budget constraint; the utility-maximising consumer's demand for any commodity depends on the prices of all commodities available to them and their total expenditure on these commodities. This formulation presumes the existence of a utility function that measures the level of satisfaction an individual achieves by consuming goods and services.

Friedman's permanent income hypothesis and Ando and Modigliani's life cycle hypothesis are the two important theories on consumption. Their theories explained why, contrary to traditional Keynesian demand theory, transitory tax policy or other transitory income boosting measures can have little or no effect on real consumption (Meghir, 2004). On the one hand, the permanent income hypothesis argues that aggregate consumption depends not only on current wealth but also on expectations of future earnings. Therefore, even if the consumer’s income remains constant, consumption could increase to adapt to expected gains in net wealth. Ando and Modigliani’s life cycle hypothesis shared this adaptive expectation framework, but it also argues that in terms of expected permanent income, consumption is distributed along the life cycle of the individual (Park et al. 2011). According to Crouch (1994) income is the most important and significant determinant of tourism demand. However, a large body of literature studies employed GDP or GDP per capita as a proxy for income to determine inbound tourism flow, but, as indicated earlier, GDP is a flow variable and is an incomplete measure of economic performance, particularly when cross-country comparison is a concern. However, Clark and Kassimatis’s (2011) market value of the economy from financial theory is a stock variable, and forward looking to incorporate expected future income. Thus, in this study, we adopt the market value of the economy (MVECON) from financial theory as a proxy for income in tourism countries of origin, as developed by Clark and Kassimatis (2011), rather than the traditional known income proxy to determine inbound tourism flow.

> ***Hypothesis 1:*** *Income of the tourism origin country has an impact on inbound tourism flow of a destination country.*

2.1.10 The wealth effect

The effect of asset wealth, such as stock and housing wealth, is an important alternative financial source of tourism consumption (Lee, 2011).[29] The phenomenon of the wealth effect has been examined by several studies. Case et al. (2005) examined the effects created by the housing and financial markets, which are connected to the wealth of many individuals. The rationale for this argument, according to Kim et al. (2012), is that “although movements in real discretionary income will undoubtedly increase international tourism demand, demand may also shift based on adjustments in adaptive expectations for future earnings or total wealth regardless of whether the potential gain is actually realized”. Therefore, the economic theories predict that consumption depends largely on the expectation of future earnings rather than current earnings. Park et al. (2010) argue that there is a theoretical gap in the international tourism demand literature which is if consumption increases with unrealised gains, tourism demand cannot be explained exclusively by the current inflow of income. Friedman's permanent income hypothesis, and Ando and Modigliani's life cycle hypothesis have been reported (Girouard and Blöndal, 2001), but the link to expenditure on tourism goods has yet to be tested. Although Ando Modigliani (1963) work was empirically validated to some extent (see, for example, Case et al., 2005), there are reports of mixed results (Attanasio et al., 2009), hence the relationship between consumption and unrealised wealth is still an ongoing issue in the literature that is far from being settled. In this consideration, a significant portion of global wealth is concentrated in financial assets. Using this line of reasoning, we expect inbound tourism demand to be affected by global financial assets.

> ***Hypothesis 2:*** *all other things being equal, the wealth effect from the global financial asset is expected to have a positive impact on the inbound tourism flow.*

[29] Lee (2011) demonstrated that the importance of asset wealth can be emphasised by the life cycle hypothesis.

2.1.11 Further hypotheses

Theoretical and empirical studies have shown that the cost of transportation, gravitational distance, tourism infrastructure, price, cultural distance, degree of openness, and so on, affect inbound tourism flow. We develop further hypotheses regarding these specific variables that have an impact on inbound tourism flow.

2.1.11.1 The cost of transportation

Transportation cost has been considered an important variable to elaborate on tourism demand. It is difficult to obtain appropriate measurements for tourist transportation costs, given the selection of different vehicles for transportation, such as planes, ships, buses, trains, boats, etc., and the fare gap between high and low seasons. Bechdolt (1973) found that the impact of travel cost changes on the demand for tourism in Hawaii was significant and elastic. Garín-Muñoz (2006) used the price of crude oil to measure the cost of travel and concluded the coefficient is negative and significant. Similarly, Wang (2009) found that Taiwan's international inbound tourism demand was affected by transportation costs as an increase in oil prices directly affects the travel costs for tourists. However, several studies acknowledged the crucial role of transportation cost but failed to include this variable in the proposed models (e.g. Barry and O'Hagan, 1971). Conversely, Moshirian (1989) and Uysal and Crompton (1984) failed to find a significant correlation between demand and transportation costs. Following Garín-Muñoz (2006) and Wang (2009), we have employed transportation cost in our model. This prediction is presented in the hypothesis below:

> ***Hypothesis 3:*** *all other things being equal, transportation cost is expected to have a negative impact on the inbound tourism flow.*

2.1.11.2 Gravitational distance:

The distance between the tourism origin country and destination country can have an impact on inbound tourism flow. The geographical distance between the tourism country of origin and the destination country is a gravity variable. As the distance between countries increases, this discourages tourism. In tourism literature, studies such as Witt and Witt (1995), Gil-Pareja et al. (2007) Balli et al. (2013), De Vita (2014) and Balli et al. (2016) found that physical distance significantly influences inbound tourism flow. In sharp contrast, some studies do not agree with this view. Ghalia (2016), using the Hausman-Taylor (1981) model, found no evidence that physical distance significantly influences inbound tourism flow and concluded that physical distance has little or no relevance in the movement of tourists. Putting the above inconsistent findings together, it can be argued that the body of empirical evidence is inconclusive for the impact of physical distance on inbound tourism flow. Nonetheless, following basic intuition, the physical distance between tourism origin and destination should have an influence on tourism especially when the distance is significantly large; thus, we anticipate negative associations between distance and tourism flow. The hypothesis can be formulated as follows:

> ***Hypothesis 4:*** *An increase in the physical distance between the tourism origin country and destination negatively affect inbound tourism flow in the destination.*

2.1.11.3 Tourism infrastructure:

Tourism infrastructure, such as the capacity of accommodation for tourism in a destination country, is used as a proxy for tourism supply in the literature. Alternatively, tourism investment, or gross fixed investment is also used in the literature to represent supply of tourism. A strong seasonality trend can have a detrimental effect on stable income from tourism, and to an efficient tourism industry, and leads to overloading of tourist infrastructure during peak season demand which, correspondingly, leads to capacity underutilisation for the rest of the year. In tourism literature, Witt and Witt (1995), Hiemstra and Ismail (1994), Tsai et al. (2006), Zhang and Jensen (2007) and Balli et al. (2013) employed the number of hotel rooms to measure infrastructure and found an increase in tourism infrastructure would lead to an increase in inbound tourism flow. However, Ferreira and Boshoff (2014) found a negative association between infrastructure and inbound tourism flow in South Africa. Therefore, the empirical finding on tourism infrastructure is inconclusive. Thus, our hypothesis can be formulated as follows:

> ***Hypothesis 5:*** *Infrastructure in the tourism destination country influences tourism inflow in the destination country.*

2.1.11.4 Relative price :

The consumer theory posits that tourism demand depends on relative prices. As a tourism-specific price index is not available, the majority of studies employ the consumer price index as a proxy. However, in order to find better proxy, Gunadhi and Boey (1986) constructed special tourism price indexes for their study. On the other hand, Matin and Witt (1987) argue that the relative consumer price index, with or without taking exchange rates into account, can be a reasonable proxy for the cost of tourism; however, exchange rates alone are not acceptable. Thus, whether to include price and exchange rate separately or whether the price should be adjusted/standardised by exchange rate is still an ongoing issue in the tourism demand literature that is far from being settled. There are two price components that scholars investigate, relative price and substitute price. Price in the tourism destination relative to the price in the tourist's country of origin is known as relative price, and price in the competing destination is known as substitute price (Song and Li, 2008). According to De Vita and Kyaw (2013), the relative price standardised by the relevant exchange rate is more appropriate than including them separately or individually. Nevertheless, Dogrue et al. (2017) argued that there was no analytical explanation nor empirical evidence in their study to underpin their argument. Attempting to find analytical and empirical evidence to underpin the proposition that prices and exchange rates should be included on their own in the tourism demand model, Dogru et al. (2017) theorised that inclusion of price and exchange rate variables as a mutually exclusive component, and price standardised by exchange rate, is a better measure to take into account the cost of living in a destination relative to the tourist country of origin. Thus, relative price standardised by exchange rate is an appropriate proxy. In order to provide empirical content to this statement, it is hypothesised that:

> ***Hypothesis 6:*** *Price increase in the tourism destination has a negative impact on inbound tourism flow.*

2.1.11.5 Cultural distance:

Language plays an important role in inbound tourism flow, as it may enhance the pleasantness of a holiday or it can act as an obstruction (Okafor et al., 2018)(Okafor et al., 2018). Similar to other aspects of consumer demand, attitudes and beliefs can have an impact on tourism demand (Vietze, 2012). Therefore, tourists being consumers would choose to holiday in a certain destination where they consider they can effortlessly increase satisfaction. Consequently, language proximity plays a crucial role as sharing a common language and cross-cultural interaction is an integral part of international tourism. The tourists integrate themselves into a culturally distinct environment and react with different degrees of comfort and enthusiasm (Kastenholz, 2010). Inbound tourism flow may increase if the tourist and host countries share a common official language, and this may attract tourists to visit that particular destination. In the tourism literature, Witt and Witt (1995), Eilat and Einav (2004) and Balli et al. (2016)

employed language to determine tourism flow. Kastenholz (2010) demonstrated that cross-cultural interaction facilitated by cultural and language proximity would increase tourists satisfaction. Therefore, it is hypothesised that:

Hypothesis 7: *Common culture has a positive impact on inbound tourism flow.*

2.1.11.6 Degree of openness:

International tourism has a significant influence on international trade flow and vice versa. Tourism inflow in countries like South Africa, Egypt and Morocco may be determined by the level of trade activities with the tourism country of origin. According to Gray (1970), international tourism demand is part of the international trade system. He argues that trade volume between countries may influence business travel and subsequent trips for pleasure. According to Chaisumpunsakul and Pholphirul (2018), theories on the connection between international trade and international tourism demand are grounded on three principles. Firstly, all business travel is stimulated by international trade and contributes to networking at the individual, business and national levels (Turner and Witt, 2001). Similarly, White (2007) argues that international trade bolsters a network effect and reduces international transaction cost and promotes travel and exchanges among countries. Secondly, international trade boosts product commercials, appeals to consumers’ attention and creates awareness of both a product and the country where it is produced. Consequently, consumers’ attention and recognition stimulate the desire to travel to the country where it produced (Kulendran and Wilson, 2000). Lastly, international trade inspires a country to develop and improve infrastructure in order to facilitate activities. Development of transportation and communication systems helps attract more tourists (Santana et al. 2011). In an empirical study, Habibi et al. (2009) investigated international tourist demand for Malaysia and found a 1% increase in international trade would cause a 0.02% increase in the short-term and 0.22% increase in long-term for tourism demand in Malaysia. Leitão (2010) and Surugiu et al. (2011) found a somewhat similar result in Portugal and Romania. Kulendran and Wilson (2000) identified three specific hypotheses for testing the international trade and international travel relationship. Firstly, the 'Marco Polo' hypothesis emphasises that business travel leads to international trade. Secondly, the interest and awareness hypothesis asserts that international trade leads to international travel. Lastly, the opportunity hypothesis argues that international travel, other than business travel, also leads to international trade. They have found evidence for all three hypotheses. However, their study was limited to only five countries, Australia as destination or host country, and four travel and trading partners, namely Japan, New Zealand, United Kingdom and the United States of America. They also proposed a simple flow model of business travel and trade as shown in - Figure 2.3:

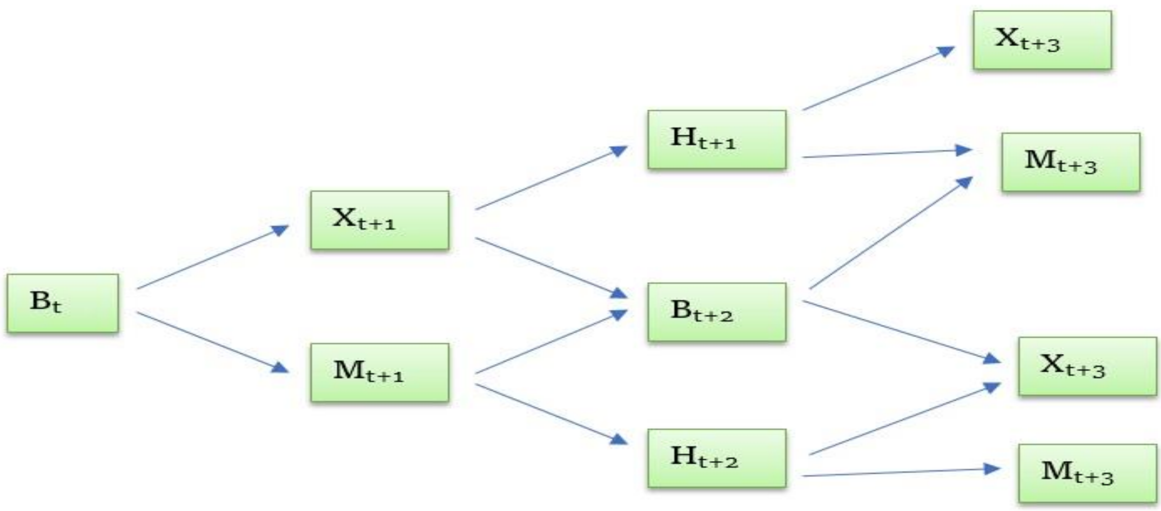

Figure 2.3 A simple flow model of travel and trade

(reproduced from Kulendran and Wilson, 2000; p.1002)

Starting with B_t (business travel) that leads to X_t (export) and M_t (import), which in turn lead to B_{t+2} (further business) and H_{t+2} (holiday travel). More sophisticated variants of this model can be drawn by taking into consideration lag effects in these flow relationships. In their study, Zhang and Jensen (2007) employed trade openness and argued that openness is significant for developing African countries. Chaisumpunsakul and Pholphirul (2017) investigated the relationship between tourism and trade openness and found that the degree of trade openness was a significant determinant of inbound tourism flow. However, they did not find any significant impact of exports on tourism flow in Thailand. Therefore, the exact relationship between trade openness and inbound tourism demand still remains to be established. Following these arguments, our competing hypothesis can be formulated as follows:

> ***Hypothesis 8:*** *Trade openness is associated with higher inbound tourism inflow in the destination country.*

2.1.12 Theoretical foundation and hypothesis development for the second empirical chapter

2.1.12.1 The financial risk of tourism origin

The financial risk of the tourism origin country can have a significant influence on inbound tourism flow of a destination. The country risk premium introduced in this study, adopted from (Clark, 2002), is analogous to the corporate default risk premium developed in the structural models based on Merton (1974). The main argument in this model is that on the expiry date of the shareholder equity, if the value is lower than the value of debt that needs to be paid then shareholder will default on his or her debt. Shareholders gain would be the difference between the debt payout and the value of the equity that he or she loses. However, a country's debt is quite different to corporate debt because international law is such that is difficult for creditors to take over assets owned by that country. Nevertheless, international creditors can take a series of actions that are costly for the country in the form of litigation, reduced access to international trade financing and, most importantly, limiting access to financial markets (Clark and Kassimatis, 2015). Even though in economic terms it saves them money which would have been paid in debt repayment, they would lose credibility in the international capital market. Occasionally a default on a foreign debt can enable a country to recover and consequently repay its debt; however a county can repay its debt but not repair its standing in the international capital market as a defaulted country would be treated with some mistrust on the international capital market for many years. In regard to tourism, if a country's financial risk premium decreases this means the country's ability to pay its foreign debt would increase, which in turn would influence more international tourism. Thus, the main testable hypothesis is as follows:

> ***Hypothesis 1A****: The financial risk rating of tourism origin country has an influence on inbound tourism flow of the destination country.*

2.1.12.2 The financial risk of the tourism destination

Similar to the financial risk premium of the tourism origin country, the financial risk premium of the tourism destination country can have a significant influence on its inbound tourism flow. Chew and Jahari (2014) point out that perceived financial risk influenced destination images, and destination images mediated between perceived financial risk and revisit intention. In another study Roehl and Fesenmaier (1992) investigates if risk perceptions associated with pleasure travel. Among other risks they have found that the financial risk associated with pleasure travel (Roehl and Fesenmaier, 1992).[30] Financial risk and financial crisis can lead to bitter protests, riots, violence that can break out on the streets of cities, national strikes, etc., which could lead to a decline in international demand for tourism. Therefore, a tourism destination country's financial risk premium can have an influence on its inbound tourism demand. The testable hypothesis is as follows:

> ***Hypothesis 1B****: The financial risk rating of the tourism destination country has an influence on inbound tourism.*

2.1.12.3 Financial asset wealth

As discussed earlier, financial asset wealth has a significant impact on consumer behaviour. However, rather than focusing on global financial asset wealth, we looked at individual countries' financial asset wealth similar to Kim et al. (2011) and Song et al. (2010). Whereas they looked at outbound tourism, in our case we are focusing on inbound tourism flow. The

[30] Roehl and Fesenmaier (1992) defined the financial risk as the possibility that the vacation would not provide value for the money spent.

consumption depends largely on the expectation of future earnings. Accordingly, in an attempt to test this conjecture, the following hypothesis is formulated:

> ***Hypothesis 1C****: All other things being equal, price gains of capital assets will increase inbound tourism demand for a destination.*

2.1.12.4 Financial development

Inbound tourism is becoming increasingly important as it has a significant influence on national economies and the size of the tourist market is growing rapidly. The association between tourism, financial development and economic growth was investigated by Ohlan (2017). He employed aggregate money supply (M3) to GDP ratio as a proxy for financial development. He found that economic growth, tourism and financial development are cointegrated. King and Levine (1993) employed the bank deposit to GDP ratio as a proxy for financial development, as this is one of the standard measures used in the literature to measure financial depth. Nevertheless, Cannonier and Burke (2017) argued that the relationship between tourism and financial development has received scant attention, and, therefore, using data that ranged from 1980 to 2013, they focused on whether tourism promotes financial development by employing M3 money supply to GDP and M2 money supply to GDP as proxies for financial development. De Vita and Kyaw (2016), in their study on tourism, argue that financial development has been ignored in prior studies despite its ability to significantly affect growth by reflecting absorptive capacity, and warned that lack of its inclusion in growth equations may lead to misspecified regression. Consequently, they include a level of financial development variable which is based on the World Bank measure of financial depth.

> ***Hypothesis 1D:*** *All other things being equal, financial development is expected to have a positive impact on the inbound tourism flow of a destination.*

2.1.13 Further hypotheses

Theoretical and empirical studies on consumer demand have shown that income and price variables must be included in the model. Hence, we developed further hypotheses regarding these specific variables that can have a significant impact on inbound tourism flow.

2.1.13.1 The income of the tourism origin country

As discussed earlier, the income of tourism origin county is the single most important factor that influences inbound tourism flow.

> ***Hypothesis 2A****: All other things being equal, the income of the tourism origin country is expected to have a positive impact on the inbound tourism flow of a destination country.*

2.1.13.2 The income of tourism destination country

The income of the tourism destination county is an important factor that influences inbound tourism flow. Linnemann (1966) points out that tourism destinations income can be viewed as a potential supply indicator. Accordingly, in an attempt to test this conjecture, the following hypothesis is formulated:

> ***Hypothesis 3A****: All other things being equal, the income of the tourism destination country is expected to have a positive impact on its inbound tourism flow.*

2.1.13.3 Relative price

In the literature, after the income variable, the relative price has been found to play a major role in determining the demand for inbound tourism. Tourists seems to be sensitive, and react, to changes in prices. Demand for inbound tourism of a destination decreases as relative prices increase. Studies such as Artus (1970), Barry and O'Hagan (1971), Witt (1980), Uysal and Crompton (1984), Vita and Kyaw (2013) and Dogru et al. (2017) included exchange rate in relative prices. In this regard, Vita and Kyaw (2013) argue that the relative price standardised by the relevant exchange rate is more appropriate than including them separately or individually. Nevertheless, there was no analytical explanation in their study to underpin their argument. Dogru et al. (2017) shed light on this issue by modelling tourism demand and theorised on inclusion of price and exchange rate variables as a mutually exclusive component. They also suggested that price standardised by the exchange rate is a better proxy for the cost of living in a destination relative to the tourist country of origin.

In an ideal world, a tourism price index would be more relevant for tourism consumption but such an index is deficient due to both the multifaceted nature of tourism products and the inadequate data. Martin and Witt (1987) argue that there is no obvious answer to the question of whether a specific cost of tourism variable or the CPI and /or relative exchange rates is the best form of the tourism price variable. However, they argue that empirically CPI alone, or with the exchange rate, is a reasonable proxy for the tourism relative price. Considering relative price standardised by exchange rate it may be hypothesised that tourism demand elasticity with respect to price changes has an impact on inbound tourism demand for a destination country.

> ***Hypothesis 4A:*** *Price increases in the tourism destination has a negative impact on inbound tourism flow.*

2.1.14 Difference between the first and second empirical chapter

In our first empirical chapter, we introduced a new income variable that accounts for not only current income but also the expected future income and wealth effect variable from global financial assets, and examined the effect of MVECON, global wealth and gravitational variables such as physical distance, language as cultural distance and trade openness. The purpose of the second empirical chapter is to bring into account financial factors or elements to which little attention has been given in the empirical literature after including the main explanatory factors for tourism demand such as income and relative prices. We have introduced financial factors such as financial risk, financial wealth and financial development. Even though the financial risk does not consist of a specific measure of tourism earnings for countries, the importance of tourism earnings and tourism development can still be traced through the financial risk premium components. Since tourism constitutes a trade in services, earnings from tourism exports are incorporated in the current account balance, which is an essential component for measuring the market value of the economy from financial theory. To construct a financial risk premium, among many other variables we have included MVECON rather than GDP, market value of a country's foreign debt using Black-Scholes (1973), a risk-adjusted rate of return on country's debt, export, import and a risk free rate. A complete description of our own financial risk premium construction is given in section 5.3. Rating agencies employed foreign debt as a percentage of GDP, exchange rate stability, debt service as a percentage of XGS, current account as percentage of XGS, and international liquidity to construct financial risk.

Theoretically, a tourism demand model that focuses only on demand-side factors has prevailed in literature as the appropriate modelling framework to estimate international tourism demand (Crouch, 1994; Lim, 1997; Sinclair, 1998). Thus, in the second empirical chapter, we adopted neoclassical demand theory and focused on tourism demand-side factors, and after including the most important factors such as income and the relative price we introduced financial factors, such as financial risk, development and wealth, that have a significant influence on inbound tourism flow. The neoclassical demand theory does not focus on the supply-side of tourism flow, and neoclassical trade theories do not focus on the demand-side of the tourism. Lancaster's characteristics theory, in which consumers derive utility from the characteristics of the goods and services as opposed to from the goods themselves, captures several important nuances that neoclassical demand model is unable to do, but is also limited as it does not give appropriate attention to the tourism supply. Therefore, in the first empirical chapter we have employed the gravity model as, conceptually and theoretically, it provides a framework for modelling inbound tourism flow by taking both demand and supply sides factors. After including the most important factors, MVECON is used as a measure for income and price variables, and we examine both the physical and cultural distance puzzle in tourism, as well as the influence of transportation cost and trade openness. Therefore, the aim and objective of these two empirical chapters are very different from one another.

The phenomenon of the financial wealth effect on tourism has been studied by researchers (e.g. Kim et al. 2011, Song et al. 2020) but they focused only on outbound tourism demand, and no attention has been given to explain inbound tourism demand. Another key variable that has attracted little attention in the tourism literature is financial development that can affect inbound tourism flow, and can affect growth by reflecting absorptive capacity (De Vita and Kyaw, 2016). There could be many potential factors that have a significant influence on inbound tourism flow but it is not possible to introduce all factors in one model. We know our world has become much closer and smaller because of globalisation. Therefore, since we have explored gravity distance variables in-depth in the first empirical chapter we focused on financial factors that influence tourism. The quest is to continue to find the missing pieces to solve this big puzzle in tourism demand literature; therefore discovering new determinants for tourism demand is part of the whole expedition.

Chapter 3: Background of tourism – worldwide, in the African region, Egypt, Morocco, South Africa and Tunisia

Introduction

The objective of this chapter is to provide a background review of the importance of tourism worldwide, in the African region and in Egypt, Morocco, South Africa and Tunisia. In particular, the aim is to give a general overview of the tourism potential of each of these destinations. Exploring and analysing tourism trends and patterns in the African region and countries will allow identification of important determinants of inbound tourism flows in this region.

This chapter is structured as follows. Section 2.2 provides definitions of tourism and related terms. Section 2.3 explains worldwide tourism, and section 2.4 discusses regional tourism and trends in Africa. Sections 2.5 to 2.8 give an overview of four tourism destinations and discuss the contribution of tourism to the economy, inbound tourism flows, trends and other tourism characteristics in this destination. Section 2.5 discusses the tourism industry of Egypt, section 2.6 discusses the tourism industry of Morocco, section 2.7 discusses the tourism industry of South Africa and section 2.8 discusses the tourism industry of Tunisia. Finally, section 2.9 summarises the chapter's key findings.

Definition of tourism and related terms

Tourism is a diverse phenomenon. Williams (2004) stated that: "The significance of tourism as a contemporary phenomenon, when allied to the diversity of disciplinary perspectives from which the subject is capable of being examined, ensures that the tourism literature is both extensive and extremely varied in subject and approach". There are numerous definitions of tourism. In the tourism literature, definitions of tourism can vary between conceptual and technical definitions.[31] One of the earliest conceptual definitions of tourism was given by Hermann Von Schullard in 1910, who defined tourism as: "The sum total of operators, mainly of an economic nature, which directly related to the entry, stay and movement of foreigners inside and outside a certain country, city or region" (quoted by Gilbert, 1990, Page 8). Although this definition emphasises the existence of inbound and outbound travel, it does not specify the reason for travel nor how long a person should stay in a foreign country to be considered as a tourist. Another earlier definition was given by Hunziker and Krap (1942) who described tourism as "being a sum of relations and phenomena resulting from travel and stay of non-residents, in so far as a stay does not lead to permanent residence and is not connected with any permanent or temporary earning activity". This definition was accepted by the International Association of Scientific Experts in Tourism (AIEST). Although this definition was generally accepted for quite some time, it had some shortcomings. Vanhove (2005) argued that business trips should be excluded from tourism as they are related to earning activity, although hospital stays could be considered to be tourism. In 1979 the British Tourism Society adopted a definition based on the study of Burkart and Medlik (1974) who stated: "Tourism is deemed to include any activity concerned with the temporary short-term movement of people to destinations outside the places where they normally live and work, and their activities during the stay at these destinations". This definition includes activities which are involved in the stay in or visit the destination, contains no insistence on overnight stays and foreign visits, and includes domestic and day visits (Gilbert, 1990). A conceptual definition for the social understanding of tourism was given by Gilbert (1990) who said: "Tourism is one part of

[31] See Burkart and Medlik (1974) and Vanhove (2005).

recreation which involves travel to a less familiar destination or community, for a short-term period, in order to satisfy a consumer need for one or a combination of activities". This definition emphasises the reasons for travel and the length of time spent.

Burkart and Medlik (1981) defined tourism as: "The phenomenon arising from temporary visits (or stays away from home) outside the normal place of residence for any reason other than furthering an occupation remunerated from within the place visited".

Tourism researchers have defined the term 'tourism' according to their research objectives. While various disciplines, such as anthropology, ecology, economics, geography, politics and sociology, have made contributions to the study of tourism, economics covers the rational behaviour and the market exchange of human activities (Hirshleifer, 1988). Tourism researchers who concentrate on the economic side examine the contribution of tourism to the economy, supply, demand, balance of payments, foreign exchange, employment, expenditure, development and other economic and financial aspects (Loeb, 1982; Summary, 1987; Uysal and Crompton, 1984; Witt and Martin, 1987).

The United Nations World Tourism Organization (UNWTO) defines tourism as "the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes, different from the exercise of an activity remunerated from within the place visited". It also defines other terms related to tourism. A visitor is any person who travels to a place outside his or her usual environment for a period not exceeding twelve months. The visitor can also be classified as a 'tourist' and 'excursionist'. A tourist is any person who is a temporary visitor staying at least 24 hours in the country visited and the purpose of whose journey can be leisure that includes recreation, holiday, health, study, religion, sports, business, family, mission, meeting (Vanhove, 2005). An excursionist is any person who is a temporary visitor staying less than 24 hours in the country visited (including travellers on cruises). Tourism country of origin, source market and generating country refer to the country, region or city in which a visitor usually resides. Tourism 'destination' connotes a country, region or city to which visitors travel as their main objective. Inbound tourism refers to the tourism of non-resident visitors to the country. Outbound tourism refers to the tourism of nationals (e.g. British) visiting destinations in other countries. According to IRTS (2008) outbound tourism comprises the activities of a resident visitor outside the country of reference, either as part of an outbound trip or as part of a domestic tourism trip. International tourism comprises inbound and outbound tourism. For this study, the definition given by UNWTO is accepted.

Worldwide tourism

Tourism is a booming and major industry for the world economy. The dramatic growth of tourism over the last 50 years is one of the most extraordinary economic and social phenomena of this period (Muhanna, 2007). It has boasted continuous growth over time despite occasional shocks,[32] demonstrating the sector's strength and resilience (UNWTO, 2016). Worldwide, there were about 277 million international tourist arrivals in 1990, reaching about 528 million in 1995, and increasing to 940 million in 2010 (UNWTO, 2017). Infrastructure development, export revenues, and enterprise and job creation are the key indicators that demonstrate tourism to be one of the main drivers of socio-economic progress for advanced and emerging economies (ILO, 2017). It is well acknowledged that the tourism industry is largely labour intensive, tourism provides jobs for many people and it has become one of the fastest growing and top job-creating industries in the world economy (Maria-Cristina and Ioana, 2016). In

[32] The economic recession in the early 1970s, Gulf War crisis in the early 1990s, Asian financial and economic crisis in the late 1990s, terrorist attack on 9/11, Severe Acute Respiratory Syndrome (SARS) in 2003 and global financial crisis of 2008.

2015, international tourism was estimated to account for 9.8% of the world's GDP and 9.5% of total employment (WTTC, 2016c). According to UNWTO (2017), in 2016 international tourism represented 7% of the world's exports of goods and services, and tourism grew faster than world trade over the previous five years. Tourism ranks third in the worldwide export category. International tourism arrivals and receipts have increased sharply. According to UNWTO (2017), in 2016 international tourist arrivals increased to 1,235 million from 25 million in 1950, and international tourism receipts earned by destinations worldwide reached US$1,220 billion.[33] Over the past six decades, tourism has experienced continued expansion and diversification to become one of the largest and fastest growing economic sectors in the world (UNWTO, 2015). Worldwide international tourist arrivals are expected to increase by 3.3% a year over the period from 2010 to 2030 and are expected to reach 1,400 million by 2020 and 1,800 million by the end of 2030 (UNWTO, 2017).

Regional tourism and trends in Africa

Tourism is regarded as an indispensable part of economic development strategies in many African countries (Akinboade and Braimoh, 2009), where it accounts for a substantial percentage of GDP. According to WTTC (2016d), in 2015 the direct contribution of travel and tourism to Africa's GDP was about US$74.3 billion[34] i.e. 3.3% of Africa's total GDP; the total contribution to GDP was about US$180 billion, accounting for 8.1% of Africa's GDP; and travel and tourism directly supported 9.1 million jobs, i.e. 3% of total employment, and

[33] International tourism receipts refer to expenditure by international visitors on accommodation, food, drink, entertainment, shopping and other goods and services in tourism destinations.

[34] Direct contribution to GDP refers to internal spending on travel and tourism as well as to government spending on travel and tourism services directly linked to visitors, such as cultural and recreational spending (WTTC, 2016d).

indirectly supported 22 million jobs, i.e. about 7.2% of total employment. Explanations for these trends include rising standards of living in developing countries, low-cost long-haul travel, increases in disposable income and fewer restrictions on travel (Muhanna, 2007). In 2015, visitor exports,[35] which is one of the key components of the direct contribution of travel and tourism, generated US$46.7 billion, i.e. 9% of total exports, and travel and tourism investment were US$29.6 billion, i.e. 6.3% of total investment. At the current projected rate of growth, international tourist arrivals in the African region are expected to reach about 101.5 million by 2026, generate US$77.6 billion and account for 11.7 million direct jobs (WTTC, 2016d). The region is still often viewed as being unfair, dangerous, unstable or economically stagnated, but overcoming these images remains important. The potential for tourism in this region is enormous and far greater than is currently being realised (Gray, M., 2000).

Egypt's tourism industry

Egypt has a strategic geographical location and unique tourism potential. The ancient monuments of Egypt possess about one-third of the world's known such ancient monuments (Asante, 2002). Egypt remains the world's oldest civilisation with more than 4,000 years of history. The Mediterranean Sea, the Red Sea and River Nile have provided it with natural tourism opportunities. The tourism sector in Egypt is one of the most influential sectors for its economic development.

The Egyptian pyramids in Cairo attract thousands of visitors every year. According to UNWTO, there has been a significant increase in the number of tourist arrivals in Egypt. While there were about 4.4 million tourist arrivals in 2001, the number rose to 14.7 million in 2010. Tourism receipts are even more spectacular; they alone generated about US$13 billion in 2010

[35] Visitor exports refer to the money spent by foreign visitors in a destination (WTTC, 2016d).

and accounted for about 11.5% of the total GDP. In 2015, about 9.139 million international tourists arrived and receipts from international tourism were about US$6,065 million (UNWTO, 2016). In 2015, the travel and tourism sectors in Egypt directly contributed 4.9% of total GDP, supported about 1.7 million jobs and accounted for 4.4% of total employment (WTTC, 2016a). In 2015, travel and tourism attracted capital investment of 39.1 billion Egyptian pounds (WTTC, 2016a). At the current projected rate of growth, international tourist arrivals in Egypt are expected to reach about 15.74 million by 2026 and generate 103.7 billion Egyptian pounds, and the travel and tourism industry is forecast to account for 1.52 million direct jobs and support 3.47 million jobs (WTTC, 2016a). The tourism industry remains one of the country's leading foreign currency earners among all the industries that contribute significantly to service Egypt's debt. The tourism industry in Egypt is also a significant contributor to the current account balance in its balance of payments and is one of the main recipients of foreign direct investment (FDI). Even though Egypt has faced post-revolution instability, tourism is still an integral part of the economy.

Figure 2.1 illustrates Egypt's inbound tourist numbers in thousands, tourist expenditure in US$ millions, the percentage of inbound tourism expenditure relative to exports of services and finally the contribution of inbound tourism expenditure to GDP. Positive inbound tourism growth was observed between 1995 and 1997, but then Egypt's tourism growth was hampered by the Luxor attack in November 1997 and the Asian financial crisis, which led to a 12.8% drop in tourist arrivals in 1998. Growth in tourism arrivals then jumped positively in 1999 and 2000 by 38.9% and 14.79% respectively. In 2001, Egypt's tourism arrivals from the rest of the world went down again because of the 9/11 events in the USA, which led to a 15.59% drop in tourist arrivals. Between 2002 and 2008, positive tourism growth, ranging between 5.52% and 34.08%, was observed. The global financial crisis in 2008 struck the tourism industry worldwide, and Egypt saw negative tourism growth of 2.3%. In 2010, Egypt attracted the highest number of tourists ever in its history when a total of more than 14.70 million tourists arrived in the country. Since then, the Arab Spring and political crisis have impacted tourist arrivals. Tourism expenditure and the ratio of tourism expenditure to Egypt's GDP have gone up and down along with the number of tourist arrivals. The ratio of tourism expenditure to the export of services also shows a similar pattern.

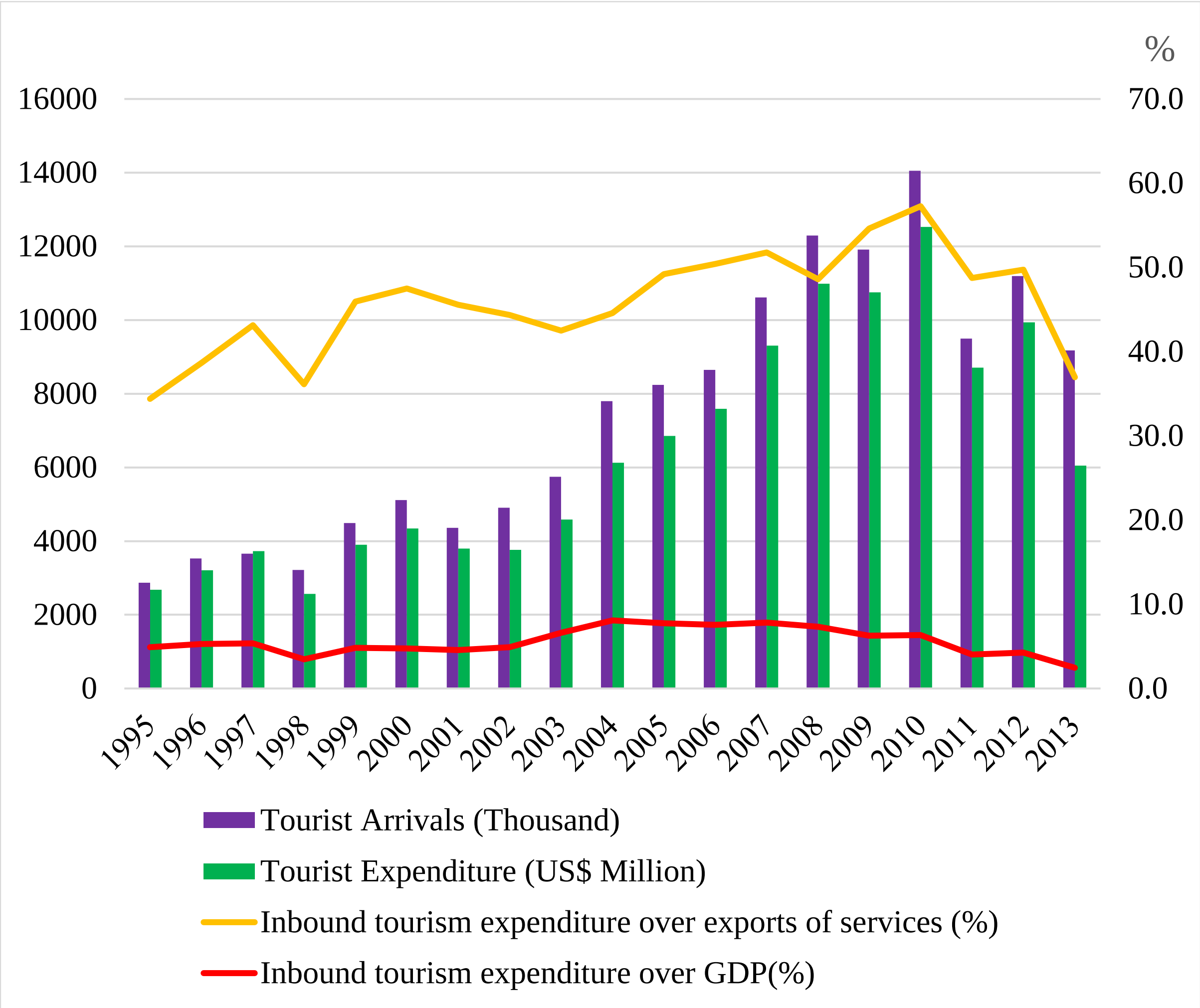

Figure 3.1 Economic significance of tourism in Egypt (1995-2013)

Source: World Tourism Organization/Ministry of Tourism, CAPMAS and Central Bank of Egypt

Morocco's tourism industry

Morocco has developed a significant tourism industry as a result of its natural and cultural resources (Boniface and Cooper, 2009). The Moroccan tourism industry is booming. According to the Moroccan Ministry of Tourism, about 4.4 million tourists arrived in 2001 and about 9.3 million in 2010, which is an annual average growth of 8.7%. Tourism receipts are even more spectacular, increasing from about US$3 billion in 2001 to about US$6.7 billion in 2010. That means an annual growth rate of about 7.5%. This confirms the tourism industry's ability to have a sustainable growth rate and that revenues from the tourism industry have become one of the primary sources of foreign currency earnings, which is a significant contributor towards the current account balance in the balance of payments. The main contribution to growth in this sector is driven by foreign and domestic investment. The tourism sector is one of the top three sectors that receive FDI, indicating the potential attractiveness of this sector to the international investor for future development. In 2015, about 10.18 million international tourists arrived, making Morocco the number one tourist destination in the African region. Receipts from international tourism were about US$6,263 million (UNWTO, 2016). In 2015, the direct contribution of travel and tourism was 7.7% of the total GDP and attracted 35.3 billion Moroccan dirhams in capital investment (WTTC, 2016b). Morocco's vision for 2020 aims to make the country among the top 20 tourist destinations in the world by attracting 20 million visitors a year and increasing tourism revenues to 140 billion Moroccan dirhams by the end of the decade, thereby becoming a benchmark for sustainable development in the Mediterranean region.[36] Diversification of this industry will play a significant role in accomplishing the objective of Morocco's tourism development strategy. At the current projected rate of growth, international tourist arrivals in Morocco are expected to reach about

[36] Source: The Kingdom of Morocco, Ministry of Tourism, Air Transport, Handicrafts and Social Economy (January 2018).

14.5 million by 2026 and generate 105.3 billion Moroccan dirhams, and the travel and tourism industry is forecast to contribute 7.5% of GDP, account for 0.86 million direct jobs and support about 2 million jobs (WTTC, 2016b).

Figure 2.2 shows Morocco's inbound tourist numbers in thousands, tourist expenditure in US$ millions, the percentage of inbound tourism expenditure relative to exports of services and finally the contribution of inbound tourism expenditure to GDP. Despite various global and regional political events as well as economic and financial events, positive tourism growth was observed in Morocco between 1995 and 2013.[37] Although tourist expenditure went down and negative growth was observed in 2009 because of the global financial crisis and the Arab Spring in 2012, it managed to recover quickly. The ratio of tourism expenditure to Morocco's GDP went up and down along with tourism expenditure. The ratio of tourism expenditure to the export of services shows the diversification of Morocco's service export.

[37] The Asian financial crisis in 1997, 9/11 attacks in 2001 in USA, global financial crisis in 2008 and the Arab Spring in late 2010.

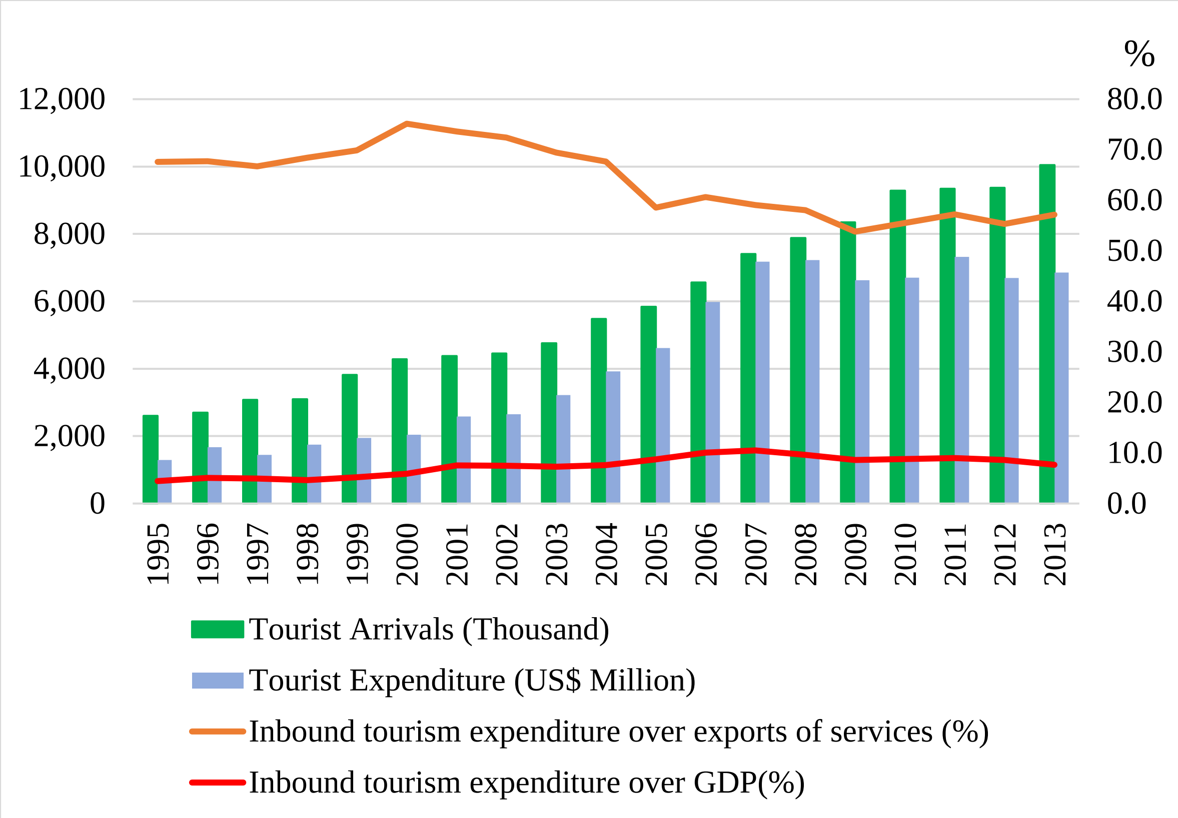

Figure 3.2 Economic significance of tourism in Morocco (1995-2013)

Source: World Tourism Organization/ Ministère du Tourisme

South Africa's tourism industry

South Africa's natural beauty, sunny climate, cultural diversity and world-class infrastructure have made it one of the most desired destinations in the world. It has 291 conservation parks, about 2,798 kilometres of coastline and is also the economic hub of Africa. [38] South Africa recently hosted three major sports events, namely the Cricket World Cup in 2003, T20 Cricket World Cup in 2007 and the football World Cup in 2010. These events boosted inbound tourism flows for South Africa. Wildlife tourism attracts a significant number of tourists, and iconic animals such as the rhino are major attractions for tourists as South Africa has approximately 80% of the world's rhino population (Lubbe et al., 2017). In 2015 South Africa had about 8.9

[38] Sourced from the Department of Tourism, South Africa

million international tourist arrivals, and receipts from international tourism were about US$8.24 billion (UNWTO, 2016). The South African tourism industry plays an important role in the country's economy. The tourism industry employs about 712,000 people, with 1 in 22 employed individuals working in the tourism industry. Tourism jobs are concentrated in the following sectors: road transport 29%, food and beverages 20%, accommodation 19%, product retailing 16% and others 16%.[39] In 2015, travel and tourism directly contributed 3% of total GDP and attracted capital investment of 63.7 billion South African rands (WTTC, 2016e). South Africa has earmarked tourism as one of the significant sectors with excellent growth potential. In 2016, South Africa enjoyed 13% growth in international arrivals, partly thanks to simpler visa procedures. (UNWTO, 2017). At the current projected rate of growth, by 2026 international tourist arrivals in South Africa are expected to reach about 15.71 million and generate 211.6 billion South African rands and the travel and tourism industry is forecast to contribute 3.4% of GDP, account for 1 million direct jobs and support 2.26 million jobs (WTTC, 2016e).

Figure 2.3 shows South Africa's inbound tourist number in thousands, tourist expenditure in US$ millions, the percentage of inbound tourism expenditure relative to exports of services and finally the contribution of inbound tourism expenditure to GDP. The financial crisis of 2008 affected tourist arrivals badly. A drop of 26.9% in tourist arrivals was observed in 2009, although tourist expenditure dropped by only 4.17% compared to 2008. The ratio of inbound tourism expenditure to GDP did not fluctuate so much from 1995 to 2013.

[39] Sourced from Statistics South Africa (STATS SA) Quarterly Employment Survey, December 2015

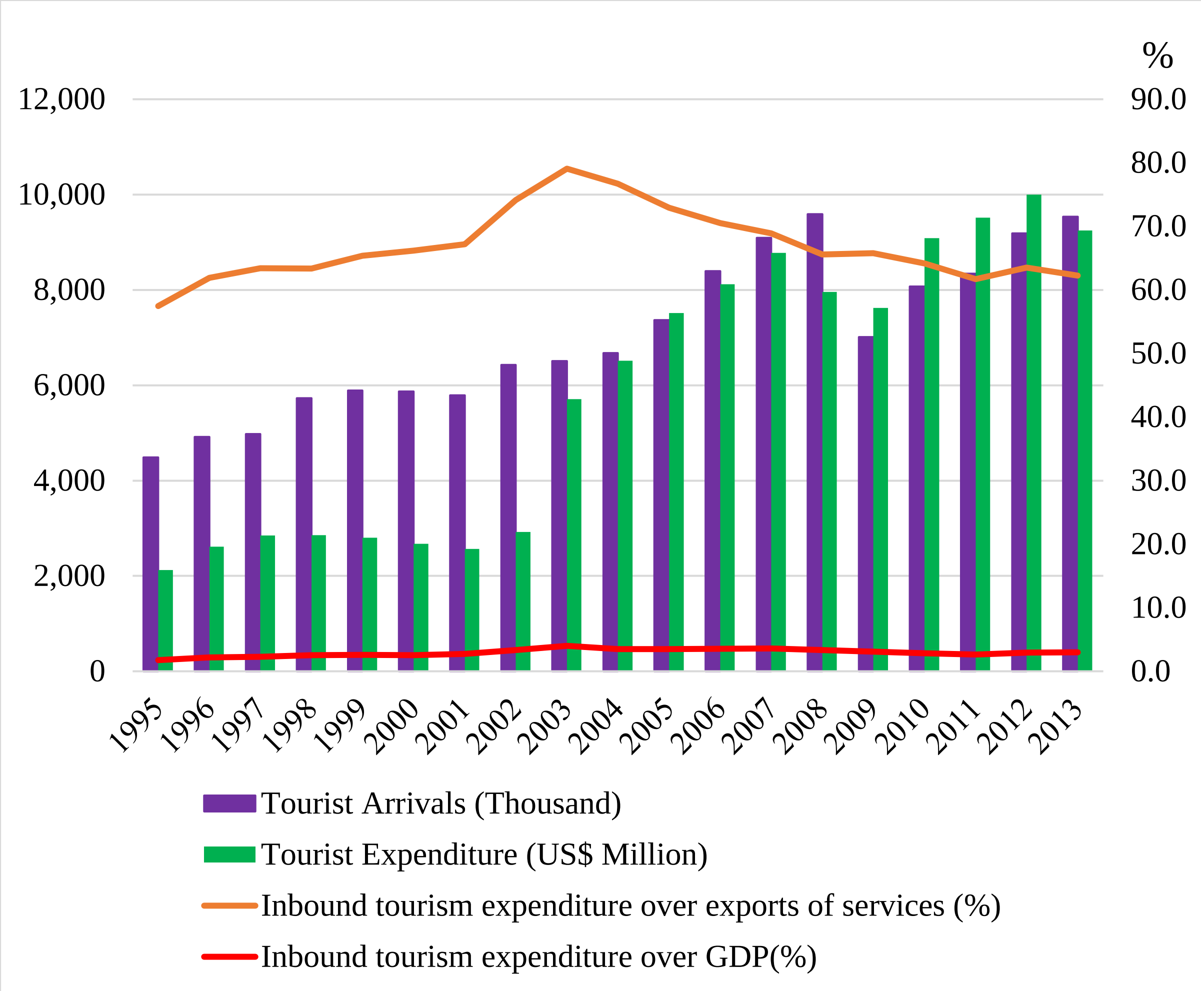

Figure 3.3 Economic significance of tourism in South Africa (1995-2013)

Source: World Tourism Organization/Statistics South Africa and South African Tourism

Tunisia's tourism industry

Tourism is one of the core pillars of the Tunisian export-oriented strategy for economic development. The government plays a dominant role in aiding its expansion and promoting and diversifying tourism products.[40] According to Poirier (1995), Tunisia embraced tourism as an aspect of economic development in the early 1960s. As tourism in Tunisia has historically relied highly on European tourists and has focused on mass leisure tourism, it has therefore

[40] Tourism products includes desert, cultural, heritage, golf, health tourism etc.

concentrated exclusively on beach tourism and relaxation. Tunisia has targeted European tourists for their wealth and proximity to North Africa and has promoted itself as a competitor to Spain, Portugal, Greece and southern Italy (Gray, M., 2000). In 2001, about 5.48 million tourists arrived in Tunisia, and in 2010 it attracted about 7 million tourists. Tourism receipts in 2001 were about US$2 billion whereas receipts from tourism were about US$3.5 billion in 2010. The tourism sector contributes about 7.9% of the total GDP. The revenues from the tourism industry count as a primary source of foreign currency earnings, which is a big contributor towards the current account balance in the balance of payments. In 2015, about 5.36 million international tourists arrived, and receipts from international tourism were about US$1.354 billion (UNWTO, 2016). Travel and tourism directly contributed 497.2 million Tunisian dinars to the Tunisian economy, which is 5.8% of total GDP, directly supported over 185,000 jobs and attracted a total investment of 1.41 billion dinars. (WTTC, 2016f). At the current projected rate of growth international tourist arrivals in Tunisia are expected to reach about 5.4 million by 2026 and generate 3.76 billion Tunisian dinars, and the travel and tourism industry is forecast to contribute 4.6% of GDP, account for 190,000 direct jobs and support a total of 410,000 jobs (WTTC, 2016f). Tunisia’s development strategy has focused on diversification of the economy and exports, investment in infrastructure and in human capital such as education, social security, health and empowering women (Cortés-Jiménez et al., 2011). Tunisia has recently experienced a period of dramatic social and political change. It was the first country to spark the uprising that led to the Arab Spring in late 2010.

Figure 2.4 shows Tunisia’s inbound tourist numbers in thousands, tourist expenditure in US$ millions, the percentage of inbound tourism expenditure relative to exports of services and finally the contribution of inbound tourism expenditure to GDP. In 2011 the most dramatic fall of tourist arrivals was caused by the beginning of the Arab Spring in late 2010, which also spread to other countries in the region. Tourism expenditure and the ratio of tourism expenditure to GDP also went down along with the number of tourist arrivals.

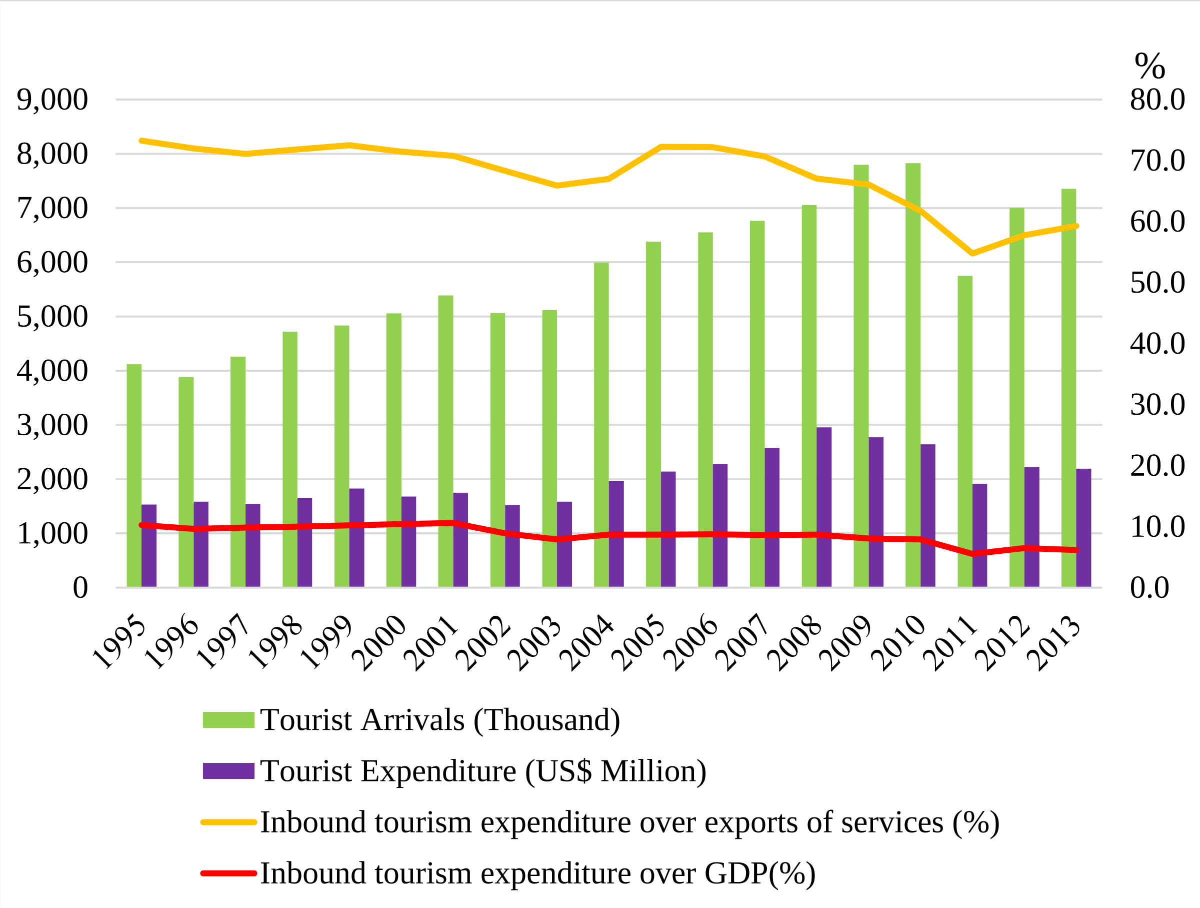

Figure 3.4 Economic significance of tourism in Tunisia (1995-2013)

Source : World Tourism Organization/ Ministère du Tourisme – Office National du Tourisme and Institut National de la Statistique

Summary and conclusion

This chapter began by defining tourism and related terms and then analysed tourism trends worldwide, in the African region generally and in Egypt, Morocco, South Africa and Tunisia. In particular, we considered special events that caused fluctuations in tourism inflows, expenditure and growth. The contribution of tourism to GDP and the importance of the industry were also analysed and discussed. Our analysis indicated that international tourism has grown steadily over the past six decades and has experienced continued development and diversification to become one of the major and fastest growing economic sectors worldwide. The number of international tourist arrivals in 2015 reached a total of 1.9 billion compared to only 25 million in 1950. International tourism receipts were even more spectacular, increasing from about US$2.1 billion in 1950 to US$1,060 billion in 2015. By 2030, international tourism arrivals are expected to reach 1.8 billion (UNWTO, 2016). International tourism is significantly important because it contributes to the economy, it creates employment in various industries, and is a major source of exports and foreign currency earnings.

Given the increase in travel and tourism worldwide, the right direction and strategic planning in Africa are needed to overcome obstacles and develop the tourism sector further. The African region still receives only a fraction of the world's tourism receipts, but it has huge potential for tourism as it possesses most of the assets and attractions required for tourism to flourish: pleasant climate, beautiful coastlines, desert landscapes, and remarkable and historic archaeological sites. The tourism potential for the African region, Egypt, Morocco, South Africa and Tunisia is enormous and far greater than is currently is being realised.

Chapter 4: Tourism and its determinants

Introduction

Many countries depend on tourism as one of the main sources of exports and foreign currency earnings. Tourism accounts for about 10% of world GDP, 7% of the world's exports in goods and services and worldwide 10% of jobs related to tourism (UNWTO, 2017). A significantly greater amount of research into the determinants of tourism has been carried out for developed countries than for African countries. In this study, we examine the determinants of inbound tourism demand for the three African countries of Egypt, Morocco and South Africa.

Most of the research focuses on factors such as income, which is the single most important determinant of tourism demand according to Crouch (1994). However, Lim (1999) argued that discretionary income was the most appropriate income variable, but it is a subjective variable that is not precisely measurable. Subsequently, in the tourism literature, most of the researchers use conventional variables such as GDP or GDP per capita as a proxy to measure the income, size or productivity of a country. Notwithstanding the fact that GDP is related to the market value of a country's productivity or income apparatus, it is an imperfect proxy in the sense that it is a flow concept. This shortcoming has been addressed by Clark (2002) who explains:

> Flow data gross of costs, such as GDP and its derivatives, are incomplete as measures of economic performance because they give no information on the economy's overall outstanding assets and liabilities or the contribution of the flow data to the evolution of assets and liabilities. Basing an analysis on such limited information is roughly equivalent to assessing the economic and

financial health of a firm based only on the firm's turnover without regard to operating costs or how the turnover is financed.[41]

Subsequently, Clark (2002) argued that GDP is an incomplete measure for gauging economic performance. In order to conduct a complete analysis, it is necessary to create a balance sheet linking the macroeconomic flows net of costs over time. This implies a system of accounting discipline where consequences on the various categories of assets and liabilities are fully and clearly defined is required. Likewise, concepts such as profits and costs should be defined appropriately. The reported profits in one country's national accounts that reflect the criteria for a country's income distribution may be quite different from another country's criteria, and relative price discrepancies between two countries can mask the international economic reality. The fact of the matter is that the national accounts are prepared and presented in the context of traditional macroeconomic analysis, where a national authority tries to maximise internal levels of output, employment and consumption. In contrast, international investors have a different perspective; they want to know a country's internal levels of output, employment and consumption information to estimate risk and returns on their investment based on their home currency. Information about the country's abilities to generate the net foreign exchange value to pay for its current and future obligations including interest, dividend, and the principle is very important for international investor's investment decision processes. Subsequentely, Clark and Kassimatis (2011) constructed an income distribution model based on international criteria that reflect the effects of foreign exchange value and international relative prices and which included the concepts of profits and a balance sheet. Therefore the market value of the

[41] See Clark (2002: p.319).

economy from financial theory would be a more appropriate proxy for income in studying the determinants of tourism demand.

In a more comprehensive study, Kim et al. (2012) argued that real disposable income might be the best proxy for income to determine international tourism demand, but there is no sufficient proof to conclude that demand for international tourism solely depends on disposable income. They also pointed out that the plausible upper limit on tourism demand will depend on the total availability of cash flows. There will be less demand for tourism if an individual or household does not have the wealth for it and, consequently, there will be less consumption. However, demand will not necessarily consistently lead to the consumption of tourism goods or travel by using a constant proportion of discretionary income.

Despite the significant and compelling results for the traditional income proxy, Crouch (1996) argued that it is still possible for other income-related factors to play a role in determining international tourism demand. The life cycle hypothesis of Ando and Modigliani (1963) and the permanent income hypothesis of Friedman (1957) suggest that consumption depends largely on expected rather than current earnings. In this light, Kim et al. (2012) explain: "Although movements in real discretionary income will undoubtedly increase international tourism demand, demand may also shift based on adjustments in adaptive expectations for future earnings or total wealth regardless of whether the potential gain is actually realized".

It is widely observed that stock prices are associated with national consumption (Case et al., 2005). In order to emphasise the importance of asset wealth in tourism demand, Lee (2011) studied the role of asset wealth, such as stock and housing wealth, in the tourism demand model. Kim et al. (2012) suggested that wealth from financial assets might be a better proxy for measuring tourism demand and used the stock market index as a proxy for financial assets.

As we have a large number of the developed and emerging markets in our study, the MSCI ACWI index is appropriate as a proxy for measuring financial wealth.

This chapter is organised as follows. Section 3.2 reviews the literature on tourism demand. Section 3.3 describes the data and variables presented. Section 3.4 presents the methodology used in the estimations. Section 3.5 reports and discusses the empirical findings and, finally, section 3.6 presents the discussion and conclusions.

Literature review

In order to understand the relevant determinants of tourism, most of the research focuses on the demand-side or supply-side factors (Crouch, 1994; Lim, 1997; Lim, 1999; Peng et al., 2014; Peng et al., 2015; Zhang, J. and Jensen, 2007). Fundamentally, tourism demand is a function of income, relative prices, exchange rate, transportation cost but the proxies of these variables are still subjects of considerable debate in the literature (Dogru et al., 2017). A study by Zhang and Jensen (2007) found that infrastructure, natural endowments and technology are the relevant supply-side factors for influencing comparative advantage and that the tourism industry requires sophisticated technological inputs and adequate social planning.

GDP data have been used extensively as a proxy for the income variable but the data are only available annually, biannually and quarterly. In the absence of monthly GDP data, researchers such as González and Moral (1995), Seo et al. (2009), Dogru et al. (2017) and Otero-Giráldez et al. (2012) used the industrial production index (IPI) as a proxy for income. Dogru et al. (2017) analysed the efficiency of the IPI as a proxy for income relative to GDP but concluded that it was not a good proxy for income. Where relevant, the literature has embraced the growth rate of the IPI as a proxy for economic growth (Bjørnland and Leitemo, 2009; Espinoza et al., 2012; Kim, Soyoung and Roubini, 2000; Laopodis, 2009).

In the literature, a meta-analysis method has been applied to analyse tourism demand whenever an explanation of the reason for different findings or effects across different studies was needed. As pointed out by Peng et al. (2014), meta-analysis can produce a real size effect through a comprehensive and systematic review of the findings from previous empirical studies. By reviewing 195 studies, Peng et al. (2015) found that the measures of explanatory variables, country of origin and destination, sample size, period, modelling method and frequency of data significantly influence the estimates of a model. Lim (1997) reviewed 100 empirical studies of tourism and found that annual data were employed most frequently, the number of observation or sample size used were too small to obtain meaningful and reliable regression estimates and that log-linear single-equation model had been employed mostly for econometric analysis. The number of tourist arrivals or departures was the most frequently used dependent variable, followed by tourist expenditure or receipts, travel exports or imports, the length of stay, nights spent in tourist accommodation and others. Income in the country of origin was employed most frequently as an explanatory variable, followed by relative price or tourism prices, transportation costs, exchange rates and other factors. Lim (1999) then performed a meta-analysis using the findings of 70 empirical studies into the relationship between international tourism demand and income, transportation costs, and relative prices and found that income and price variables were more robust compared to transportation costs.

Crouch (1992) examined the results of 44 empirical studies and found that depending on the proxy for income (e.g. total income or per capita income), employed estimation results changes. He also found that international travellers are sensitive to price changes.

It is extensively acknowledged that changes in consumption are associated with changes in stock prices (Case et al., (2005). The coefficient relating the change in consumption to changes in stock market wealth measures the ’wealth effect’. The circumstances when stock prices increase but labour income remains constant and consumption rises due to the increase in stock market prices can be defined as stock market wealth effect (Peltonen et al., 2012).

In order to find the determinants of outbound tourism from South Korea, Kim (2012) used the number of outbound tourists as a dependent variable, real estate as an explanatory variable and the stock market index (financial assets) as a proxy for the wealth effect, and found that stock index price was not a significant determinant of outbound tourism. However, real estate was found to be a significant determinant of outbound tourism. Fereidouni et al. (2017) employed quarterly tourism data from Malaysia to examine the relationship between outbound tourism and real estate and concluded that there was a significant positive relationship between them.

Martins et al. (2017) used world GDP per capita as a possible determinant of tourism demand and found it to be one of the most important variables along with the decline of relative domestic prices. They also found that depreciation of the national currency helped to boost tourism demand and that when tourist expenditure was used as a proxy for tourism demand, then relative prices became more significantly important.

Lee (2011) provided comprehensive evidence that the permanent income variable based on 'Permanent Income-Life Cycle Hypothesis' was superior to the conventional income variable in a tourism demand model.

In the search for factors affecting tourism demand, Goh (2012) went beyond the traditional economic variable and examined the socio-psychological variable. She found that climate as a non-economic variable was a significant determinant of tourism demand and suggested that tourism demand planning should go beyond analysing traditional economic factors. According to Álvarez-Díaz et al. (2010), the impact of climate and weather on tourism needs more attention. They investigated the influence of the North Atlantic Oscillation (NAO) on tourism demand and found a significant connection between them. They argued that NAO can be a valuable explanatory variable for the construction of a tourism demand model. Temperature and precipitation are the two climate proxies that have been used to study tourism demand (Lise and Tol, 2002; Maddison, 2001).

In addition, a study by Morley (1992) developed a utility approach to tourism based on macroeconomic theory, which reflects the actual decision-making process concerning tourism demand rather than destination-based models. The decision on whether to participate in tourism or not weighed the costs and benefits of alternative destinations. They also looked at the demand function properties. Zhang et al. (2016) argued that, depending on the tourist country of origin, the level of expenditure and risk associated with the tourist varies and that the variation may alter over time. They employed productivity measurement theory in mean-variance space to a region in France by introducing the utility function in the mean-variance framework. They found that it was possible to calculate an optimal portfolio share for each origin by employing this method and that this would help policymakers decide how to improve the performance of the tourism sector.

Since Balaguer and Cantavella-Jordá (2002) pioneered the idea of the tourism-led growth hypothesis which borrowed from the export-led growth hypothesis, it has attracted significant research in tourism economics. They employed real GDP as the dependent variable and international tourism earnings in real terms and the real effective exchange rate as a proxy for external competitiveness as explanatory variables. They found that a stable relationship between economic growth and tourism expansion existed in Spain. Tang and Abosedra (2016) analysed the relationship between tourism and economic growth in Morocco and Tunisia. They found evidence of tourism-led growth in these countries and stated that economic growth could be sustained through the expansion of their tourism sectors.

Nowak et al. (2007) found the existence of the second channel of transmission between tourism development and economic growth via investment. Cortes-Jimenez and Pulina (2010) considered a production function and introduced the percentage of GDP used for investment as a proxy for capital and percentage of the active population who had completed secondary education as a proxy for human resource. Recently, Perles-Ribes et al. (2017) examined the robustness of the relationship between tourism and economic growth and included event variables such as global financial crisis, economic crisis and the Arab Spring which negatively shocked the tourism market.

While early studies concentrated on the direction of causality between tourism and tourism growth, some studies focused on reverse causality. Sequeira and Campos (2007) employed variables such as real GDP, tourism receipts as a percentage of exports of goods and services, the ratio of tourist arrivals to total population, black market premium, secondary school male enrollment, government consumption-output ratio, degree of openness and investment output ratio to examine the relationship between international travelling and economic development. They found that the variables employed were not strongly correlated with the economic boom or had adverse effects of tourism development on economic growth.

Furthermore, De Vita and Kyaw (2016) studied the impact of tourism development on economic growth with GDP per capita as a dependent variable and with lagged growth rate, tourism arrivals (tourism development coefficient), investment, government consumption, inflation, population growth, secondary education, trade, political stability and financial development as explanatory variables. They found evidence of increasing tourism development at the 5% significance level for middle-income and high-income countries but not for low-income countries. As a robustness test of their finding, they employed tourism expenditure as a tourism development coefficient and found a similar result.

Oil price movement has an impact on every country's economy. Chatziantoniou (2013) found that oil-specific demand shocks affect inflation and the tourism sector equity index at the same time, and aggregate demand oil price shocks have a lagged effect on tourism income and economic growth.

In their study, Khadaroo and Seetanah (2007) demonstrated the importance of good transport infrastructure for tourism development. They pointed out that transportation infrastructure represents a significant strategic investment for countries' tourism development and that it is a precondition for the attractiveness of a tourist destination.

Tsui (2017) examined whether low-cost carriers influence the domestic tourism of New Zealand. Domestic guest nights were employed as a proxy for demand and their findings suggested that low-cost carrier services and transportation costs, GDP per capita and regional tourism indicators do affect domestic tourism.

The relationship between international tourism and international trade has been explored by many researchers.[42] In their study of South Africa, Fry et al. (2010) found a long-term association between tourist arrivals and trade and strong evidence that tourism causes trade. In an empirical study of South Korea, Keum (2010) found a positive and significant relationship between tourism and trade. Shan and Wilson (2001) in a study of China found a relationship between trade and tourism.

Khan et al. (2005) asserted that tourism might influence international trade as tourists buy food, souvenirs and transportation in a foreign country and that foreign country may have to import goods and services from the tourism country of origin. Hence, tourism has the potential to encourage trade.

[42] See for example, Shan and Wilson (2001), Khan et al. (2005) and Santana-Gallego et al. (2001).

However, Santana-Gallego et al. (2016) argued that the impact of tourism on trade flows using a gravity model has been neglected. Their empirical findings suggested that tourism affects the extensive margin and intensive margin of trade. They employed cross-section data from 195 countries and an HMR (Helpman, Melitz and Rubinstein) model, which suggested that, if the number of tourist arrivals increased by 1%, this would increase the probability of export by 1.25% and raise the volume of exports by 9%. They also pointed out that tourism could lead to increased trade as improved infrastructure for tourism would also facilitate trade and reduce the cultural distance between countries, increase information exchange, reduce transaction costs and increase market size. Guo (2007) employed a gravity model to examine inbound tourism demand in China. Khadaroo and Seetanah (2008) also employed a gravity model to investigate tourism flows. Another study by Gil-Pareja et al. (2007) used a gravity model on a panel dataset of twenty OECD countries to investigate whether the Euro had an impact on intra-EMU (Economic and Monetary Union) tourist flows. An empirical study by Santeramo and Morelli (2016) on international tourism demand for Italian agritourism employed gravity-type models through quantile regression.

There is still an ongoing issue in the tourism demand literature that is far from being settled over whether to include price and exchange rate separately or whether the price should be adjusted/standardised by the exchange rate. According to Song and Li (2008), there are two different price components that researchers investigate, i.e. relative price and substitute price. Price in tourism destination relative to price in the tourist' country of origin is known as relative price and price in the competing destinations is known as substitute price. In their study, De Vita and Kyaw (2013) pointed out that relative price as well as exchange rate, are significant determinants of tourism demand. They argued that the relative price standardised by the relevant exchange rate is more appropriate than including them separately or on their own.

However, there was no analytical explanation nor empirical evidence in their study to underpin their argument (Dogru et al. (2017).

Inquest to find analytical and empirical evidence to underpin the proposition that whether prices and exchange rates should be included on their own in the tourism demand model, Dogru et al. (2017) shed light on this issue by modelling tourism demand for Turkey from nine major tourist generating countries for the period between 2003 and 2012, and theorised that inclusion of price and exchange rate variables as a mutually exclusive component. They also suggested that price standardised by the exchange rate is a better proxy for the cost of living in a destination relative to tourist country of origin.

In addition to the main variables, some dummy variables, such as special events, political instability, social conflict, airlift problems, recession and crisis have frequently been included in the demand model as additional explanatory factors. To analyse the primary determinants of domestic tourism and international tourism demand, Garín-Muñoz (2009) studied 17 regions in Spain and 24 countries for the period between 1999 and 2006. In order to investigate international tourism demand, the number of overnight stays was employed as a proxy for the demand variable. Whereas conventional income, price (index constructed by multiplying the distance between the origin and destination countries and the annual average price of crude oil price), a dummy for Holy Year and a time variable employed as an explanatory variable. The domestic tourism price index was constructed by dividing the price index of accommodation of Galicia in the corresponding year by the corresponding consumer price index (CPI) of each of the tourism regions of origin. Their findings suggested that domestic and international tourism are very sensitive to income and prices.

Furthermore, Choong-Ki et al. (1996) used inbound tourism expenditure in South Korea as a proxy for demand. They used tourism income, price, exchange rate and some dummy variables for the oil crisis of 1974, the oil crisis and political instability of 1980 and effects of the Seoul Olympic Games in 1988 as an explanatory variable. They found the oil crisis and the 1988 Olympic1988 is not significant, but the relative price and exchange rates are statically significant.

A stable exchange rate is necessary for inbound tourism flows, as pointed out in an empirical study by Santana-Gallego et al. (2010), who found that stable exchange rates are more favourable to tourism. De Vita (2014) investigated the impact of exchange rate regimes on international tourism flows and recommended that it was essential to maintain a relatively stable exchange rate to attract international tourist arrivals.

Volatility in exchange rates affects international tourism receipts and tourism arrivals. Agiomirgianakis et al. (2015) found that exchange rate volatility had an adverse effect on tourist arrivals in Iceland. Webber (2001) found that tourists abandon the idea of a holiday in a particular destination and choose a different destination for a holiday because of the adverse effects of exchange rate volatility.

According to Witt and Witt (1995), it is impossible to construct a single equation model that is appropriate for all tourism origin-destination pairs. There are some certain explanatory variables that influence tourism demand for some origin-destination pairs. However, these explanatory variables have no influence when it comes to other origin-destination pairs and these estimated coefficients also vary substantially across tourist flows.

Data and variables

4.1.1 Data

The estimated period in this study is varied due to the availability of data for three tourist destination countries. The datasets for Egypt and Morocco include tourist arrivals from 68 countries and corresponding determinants from 1995 to 2011. However, due to data constraints, South Africa's dataset includes tourist arrivals from 66 countries and corresponding determinants from 2000 to 2011. We have employed both the static and dynamic panel data approaches. The lists of tourism countries of origin are given in section 7.2 Appendix B for Egypt, section 7.3 Appendix B for Morocco and section 7.4 Appendix B for South Africa.

The theoretical and empirical literature review suggests a large number of explanatory variables that can be employed to investigate inbound tourism flows. Although all these variables are possible, it is practically impossible to consider all of the explanatory variables in the empirical models. Hence, it is necessary to recognise the most appropriate and potentially informative explanatory variables before conducting an empirical analysis.

4.1.2 Specification of variables

Dependent variable

Tourism inflows can be represented by the number of tourist arrivals, tourism receipts and tourist nights as well as the length of stay (Lim, 1997). In the tourism literature, data for the number of tourist arrivals at the national border is the most common measure used to capture tourism demand. The number of tourist arrivals is used as a measure for tourism demand by many researchers – see, for example, Kim and Song (1998), Zhang and Jensen (2007), Gil-Pareja et al. (2007), Cró and Martins (2017), Chaisumpunsakul and Pholphirul (2017) and Dogru et al. (2017). Alternatively, many researchers have used other measures for tourism demand; for example, Song et al. (2010) employed tourism expenditure and Arslanturk et al. (2011) used tourism receipts, but Akal (2004) argued that tourism receipts are theoretically and statistically correlated with tourism arrival. Gokovali et al. (2007) employed a length of stay and Gouveia and Rodrigues (2005) employed tourist nights spent.

The choice of a particular dependent variable will depend on whether the researcher wants to focus on an increase or decrease in tourism arrivals, tourism expenditure or receipts. The number of tourist arrivals can be employed as a measure of the absolute size of a particular market. Alternatively, expenditures or receipts and the total length of stay can be employed as a measure for the total goods and services consumed by tourists. In this study, only the number of tourist arrivals is used as a proxy to represent tourism demand or tourism inflows because data on tourism expenditure, receipts and length of stay was not available for the selected tourism countries of origin. Furthermore, the meta-analysis by Crouch (1994), Lim (1999) and Peng et al. (2015) indicated that demand theory suggests that tourism demand should be represented by the number of tourist arrivals.

In this present study, we examine the three African countries namely Egypt, Morocco and South Africa individually, by using 68 country pair and for the period from 1995 to 2011, depending on the availability of data. Inbound tourism flow data from 68 countries of origin to the destination country of Egypt for the period from 1995 to 2011 was collected from UNWTO (United Nations World Tourism Organization) and the Central Agency for Public Mobilization and Statistics (CAPMAS). Inbound tourism flow data from 68 countries of origin to the destination country of Morocco for the period from 1995 to 2011 was also obtained from UNWTO. Inbound tourism flow data from 65 tourism countries of origin to the destination country of South Africa for the period from 2000 to 2011 was obtained from UNWTO and Statistics South Africa (STATS SA).

Explanatory variables

Lag tourism arrival: Destination attributes and visitor satisfaction influence repeat visits to a particular destination. Previous years' visiting experience is an important determinant of tourism flow (Alegre and Juaneda, 2006; Garín Muñoz, 2007; Garin-Munoz and Amaral, 2000; Naudé and Saayman, 2005; Oppermann, 2000; Pearce, 2012; Sönmez and Graefe, 1998). In a similar vein, Garín-Muñoz & Pérez-Amaral (2000) argued that a lagged dependent variable is an important factor as tourists are more likely to go to the same destination if they have liked it. Garín Muñoz (2007) argued that tourists who have already visited a particular destination feel more comfortable about that destination compared to a new destination because tourists are also generally risk adverse. Furthermore, knowledge about the destination expands as people talk about their holidays, hence reducing uncertainty for potential visitors to the destination.

MVECON: Income is the most important and significant determinant of tourism demand (Crouch, 1994). In this study, we adopt the market value of the economy (MVECON) from financial theory as a proxy for income in tourism countries of origin as developed by Clark (2002) and then Clark and Kassimatis (2011). Many studies have used GDP or GDP per capita as a proxy for income, but, as mentioned earlier, GDP is a flow variable and is an incomplete measure of economic performance, particularly when cross-country comparison is a concern. A description of the construction of the MVECON income variable is given in Appendix A.

MSCIACWI: The effect of asset wealth, such as stock and housing wealth, is an alternative important financial source of tourism consumption (Lee, 2011).[43] Similarly, in an empirical study, Kim et al. (2012) also employed a stock index as a proxy to measure financial wealth. In our study, we have about 68 countries of tourism origin from developed, emerging and developing countries, hence an index that represents all these countries of origin could be a

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[43] Lee (2011) demonstrated that the importance of asset wealth can be emphasised by the 'life cycle' hypothesis.

better proxy for examining the wealth effect. The MSCI ACWI Index is a global equity benchmark that represents large-cap and mid-cap stocks across 23 developed and 24 emerging markets.[44] It has more than 2,400 constituents across 11 sectors and approximately 85% of the free float-adjusted market capitalisation in each market (MSCI, 2017) and therefore represents the financial wealth of all the tourism countries of origin in our sample. The annual MSCIACWI index at the level is employed as a proxy for financial wealth.

Brent crude: It is difficult to obtain appropriate measurements for tourist transportation costs, given the selection of different vehicles for transportation, such as planes, ships, buses, trains, boats, etc., and the price gap between high and low seasons. Thus, following Garín-Muñoz (2006) and Wang (2009), the oil price is used as a proxy for transportation cost.

Distance: The geographical distance between tourism country of origin and destination country is a gravity variable. As the distance between countries increases, this discourages tourism. Witt and Witt (1995), Gil-Pareja et al. (2007) Balli et al. (2013), De Vita (2014) and Balli et al. (2016) employed distance to examine tourism flows.

Number of rooms: Tourism infrastructure, such as the capacity of accommodation for tourism in a destination country, is used as a proxy for tourism supply in the literature. Alternatively, tourism investment or gross fixed investment is also used in the literature to represent supply for tourism. The number of hotel rooms available at the time is used as a proxy for tourism infrastructure in this study. Witt and Witt (1995), Zhang and Jensen (2007) and Balli et al. (2013) also used the number of hotel rooms to measure infrastructure.

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[44] The 23 developed markets are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, the U.K. and the U.S. The 24 emerging markets are: Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Russia, Qatar, South Africa, Taiwan, Thailand, Turkey and the United Arab Emirates (MSCI, 2017).

RPEX: Relative price standardised by the bilateral exchange rate is an important factor for tourism. We combine these two variables because, individually, prices and exchange rates cannot capture the costs of tourism destinations Dogru et al. (2017). For example, if we take Morocco as the tourism destination country, the UK as tourism country of origin and 2005 as the base year for CPI that starts with index number 100, then in 2007 the CPI for Morocco is 145 and 116 for the UK. This means that the baskets of goods and services that could be bought with one Moroccan dirham in 2005 could only be bought with 1.45 dirham in 2007. In the UK, the baskets of goods and services that could be bought with £1 in 2005 could only be bought with £1.16 in 2007. If we only considered the CPI ratio of these two countries, we would get 1.25, which could be misleading in the sense that UK tourists might think that prices in Morocco were higher than in the UK in 2007 compared to 2005, as they increased by a quarter. However, these prices do not tell UK tourists whether they could buy more or fewer goods and services in Morocco. However, if in 2007 £1 was worth 1.5 Moroccan dirhams, then, if we take the ratio of CPI standardised by the exchange rate, we would get 0.8333, which would indicate that prices in Morocco were relatively lower than prices in the UK. Therefore, what would cost 0.8333 dirhams in Morocco would cost 1 dirham in the UK. In their empirical studies, De Vita (2014), Lorde et al. (2016) and Mangion et al. (2005) used relative price as CPI of destination relative to CPI of tourism country of origin and the standardised exchange rate between countries.

Language: Inbound tourism flow may increase if the tourist and host countries share a common official language and may attract tourists to visit that particular destination. In the tourism literature, Witt and Witt (1995), Eilat and Einav (2004) and Balli et al. (2016) employed language to determine tourism flow.

Trade Openness: International tourism has a significant influence on international trade flow and vice versa. Tourism inflow in countries like South Africa, Egypt and Morocco may be determined by the level of trade activities with the tourism country of origin. In their study, Chaisumpunsakul and Pholphirul (2017) investigated the relationship between tourism and trade openness and found that the degree of trade openness was a significant determinant of inbound tourism flow. Zhang and Jensen (2007) also used trade openness and argued that openness is significant for developing African countries.

Table 4.1 provides further details of the variables and data sources. The descriptive statistics of variables for Egypt are given in Table 4.2, for Morocco in Table 4.3 and South Africa in Table 4.4. The cross-correlation of variables for Egypt is given in Table 4.5, for Morocco in Table 4.6 and South Africa in Table 4.7.

Table 4.1 Data descriptions and sources of research variables

Variables	Descriptions	Data Source
TA_{ijt}	Tourism inflows from the country of origin *i* to the country of destination *j*	World Tourism Organization (UNWTO), The Compendium of Tourism Statistics database, 2015
$MVECON_{it}$	The market value of the economy from financial theory for tourism country of origin (in billion US$)	countrymetrics countrymetrics.com
$MSCIACWI_{ijt}$	A benchmark index to represent the performance of equity markets across 23 developed and 24 emerging markets, created by MSCI	Morgan Stanley capital international (MSCI)
$RPEX_{ijt}$	Measured by the ratio of the consumer price index in destination country *j* over the consumer price index in the origin country *i* at time *t* standardised by the bilateral exchange rate and calculated by the following formula: $\frac{CPI_{jt}}{CPI_{it} \times exchange\ rate}$ Represents relative price standardised by the exchange rate (Dogru et al., 2017)	World Bank, World Development Indicators (WDI) database and International Monetary Fund (IMF)
$Openness_{ijt}$	The ratio of the total value of exports and imports between origin country *i* and destination country *j* over the market value of the economy *j*	IMF's Direction of Trade Database and countrymetrics
Brent $Crude_{ijt}$	Transport cost, the oil price is proxy for transport cost, and we used Europe Brent crude oil spot price FOB(USD per barrel)	Energy Information Administration (EIA), 2015
No of $Rooms_{jt}$	Number of hotel rooms available in destination country *j* proxy for tourism infrastructure	World Tourism Organization (UNWTO), The Compendium of Tourism Statistics database
Language	A binary variable that takes the value of one when country *i* and *j* share a common official language or zero otherwise	CEPII (Gravity dataset)
$Distw_{ij}$	The distance between the country of origin and country of destination is based on the bilateral distance between the biggest cities of these two countries, these inter-city distances being weighted by the share of the city in the overall countries' population	CEPII (Gravity dataset)

Table 4.2 Descriptive statistics of variables for Egypt

Variable	Observation	Mean	Std. Dev.	Minimum	Maximum
TA_{it}	1119	85403.7	227553.9	23	2855723
$MVECON_{it}$	1156	1097.465	3351.807	0.1	30067.04
MSCIACWI	1156	277.7065	60.68767	181.9	403.25
Brent crude	1156	40.55882	26.51498	10.98	98.25
Distance	1156	6648.137	4103.801	522.9955	16536.4
No of $rooms_{jt}$	1156	143382.8	53470.85	64958	225592
$RPEX_{ijt}$	1151	128.5014	580.8589	0.034893	7099.997
$Language_{ijt}$	1156	0.102941	0.304014	0	1
$Openness_{ijt}$	1156	2.906933	5.661159	0	43.70334

Notes: TA_{it} is the number of tourist arrivals in Egypt, $MVECON_{it}$ is the market value of the economy of tourism country of origin in billion USD, MSCIACWI is a global stock market index, Brent crude is the oil price and distance is the distance between the capital of the tourism country of origin and Egypt's capital city. No of $rooms_{jt}$ is the number of hotel rooms available in Egypt at the time measured in units. RPEX is the relative price standardised by the exchange rate. Language is a dummy variable common official language. Openness is the trade between tourism countries of origin and destination in thousand USD to the market value of the economy of the tourism destination country.

Table 4.3 Descriptive statistics of variables for Morocco

Variable	Observation	Mean	Std. Dev.	Min	Max
TA_{it}	1142	38787.88	156852	2	1827453
MVECON	1142	1110.711	3370.158	0.104561	30067.04
MSCIACWI	1142	277.7909	60.63528	181.9	403.25
Brent crude	1142	40.64083	26.55208	10.98	98.25
Distance	1142	6294.785	3841.605	716.5693	19333.78
No of rooms	1142	58544.3	14595.93	44454	87801
RPEX	1137	101.0771	440.222	0.032116	4339.842
Language	1142	0.19352	0.39523	0	1
Openness	1142	0.75643	1.338498	0	14.53415

Notes: TA_{it} is the number of tourist arrivals in Morocco, $MVECON_{it}$ is the market value of the economy of tourism country of origin in billion USD, MSCIACWI is a global stock market index, Brent crude is the oil price and distance is the distance between the capital of the tourism country of origin and Morocco's capital city. No of $rooms_{jt}$ is the number of hotel rooms available in Morocco at the time measured in units. RPEX is the relative price standardised by the exchange rate. Language is a dummy variable common official language. Openness is the trade between tourism countries of origin and destination in thousand USD to the market value of the economy of the tourism destination country.

Table 4.4 Descriptive statistics of variables for South Africa

Variable	Observation	Mean	Std. Dev.	Min	Max
TA_{it}	788	30303.84	69459.86	38	497687
MVECON	792	1284.479	3713.699	0.141347	30067.04
MSCIACWI	792	291.21	56.92514	190.8	403.25
Brent crude	792	50.53	25.5329	18.96	98.25
Distance	792	9044.583	2793.016	1837.949	14785.83
No of rooms	792	64439.92	9245.62	51874	77600
RPEX	792	100.59	437.61	0.025872	4407.737
Language	792	0.257576	0.437575	0	1
Openness	792	5.283608	10.77355	0	71.42256

Notes: TA_{it} is the number of tourist arrivals in South Africa, $MVECON_{it}$ is the market value of the economy of tourism country of origin in billion USD, MSCIACWI is a global stock market index, Brent crude is the oil price and distance is the distance between the capital of the tourism country of origin and South Africa's capital city. No of $rooms_{jt}$ is the number of hotel rooms available in South Africa at the time measured in units. RPEX is the relative price standardised by the exchange rate. Language is a dummy variable common official language. Openness is the trade between tourism countries of origin and destination in thousand USD to the market value of the economy of the tourism destination country.

Tabel 4.5 reports Egypt's pairwise correlation analysis and the degree of correlation varies among variables. The explanatory variable openness has the highest relationship with tourism arrivals, and there is a positive and significant correlation between tourism and MVECON, MSCIACWI, Brent crude and number of rooms. However, there is a negative relationship with distance, RPEX and language.

Table 4.5 Egypt's cross-correlation between variables, 1995-2011

	TA	MVECON	MSCIACWI	Brent crude	Distance	No of rooms	RPEX	Language	Openness
TA	1								
MVECON	0.2572	1							
MSCIACWI	0.1012	0.059	1						
Brent crude	0.1385	0.0856	0.4037	1					
Distance	-0.2691	0.0822	-0.0153	0.0279	1				
No of rooms	0.1673	0.0931	**0.5524**	**0.8534**	0.0277	1			
RPEX	-0.0743	-0.0643	-0.012	-0.0034	0.1912	-0.0071	1		
Language	-0.0052	-0.1018	0.0117	0.001	-0.3631	0.005	-0.0677	1	
Openness	**0.5165**	**0.7108**	0.0297	0.1234	-0.1360	0.0940	-0.0888	-0.0017	1.0000

Notes: The correlation coefficients greater than 0.5 are shown in bold.

Table 4.6 reports Morocco's pairwise correlation analysis and the degree of correlation varies among variables. MVECON has the highest relationship with tourism arrivalsMVECON. There is also a positive and significant correlation with MSCIACWI, Brent crude, number of rooms, language and openness. Conversely, there is a negative relationship between distance and RPEX.

Table 4.6 Morocco's cross-correlation between variables, 1995-2011

	Tourism	MVECON	MSCIACWI	Brent crude	Distance	No of rooms	RPEX	Language	Openness
Tourism	1								
MVECON	0.2174	1							
MSCIACWI	0.0518	0.0539	1						
Brent crude	0.0818	0.094	0.3778	1					
Distance	-0.2487	0.0639	0.0001	0.0001	1				
No of rooms	0.0888	0.105	0.4681	**0.8954**	0.0002	1			
RPEX	-0.0545	-0.0659	0.0024	-0.0113	0.1359	-0.0123	1		
Language	0.1934	-0.0753	0.0042	0.0067	-0.3105	0.0063	-0.0941	1	
Openness	0.0964	-0.1032	0.0282	0.102	-0.294	0.0896	-0.0101	0.2946	1

Notes: The correlation coefficients greater than 0.5 are shown in bold.

Table 4.7 reports South Africa's pairwise correlation coefficient matrix. The correlation analysis and the degree of correlation vary among variables. The explanatory variable openness has the highest relationship with tourism. There is also a positive and significant correlation between tourism and MVECON, MSCIACWI, Brent crude, distance, number of rooms and common language. However, there is a negative relationship only with RPEX.

Table 4.7 South Africa's cross-correlation between variables, 2000-2011

	Tourism	MVECON	MSCIACWI	Brent crude	Distance	No of rooms	RPEX	Language	Openness
Tourism	1								
MVECON	0.4968	1							
MSCIACWI	0.0253	0.0364	1						
Brent crude	0.0473	0.0736	0.3105	1					
Distance	0.0615	0.3398	0.0044	0.005	1				
No of rooms	0.0451	0.0757	0.3967	**0.756**	0.0068	1			
RPEX	-0.0935	-0.07	0.0155	-0.0011	0.0597	0.0014	1		
Language	0.2929	0.1164	-0.0025	-0.0029	-0.1617	-0.0039	-0.0795	1	
Openness	**0.6854**	**0.7493**	-0.0099	0.0294	0.2059	0.0031	-0.0901	0.094	1

Notes: The correlation coefficients greater than 0.5 are shown in bold.

Methodology

4.1.3 Benchmark specifications

The model specification for conducting econometric estimation is the conventional gravity model as it performs like a workhorse model for many empirical studies to determine tourism demand by accounting for resistance and friction factors that are neglected, such as distance and common language. Market value of the economy and the global stock market index are the two main variables of interest. A range of control variables is also included. The base gravity model specification is given below:

$$TA_{\,ijt} = B_0 + B_2 Mvecon_{it} + B_3 Msciacwi_t + B_4 Brent\ crude_t + B_5 Distance_{ijt} + B_6 No\ of\ Rooms_{jt} + B_7\ RPEX_{ijt} + B_8 Langauage_{ijt} + B_9 Openness_{ijt} + \varepsilon_{ijt} \tag{3.1}$$

Where *i* is tourism country of origin and *j* is tourism country of destination and year *t.*

4.1.4 Static panel data

In this study, panel data refers to the polling of observations on a cross-section of countries over several time periods. Panel data gives more informative data, more variability, less collinearity among the variables and more degrees of freedom and efficiency (Baltagi, 2008), whereas pooled ordinary least square (POLS) yields a better understanding of the preliminary sign of each determinant of inbound tourism flow (Naudé and Saayman, 2005; Su and Lin, 2014; Yang et al., 2010). However, POLS estimation ignores the dual nature of the time series and cross-sectional data. Moreover, this model assumes that the coefficients of the tourism function remain constant across time and cross-sections. It also assumes that regressors are nonstochastic but if stochastic then uncorrelated with the error terms and error term satisfies all the usual classical assumptions such as homoscedasticity, no serial correlation. Thus, POLS estimation is also known as the constant coefficient model. However, the model can be misspecified because it ignores the individuality or heterogeneity that may exist among different countries. If the heterogeneity of each country contains an error term, then it is possible that the error terms correlated with other regressors and the estimated coefficients may be biased and inconsistent (Gujarati, 2011). A panel data model with fixed effects or random effects can be employed to eliminate this problem.

The fixed effect model (FEM), also known as least squares dummy variables (LSDV), takes into account heterogeneity that may exist among countries and allows each country to have its own intercept. One of the advantages of the random effect model (REM), also known as the error components model (ECM), over the FEM is that it can include time-invariant variables and facilitate a country fixed effect. With the REM, the variation across entities is assumed to be random and uncorrelated with the explanatory variables, and intercepts for each cross-sectional unit are assumed to share a common intercept. A Hausman test specification can be employed to determine whether the FEM or REM performs better.

4.1.5 Dynamic panel data

$$TA_{it} = \gamma TA_{i,t-1} + x'_{it}\beta + \varepsilon_{it} \tag{3.2}$$

$$\varepsilon_{it} = \mu_i + \nu_{it} \tag{3.3}$$

Where ε_{it} is the disturbance term, while μ_i represents the country-specific fixed effect that is time-invariant, and $\nu_{it} \approx n(0, \sigma_\nu^2)$ that is independent, normally distributed with 0 mean and constant variance σ_ν^2 over time and across countries. The inclusion of lagged dependent variable (TA_{it-1}) as regressor violates the orthogonality assumption and the model suffers from endogeneity because TA_{it-1} depends on ε_{it-1}, which is a component of ε_{it} and as $\varepsilon_{it} = \mu_i + \nu_{it}$ consequently E(TA_{it-1} μ_i)≠0. Nickell (1981) argued that dynamic panel data estimation becomes biased because of this correlation but the bias disappears as t tends to infinity. In order to eliminate the country-specific effect, equation (3.2) can be amended as below:

$$\Delta TA_{it} = \gamma \Delta TA_{i,t-1} + \Delta x'_{it}\,\beta + \Delta\,\nu_{it} \tag{3.4}$$

$$(\varepsilon_{it} - \varepsilon_{it-1}) = (\mu_i - \mu_i) + (\nu_{it} - \nu_{it-1}) = (\nu_{it} - \nu_{it-1}) \tag{3.5}$$

Where the symbol Δ represents the first-difference operator. Even though this transformation removes the individual specific effect, the model is still biased because ΔTA_{it-1} is correlated with transformed error term $\Delta\nu_{it}$ since both comprise ν_{it-1} and there may also be the existence of endogeneity in other explanatory variables. Unlike a static model, OLS on the first-differenced data in a dynamic model produces inconsistent parameter estimates because

$E(TA_{it-1}\,\nu_{it}) \neq 0$. Nevertheless, as $E(TA_{it-s}\,\Delta\nu_{it})=0$, $\forall\ s \geq 2$ and $t = 3,..., T$ the lagged variables as instruments could be employed in instrumental variable (IV) estimations.

An empirical study by Anderson and Hsiao (1982) identified this fact and introduced IV estimations using TA_{it-2} as instruments for ΔTA_{it-1} because these are expected to be uncorrelated with the error term, $E(TA_{it-2}\,\Delta\nu_{it})=0$. As an instrument TA_{it-2} is preferable to the alternative ΔTA_{it-2} because of TA_{it-2} available when $t = 3$ but ΔTA_{it-2} generally available at $t=4$; hence particularly in sort panel TA_{it-2} involved more information Roodman (2009). In order to generate extra instruments, Holtz-Eakin et al. (1988) used further lags of the dependent variable. Arellano and Bond (1991) proposed the difference GMM estimator for dynamic panels and argued that a more efficient estimator could be obtained by using available lagged values of the dependent variable and the lagged values of the exogenous variable. To eliminate the endogeneity of ΔTA_{it-1} and other endogenous regressors, Arellano and Bond (1991) recommended using lags in levels starting from lag two and beyond as valid instruments i.e. $E(TA_{it-s}\,\Delta\nu_{it})=0\ \ \forall\ s \geq 2$, $t=3,.., T$. The validity of the difference GMM estimation depends on the instruments that are not correlated with differenced residuals at the time when residuals are not correlated themselves. In order to test for overall validity of the instruments, the Hansen statistic can be employed. It is asymptotically χ^2 under the null hypothesis that the instruments are jointly valid and there is no misspecification.

Arellano and Bond,(1991) proposed the use of second-order autocorrelation in the transformed equation to investigate if the level equation correlated at first order. Consequently, Arellano and Bond tested for AR(1) and AR(2) in the transformed equation employed to test if there is a first-order correlation of residuals in the level equation. If AR(1) is statistically significant and AR(2) is statistically insignificant, then the level equation is not serially correlated at first order.

Arellano and Bove (1995) and Blundell and Bond (1998) argue that, if the explanatory variables and the lagged dependent are highly persistent over time, then lagged levels of these explanatory variables are weak instruments for the regressions in difference. Instrument weakness increases the variance of the coefficients, and in a small sample, this weakness would produce a biased coefficient. Another way to put it is that difference GMM is biased if the coefficient of lagged dependent variable is close to unity because then the dependent variable follows a near a random walk and lagged levels correlate poorly with lagged differences, consequently suffers from severe weak instruments problem. The standard difference GMM performs poorly because the past level instruments carry little information about future variation. For instance, $TA_{i,t-2}$ is not helpful for predicting the change in future values of $\Delta TA_{i,t-1} = (TA_{i,t-1} – TA_{i,t-2})$, even though it is a valid instrument. This makes untransformed lags weak instruments for transformed variables.

The difference GMM eliminates the endogeneity bias but suffers from a loss of efficiency by omitting informative moment condition. Blundell and Bond (1998) developed the system GMM proposed by Arellano and Bover (1995) that mainly improved the estimation efficiency as more instruments were imposed to include more information. This combines the equation in differences (3.4) with the equation in levels(3.2). For levels equation rather than differencing equation (3.2) to eliminate the fixed effect, it differences the instrument to make them exogenous to the fixed effect. Assuming that changes in these variables are not correlated with fixed effect i.e. $E(\Delta TA_{it}\,\mu_i)=0\ \forall\ i$ and t, at that time $E(\Delta x_{it}\,\mu_i)=0\ \forall$ i and t. If this assumption holds then ΔTA_{it-1} and Δx_{it-1} will be valid instruments for the variables in levels, i.e. $E(\Delta TA_{it}\,\mu_i)=0$ and $E(\Delta x_{it}\,\mu_i)=0$.

Furthermore, in circumstances where N > T, then difference and system GMM estimators can be employed as Nickell (1981) suggested that in the case of large T panels the shocks to a country's fixed effect that has been captured by residuals will dwindle over time also correlation among lagged dependent variable and error term will not be significant Roodman (2009). Since T in this study is up to 17 year, the use of the system GMM estimator is necessary. However, a finite sample may underestimate the standard errors (Baltagi, 2008). Therefore, Windmeijer (2005) proposed two-step robust standard errors to be used to correct for finite sample bias.

A dynamic panel model allows the short-run and long-run associations to be accounted for. The system GMM employs lagged values of the endogenous regressors as instruments because it is hard to find appropriate instruments. Following the econometrics technique demonstrated above suits the purpose and enriches our analysis. The number of tourist arrivals, the market value of the economy, MSCI ACWI index, Brent crude, distance between tourism countries of origin and destination, number of rooms available at the destination, relative price standardised by the exchange rate, common language, trade openness (ratio of trade between tourism origin and destination to the market value of destination country) may be simultaneously determined. System GMM estimators address potential endogeneity bias since every regressor is instrumented and includes both level and first difference equations in a stacked system.

Furthermore, the system GMM allows time-invariant variables, such as the distance between the countries of origin and destination to examine whether it is a factor for the determinants of tourism arrivals. Following De Vita (2014), the specific linear dynamic model used in our estimation can be defined as follows:

$$TA_{ijt} = \alpha_0 + \sum_{k=1}^{p} \alpha_k \, TA_{ijt-k} + \sum_{I=0}^{q} \beta_I \, X_{ijt-I} + \eta_i + \lambda_t + \nu_{ijt}$$

$$i=1,\ldots,n \text{ and } t=1,\ldots,T \qquad (3.6)$$

In equation (3.6) above, TA_{ijt} is the dependent variable that represents the total number of tourist arrivals at the destination from the country of origin *i* at time t. TA_{ijt--k} entails the autoregressive structure to reflect persistence and reputation effect (repeat visits to a tourism destination from a country of origin). X_{ijt-I} denotes the current and lagged values of the matrix of independent variables that could be predetermined or endogenous, strictly exogenous; η_i represents individual effects that estimate differences in the mean level of tourist arrivals across country pairs. λ_t represents time specific effects, and υ_{ijt} represents the disturbance term.

In the tourism literature, Balli et al. (2016) and Balli et al. (2013) employed Arellano and Bond (1991) who proposed a difference GMM to correct for endogeneity biases. Another study by De Vita (2014) used the system GMM estimation method to investigate tourism inflows.

Empirical results

Tables 4.8 to 4.10 show the empirical results for Egypt, Morocco and South Africa.

Table 4.8 Empirical results for Egypt

Dependent variable: Tourism arrivals	Pooled OLS (1)	Fixed Effect (2)	Random Effect (3)	System GMM (4)
TA_{ijt-1}	-	-	-	0.530***
				(0.070)
MVECON	0.786***	0.463***	0.692***	0.243**
	(0.0206)	(0.109)	(0.0616)	(0.099)
MSCIACWI	0.166	0.212***	0.195***	0.358***
	(0.148)	(0.0533)	(0.0505)	(0.066)
Brent crude	-0.0520	0.0760	0.00240	-0.155***
	(0.0901)	(0.0466)	(0.0451)	(0.046)
Distance	-1.084***	-	-1.243***	-0.449*
	(0.0473)		(0.185)	(0.226)
No of rooms	0.0209	0.259**	0.0985	0.189*
	(0.149)	(0.125)	(0.112)	(0.103)
RPEX	0.00717	-0.0252	-0.0288	-0.042
	(0.0109)	(0.0316)	(0.0294)	(0.038)
Language	0.735***	-	0.413	0.200
	(0.0873)		(0.370)	(0.231)
Openness	0.108***	-0.00124	0.0175	0.116**
	(0.0166)	(0.0287)	(0.0275)	(0.049)
Constant	13.67***	2.464**	14.16***	3.419
	(1.360)	(1.202)	(1.662)	(2.142)
Observations	1,088	1,088	1,088	1,011
R-squared	0.870	0.665	0.856	-
Number of countries	-	68	68	68
Number of instruments	-	-	-	68
AR(1) test,(p-value)	-	-	-	0.000
AR(2) test, (p-value)	-	-	-	0.143
Hansen test, (p-value)	-	-	-	0.201

Notes: Robust standard errors are reported in parentheses. Significant at *** 1%, ** 5% and* 10% level respectively. The dependent variable is tourism arrivals (TA), and all the variables are in natural log form except language. Dynamic two-step system GMM estimator of Blundell and Bond (1998) with Windmeijer (2005) finite sample correction estimated. The Arellano-Bond AR(1) AR(2) test examines whether the transformed equation is serially correlated at the first order and at second order respectively. Hansen test examines the over-identification restriction for system GMM estimation.

Empirical results for Egypt:

The independent variables in column (1) of Table 4.8 represent POLS estimations; column (2) represents the fixed effect estimations with country-specific effects; column (3) represents the random effect estimations, and column (4) represents the system GMM estimations by taking $Tourism_{t-1}$ as an endogenous variable. However, neither the POLS, FE nor RE estimators are perused any further because these estimators are prone to bias estimation when a lagged dependent variable is present in the model.

A statistical diagnostics check is essential to validate the system GMM. The rejection of the null hypothesis of the Arellano-Bond AR(1) test and failure to reject the null hypothesis of the Arellano-Bond AR(2) test indicates that the transformed equation is not serially correlated at the second order and the model is correctly specified. The failure to reject the null hypothesis of the Hansen test of overidentifying confirms the overall validity of the augmented instruments. The number of instruments is smaller than the number of groups. Hence, for Egypt the p-value of AR (1) is 0.00, AR(2) is 0.143, Hansen is 0.201, the number of instruments is 68 and the number of groups is 68. The system GMM estimation passes all the diagnostics checks and suggests that the estimators are valid and correctly specified.

In column (4) of Table 4.8, the coefficient of the dynamic panel variable lagged value of tourism is 0.530, which is positive and statistically highly significant at the 1% level, confirming repeat visits to the same destination. The income coefficient is 0.243 and is significant at the 5% level, indicating that a 1% increase in the income of the country of origin would increase the number of tourist arrivals in Egypt by 24.3%. This suggests that as a country gets richer more funds are allocated to tourism activities abroad. These results are in line with the income proxy variable used by Balli et al. (2016) and Khadaroo and Seetanah (2008). The estimated coefficient value of MSCIACWI is 0.358, which is positive and highly significant at the 1% level, indicating that Egypt's inbound tourism would increase by 35.8% if the world benchmark equity index appreciated by 1%. The coefficient value of Brent crude is (-0.155), which is negative and statistically highly significant at the 1% level, indicating that if transportation costs increased by 1% then tourism flow to Egypt would decrease by 15.5%. The distance coefficient value is (-0.449), which is negative and statistically significant at the 10% level. The infrastructure coefficient for tourism is 0.189 and statistically significant at the 10% level, indicating that Egypt's inbound tourism would increase by 18.5% if the number of hotel rooms increased by 1%. The trade openness coefficient value is 0.116 and is significant at the 5% level. The tourism price coefficient RPEX, which is relative price standardised by the exchange rate, is (-0.042) but insignificant, or else a 1% increase in the (real) price level of the destination country relative to the country of origin would decrease the number of tourist arrivals by 2.6%. Language is not statistically significant.

Table 4.9 Empirical results for Morocco

Dependent variable: Tourism arrivals	Pooled OLS (1)	Fixed Effect (2)	Random Effect (3)	System GMM (4)
TA_{it-1}	-	-	-	0.691***
				(0.0951)
Income	0.669***	0.301***	0.601***	0.224***
	(0.0266)	(0.0769)	(0.0539)	(0.0756)
MSCIACWI	0.169	0.216***	0.167***	0.217***
	(0.131)	(0.0541)	(0.0569)	(0.0535)
Brent crude	-0.0757	-0.0215	-0.0368	-0.0191
	(0.0968)	(0.0276)	(0.0279)	(0.0221)
Distance	-1.185***	-	-1.487***	-0.359**
	(0.0466)		(0.205)	(0.138)
No of rooms	0.258	1.067***	0.510***	0.00670
	(0.275)	(0.210)	(0.154)	(0.0865)
RPEX	-0.0115	0.0349*	0.0330*	0.00218
	(0.0105)	(0.0191)	(0.0195)	(0.0146)
Language	1.244***	-	1.239***	0.408***
	(0.0653)		(0.302)	(0.142)
Openness	0.202***	0.000826	0.0331	0.0534*
	(0.0231)	(0.0261)	(0.0273)	(0.0282)
Constant	11.26***	-6.364***	11.00***	3.228**
	(2.641)	(1.957)	(2.162)	(1.606)
Observations	1,081	1,081	1,081	1014
R-squared	0.886	0.589	0.846	
Number of countries		68	68	68
Number of instruments	-	-	-	60
AR(1) test,(p-value)	-	-	-	0.001
AR(2) test, (p-value)	-	-	-	0.643
Hansen test, (p-value)	-	-	-	0.128

Notes: Robust standard errors are reported in parentheses. Significant at *** 1%, ** 5% and* 10% level respectively. The dependent variable is tourism arrivals, and all the independent variables are in natural log form except language. Dynamic two-step system GMM estimator of (Blundell and Bond, 1998) with (Windmeijer, 2005) finite sample correction estimated. The Arellano-Bond AR(1) AR(2) test examines whether the transformed equation is serially correlated at the first order and at second order respectively. Hansen test examines the over-identification restriction for system GMM estimation.

Empirical results for Morocco:

The independent variables in column (1) of Table 4.9 present POLS estimations; column (2) represents the fixed effect estimations with country-specific effects; column (3) represents the random effect estimations, and column (4) represents the system GMM estimations by taking $Tourism_{-1}$ as an endogenous variable. However, neither the POLS, FE nor the RE estimators are perused any further because these estimators are prone to bias estimation when a lagged dependent variable is present in the model.

Result of diagnostic tests suggests that Morocco's p-value of AR(1) is 0.001, AR(2) is 0.643, Hansen is 0.128, the number of the instrument is 60 and smaller than the number of the group which is 68 the system GMM estimation. Therefore, pass all the diagnostics check and suggests that the estimators are valid and correctly specified.

In column 4 of Table 4.9, the coefficient of the dynamic panel variable lagged value of tourism is 0.691, which is positive and statistically highly significant at the 1% level, confirming repeat visits to the same destination. The income coefficient is 0.224 and is significant at the 1% level, indicating that a 1% increase in income of the country of origin would increase the number of tourist arrivals in Morocco by 22.4%. The estimated coefficient value of MSCIACWI is 0.217, which is positive and also highly significant at the 1% level, indicating that Morocco's inbound tourism would increase by 21.7% if the world benchmark equity index appreciated by 1%. The coefficient value of Brent crude is (-0.019), which is negative and statistically insignificant. The distance coefficient value is (-0.359), which is negative and statistically significant at the 5% level. The trade openness coefficient value is 0.053 and significant at the 10% level. The estimated coefficient of RPEX, which is relative price standardised by the exchange rate, is (-0.002) and is insignificant. The language coefficient is 0.408 and statistically highly significant at the 1% level. Infrastructure for tourism is also insignificant.

Table 4.10 Empirical results for South Africa

Dependent variable: Tourism arrival	Pooled OLS (1)	Fixed Effect (2)	Random Effect (3)	System GMM (4)
TA_{ijt-1}	-	-	-	0.792***
				(0.058)
MVECON	0.650***	0.521***	0.684***	0.211***
	(0.0438)	(0.0766)	(0.0641)	(0.078)
MSCIACWI	0.0891	-0.0323	0.000196	0.121*
	(0.182)	(0.0521)	(0.0551)	(0.071)
Brent crude	-0.0770	0.0688**	-0.00496	-0.072**
	(0.101)	(0.0309)	(0.0272)	(0.035)
Distance	-1.892***	-	-1.890***	-0.586***
	(0.135)		(0.401)	(0.194)
No of rooms	0.0650	0.0116	-0.180	-0.236**
	(0.351)	(0.127)	(0.110)	(0.100)
RPEX	-0.0148	0.110**	0.0324	0.018
	(0.0141)	(0.0444)	(0.0371)	(0.020)
Language	1.184***	-	1.421***	0.260***
	(0.0800)		(0.279)	(0.093)
Openness	0.272***	-0.00619	0.0429**	0.022
	(0.0364)	(0.0186)	(0.0205)	(0.034)
Constant	21.14***	5.564***	23.73***	8.190***
	(3.892)	(1.268)	(3.928)	(2.282)
Observations	787	787	787	698
R-squared	0.846	0.453	0.825	-
Number of countries	-	66	66	65
Number of instruments	-	-	-	65
AR(1) test,(p-value)	-	-	-	0.000
AR(2) test, (p-value)	-	-	-	0.114
Hansen test, (p-value)	-	-	-	0.310

Notes: Robust standard errors are reported in parentheses. Significant at *** 1%, ** 5% and* 10% level respectively. The dependent variable is tourism arrivals, and all the variables are in natural log form except language. Dynamic two-step system GMM estimator of Blundell and Bond (1998) with Windmeijer (2005) finite sample correction estimated. The Arellano-Bond AR(1) AR(2)test examines whether the transformed equation is serially correlated at the first order and at second order respectively. Hansen test examines the over-identification restriction for system GMM estimation.

Empirical results for South Africa:

The estimation results suggest that for South Africa, the p-value of AR(1) is 0.00, AR(2) is 0.114 and is 0.310 for Hansen. The number of instruments is 68 and the number of groups is 68. Therefore the GMM estimation passes all the diagnostics check and suggests that the estimators are valid and correctly specified. However, neither POLS, FE nor RE estimators are perused any further because these estimators are prone to bias estimation when a lagged dependent variable is present in the model.

In column (4) of Table 4.10, the coefficient of the dynamic panel variable lagged value of tourism is 0.792, which is positive and statistically highly significant at the 1% level, confirming repeat visits to the same destination. The income coefficient is 0.211 and is significant at the 1% level, indicating that a 1% increase in income of the country of origin would increase the number of tourist arrivals in South Africa by 21.1%. The estimated coefficient value of MSCIACWI is 0.121, which is positive and significant at the 10% level, indicating that South Africa's inbound tourism would increase by 12.1% if the world benchmark equity index appreciated by 1%. The coefficient value of Brent crude is (-0.072), which is negative and statistically significant at the 5% level, indicating that if transportation costs increased by 1%, then the tourism flow to South Africa would decrease by 7.2%. This result is in line with the study by (Saayman and Saayman, 2008) who found a negative relationship between travel costs and tourist arrivals from Australia. The distance coefficient value is (-0.586), which is negative and statistically significant at the 1% level. The coefficient of infrastructure for tourism is negative and significant at the 5% level. The common language coefficient value is 0.260 and is statistically highly significant. However, the price variable RPEX and trade openness is statistically insignificant. In 2010, South Africa hosted the football World Cup, which resulted in a 50% increase in the number of rooms in five-star hotels in Cape Town and a 20% increase in four-star hotel rooms between 2007 and 2010 (Ferreira and

Boshoff, 2014). An oversupply of hotel rooms is the reason why our coefficient for the number of hotel rooms is negative and statistically significant at the 5% level. Saayman and Saayman (2008) also found a negative relationship between the number of hotel rooms available and European tourist arrivals in South Africa.

4.1.6 Other measures of income – Robustness test

Table 4.11 Data Descriptions and sources of research variables

Variables	Descriptions	Data Source
TA_{ijt}	Tourism inflows from the country of origin *i* to the country of destination *j*	World Tourism Organization (UNWTO), The Compendium of Tourism Statistics database, 2015
GDP_{it}	Gross domestic product of tourism country of origin (GDP constant 2010 USD)	World Bank, World Development Indicators (WDI) database
$MSCIACWI_{ijt}$	A benchmark index to represent the performance of equity markets across 23 developed and 24 emerging markets, created by MSCI	Morgan Stanley capital international (MSCI)
$RPEX_{ijt}$	Measured by the ratio of the consumer price index in destination country *j* over the consumer price index in the origin country *i* at time *t* standardised by the bilateral exchange rate and calculated by the following formula: $$\frac{CPI_{jt}}{CPI_{it} \times exchange\ rate}$$ Represents relative price standardised by the exchange rate (Dogru et al., 2017)	World Bank, World Development Indicators (WDI) database and International Monetary Fund (IMF)
$Openness_{ijt}$	The ratio of the total value of exports and imports between origin country *i* and destination country *j* over the GDP of economy *j*	IMF's Direction of Trade Database and World Bank, World Development Indicators (WDI) database
Brent $Crude_{ijt}$	Transport cost, the oil price is proxy for transport cost, and we used Europe Brent crude oil spot price FOB(USD per barrel)	Energy Information Administration (EIA), 2015
No of $Rooms_{jt}$	Number of hotel rooms available in destination country *j* proxy for tourism infrastructure	World Tourism Organization (UNWTO), The Compendium of Tourism Statistics database
Language	A binary variable that takes the value of one when country *i* and *j* share a common official language or zero otherwise	CEPII (Gravity dataset)
$Distw_{ij}$	The distance between the country of origin and country of destination is based on the bilateral distance between the biggest cities of these two countries, these inter-city distances being weighted by the share of the city in the overall countries' population	CEPII (Gravity dataset)

Table 4.12 Descriptive statistics of variables for Egypt

Variable	Observation	Mean	Std. Dev.	Minimum	Maximum
TA_{it}	1119	85403.7	227553.9	23	2855723
GDP_{it}	1156	717.2161	1831.47	1.28758	15204
MSCIACWI	1156	277.7065	60.68767	181.9	403.25
Brent crude	1156	40.55882	26.51498	10.98	98.25
Distance	1156	6648.137	4103.801	522.9955	16536.4
No of $rooms_{jt}$	1156	143382.8	53470.85	64958	225592
$RPEX_{ijt}$	1151	128.5014	580.8589	0.034893	7099.997
$Language_{ijt}$	1156	0.102941	0.304014	0	1
$Openness_{ijt}$	1156	2.237635	4.57823	0	37.1541

Notes: TA_{it} is the number of tourist arrivals in Egypt, GDP_i is the income of tourism country of origin in billion USD, MSCIACWI is a global stock market index, Brent crude is the oil price and distance is the distance between the capital of the tourism country of origin and Egypt's capital city. No of $rooms_{jt}$ is the number of hotel rooms available in Egypt at the time measured in units. RPEX is the relative price standardised by the exchange rate. Language is a dummy variable common official language. Openness is the trade between tourism countries of origin and destination in thousand USD to the GDP of the tourism destination country.

Table 4.13 Descriptive statistics of variables for Morocco

Variable	Observation	Mean	Std. Dev.	Min	Max
TA_{it}	1142	38787.88	156852	2	1827453
GDP_{it}	1142	1726.886	1840.67	1.28758	15204
MSCIACWI	1142	277.7909	60.63528	181.9	403.25
Brent crude	1142	40.64083	26.55208	10.98	98.25
Distance	1142	6294.785	3841.605	716.5693	19333.78
No of rooms	1142	58544.3	14595.93	44454	87801
RPEX	1137	101.0771	440.222	0.032116	4339.842
Language	1142	0.19352	0.39523	0	1
Openness	1142	5.08673	13.6169	0	123.304

Notes: TA_{it} is the number of tourist arrivals in Morocco, GDP_i is the income of tourism country of origin in billion USD, MSCIACWI is a global stock market index, Brent crude is the oil price and distance is the distance between the capital of the tourism country of origin and Morocco’s capital city. No of $rooms_{jt}$ is the number of hotel rooms available in Morocco at the time measured in units. RPEX is the relative price standardised by the exchange rate. Language is a dummy variable common official language. Openness is the trade between tourism countries of origin and destination in thousand USD to the GDP of the tourism destination country.

Table 4.14 Descriptive statistics of variables for South Africa

Variable	Observation	Mean	Std. Dev.	Min	Max
TA_{it}	788	30303.84	69459.86	38	497687
GDP_{it}	792	328.5839	41.06738	267.049	387.677
MSCIACWI	792	291.21	56.92514	190.8	403.25
Brent crude	792	50.53	25.5329	18.96	98.25
Distance	792	9044.583	2793.016	1837.949	14785.83
No of rooms	792	64439.92	9245.62	51874	77600
RPEX	792	100.59	437.61	0.025872	4407.737
Language	792	0.257576	0.437575	0	1
Openness	792	3.759477	7.92898	0	68.69833

Notes: TA_{it} is the number of tourist arrivals in South Africa, GDP_i is the income of tourism country of origin in billion USD, MSCIACWI is a global stock market index, Brent crude is the oil price and distance is the distance between the capital of the tourism country of origin and South Africa's capital city. No of $rooms_{jt}$ is the number of hotel rooms available in South Africa at the time measured in units. RPEX is the relative price standardised by the exchange rate. Language is a dummy variable common official language. Openness is the trade between tourism countries of origin and destination in thousand USD to the GDP_i of the tourism destination country.

Tabel 4.15 reports Egypt's pairwise correlation analysis and the degree of correlation varies among variables. The explanatory variable openness has the highest relationship with tourism arrivals, and there is a positive and significant correlation between tourism and GDP_i, MSCIACWI, Brent crude and number of rooms. However, there is a negative relationship with distance, RPEX and language.

Table 4.15 Egypt's cross-correlation between variables, 1995-2011

	TA	GDPi	MSCIACWI	Brent crude	Distance	No of rooms	RPEX	Language	Openness
TA	1								
GDP_i	0.289	1							
MSCIACWI	0.1012	0.0358	1						
Brent crude	0.1385	0.0376	0.4037	1					
Distance	-0.2691	0.084	-0.0153	0.0279	1				
No of rooms	0.1673	0.0423	**0.5524**	**0.8534**	0.0277	1			
RPEX	-0.0743	-0.066	-0.012	-0.0034	0.1912	-0.0071	1		
Language	-0.0052	-0.117	0.0117	0.001	-0.3631	0.005	-0.0677	1	
Openness	**0.5198**	**0.7406**	0.0584	0.1863	-0.1325	0.1563	-0.0848	0.0053	1

Notes: The correlation coefficients greater than 0.5 are shown in bold.

Table 4.16 reports Morocco's pairwise correlation analysis and the degree of correlation varies among variables. GDP_i has the highest relationship with tourism arrivals. There is also a positive and significant correlation with MSCIACWI, Brent crude, number of rooms, language and openness. Conversely, there is a negative relationship between distance and RPEX.

Table 4.16 Morocco's cross-correlation between variables, 1995-2011

	Tourism	GDP_i	MSCIACWI	Brent crude	Distance	No of rooms	RPEX	Language	Openness
Tourism	1								
GDP_i	0.2265	1							
MSCIACWI	0.0518	0.0306	1						
Brent crude	0.0818	0.0471	0.3778	1					
Distance	-0.2487	0.0436	0.0001	0.0001	1				
No of rooms	0.0888	0.0495	0.4681	**0.8954**	0.0002	1			
RPEX	-0.0545	-0.0688	0.0024	-0.0113	0.1359	-0.0123	1		
Language	0.1934	-0.0864	0.0042	0.0067	-0.3105	0.0063	-0.0941	1	
Openness	**0.8904**	0.3776	0.0571	0.1131	-0.2531	0.112	-0.079	0.1478	1

Notes: The correlation coefficients greater than 0.5 are shown in bold.

Table 4.17 reports South Africa's pairwise correlation coefficient matrix. The correlation analysis and the degree of correlation vary among variables. The explanatory variable openness has the highest relationship with tourism. There is also a positive and significant correlation between tourism and GDP_i MSCIACWI, Brent crude, distance, number of rooms and common language. However, there is a negative relationship only with RPEX.

Table 4.17 South Africa's cross-correlation between variables, 2000-2011

	Tourism	GDP_i	MSCIACWI	Brent crude	Distance	No of rooms	RPEX	Language	Openness
Tourism	1								
GDP_i	0.0519	1							
MSCIACWI	0.0253	0.4624	1						
Brent crude	0.0473	0.8813	0.3105	1					
Distance	0.0615	0.0062	0.0044	0.005	1				
No of rooms	0.0451	**0.8974**	0.3967	0.756	0.0068	1			
RPEX	-0.0935	-0.0029	0.0155	-0.0011	0.0597	0.0014	1		
Language	0.2929	-0.0036	-0.0025	-0.0029	-0.1617	-0.0039	-0.0795	1	
Openness	**0.6571**	0.1468	0.0824	0.1411	0.2022	0.1371	-0.0865	0.0807	1

Notes: The correlation coefficients greater than 0.5 are shown in bold.

Table 4.18 Empirical results for Egypt

Dependent variable: Tourism arrivals	Pooled OLS (1)	Fixed Effect (2)	Random Effect (3)	System GMM (4)
TA_{ijt-1}	-	-	-	0.586***
				(0.0704)
GDP_{it}	0.924***	1.118***	0.977***	0.340***
	(0.0224)	(0.143)	(0.0472)	(0.110)
MSCIACWI	0.208	0.217***	0.223***	0.347***
	(0.138)	(0.0742)	(0.0739)	(0.0578)
Brent crude	0.114	0.111**	0.121***	-0.122***
	(0.0817)	(0.0453)	(0.0441)	(0.0427)
Distance	-1.221***	-	-1.273***	-0.603***
	(0.0447)		(0.133)	(0.172)
No of rooms	0.226	0.195**	0.240***	0.323***
	(0.139)	(0.0869)	(0.0760)	(0.0818)
RPEX	-0.0318***	-0.0525***	-0.0472***	-0.0244
	(0.0104)	(0.0167)	(0.0152)	(0.0313)
Language	0.825***	-	0.794**	0.0906
	(0.0931)		(0.331)	(0.330)
Openness	0.0641***	0.0177	0.0205	0.0196
	(0.0162)	(0.0160)	(0.0155)	(0.0373)
Constant	10.85***	-0.148	10.72***	1.975
	(1.308)	(0.726)	(1.312)	(1.401)
Observations	1,088	1,088	1,088	957
R-squared	0.886	0.673	0.885	-
Number of countries	-	68	68	67
Number of instruments	-	-	-	67
AR(1) test,(p-value)	-	-	-	0.000
AR(2) test, (p-value)	-	-	-	0.117
Hansen test, (p-value)	-	-	-	0.202

Notes: Robust standard errors are reported in parentheses. Significant at *** 1%, ** 5% and* 10% level respectively. The dependent variable is tourism arrivals (TA), and all the variables are in natural log form except language. Dynamic two-step system GMM estimator of Blundell and Bond (1998) with Windmeijer (2005) finite sample correction estimated. The Arellano-Bond AR(1) AR(2) test examines whether the transformed equation is serially correlated at the first order and at second order respectively. Hansen test examines the over-identification restriction for system GMM estimation.

Empirical results for Egypt:

The independent variables in column (1) of Table 4.18 represent POLS estimations; column (2) represents the fixed effect estimations with country-specific effects; column (3) represents the random effect estimations, and column (4) represents the system GMM estimations by taking $Tourism_{t-1}$ as an endogenous variable. However, neither the POLS, FE nor RE estimators are perused any further because these estimators are prone to bias estimation when a lagged dependent variable is present in the model.

A statistical diagnostics check is essential to validate the system GMM. The rejection of the null hypothesis of the Arellano-Bond AR(1) test and failure to reject the null hypothesis of the Arellano-Bond AR(2) test indicates that the transformed equation is not serially correlated at the second order and the model is correctly specified. The failure to reject the null hypothesis of the Hansen test of overidentifying confirms the overall validity of the augmented instruments. The number of instruments should be equal to or smaller than the number of groups. Hence, for Egypt the p-value of AR(1) is 0.00, AR(2) is 0.117, Hansen is 0.202, the number of instruments is 67 and the number of groups is 67. The system GMM estimation passes all the diagnostics checks and suggests that the estimators are valid and correctly specified.

In column (4) of Table 4.18, the coefficient of the dynamic panel variable lagged value of tourism is 0.586, which is positive and statistically highly significant at the 1% level, confirming repeat visits to the same destination. The income coefficient is 0.340 and also significant at the 1% level, indicating that a 1% increase in the income of the country of origin would increase the number of tourist arrivals in Egypt by 34%. This suggests that as a country gets richer more funds are allocated to tourism activities abroad. These results are in line with the income proxy variable used by Balli et al. (2016) and Khadaroo and Seetanah (2008). The estimated coefficient value of MSCIACWI is 0.347, which is positive and highly significant at the 1% level, indicating that Egypt's inbound tourism would increase by 34.7% if the world benchmark equity index appreciated by 1%. The coefficient value of Brent crude is -0.122, which is negative and statistically highly significant at the 1% level, indicating that if transportation costs increased by 1% then tourism flow to Egypt would decrease by 12.2%. The distance coefficient value is -0.603, which is negative and statistically significant at the 1% level, indicating an increase in distance causes a reduction in tourist arrival numbers. The infrastructure coefficient for tourism is 0.323 and also statistically significant at the 1% level, indicating that Egypt's inbound tourism would increase by 32.3% if the number of hotel rooms increased by 1%. The tourism price coefficient, RPEX, which is relative price standardised by the exchange rate, is -0.0244 but insignificant, or else a 1% increase in the (real) price level of the destination country relative to the country of origin would decrease the number of tourist arrivals by 2.44%. Language and Openness are not statistically significant.

Compare findings on Egypt:

In both Table 4.8 and 4.18, the first column reports Pooled OLS, whereas the second column shows fixed effects, the third column shows random effects estimates, and the final column presents parameter estimates obtained using System GMM estimators which is a dynamic model.

In both Table 4.8 and 4.18 the lag dependent variable indicates tendency persistence, which is the impact the number of tourist arrivals in the previous year has on the number of tourist arrivals in the current year. The coefficient is positive and statistically highly significant. In this regard Garin-Munoz (2007) argues that there could be two reasons: first tourists are risk adverse, so travelling to previous destinations is preferred as it undoubtedly leads to lower risks and less inconvenience than travelling to a new destination does; and second, having knowledge of a destination helps mitigate other possible risks. Knowledge about a specific destination is thereafter shared with family and friends and helps them to reduce possible risks of travelling to that destination. Hence, Song et al. (2003) demonstrated that word of mouth might have a more significant impact on the inbound tourism flow for a destination.

It is critical to note that when GDP is employed as a measure for income, the size of coefficients are slightly greater in magnitude for all the estimated models than those reported employing the market value of the economy from financial theory. This difference in magnitude of coefficients may be attributed mainly to the different way these two variables have been constructed. As mentioned earlier, GDP is a flow variable and only measures the current year's income, whereas MVECON is a stock variable that is forward looking and takes into account expected future income. Nevertheless, both the variables are positive and statistically highly significant. Therefore, this supports our first hypothesis that the income of the tourism origin country has an impact on inbound tourism flow of a destination country.

In Table 4.18, the fixed effect model in column (2), which is the coefficient of income, is 1.118 and significant at the 1% level, which is also above unity, so demand is income elastic and theoretically consistent. This result is consistent with Smeral's (2003) finding that shows that the income elasticity for international tourism is greater than unity. Therefore, as Crouch (1996), Lim (1997) and Smeral (2012) suggested, if the coefficient of income is above unity it would represent as a luxury product; therefore, tourism to Egypt can be considered as a luxury. However, when we employed MVECON as a measure for income in Table 4.8, none of the coefficients exceeded unity, nor is income elasticity of demand for tourism less than one in magnitude. Typically, economic products with such elasticities are perceived as 'necessity' products; therefore, tourism to Egypt would represent a necessityor non-luxury product.

Our second hypothesis relates to the impact of global financial asset wealth on tourism. In table 4.8 and 4.18 in columns (1), (2) , (3) and (4) all the results are identical, except for the Pooled OLS; the coefficient in all models produced a positive and statistically highly significant results. Therefore, our estimation results are in line with Kim et al. (2011) and Song et al.'s (2010) findings, and price gains in capital assets worldwide will increase inbound tourism demand for a destination.

Control variables:

From both Table 4.8 and 4.18, column (4) shows our third hypothesis, a transportation cost variable, which is statistically significant at 1% level and coefficients are negative. This shows that an increase in oil prices directly affects the travel cost for tourists, and, therefore, tourists are less willing to come to Egypt for sightseeing.

In both Table 4.8 and 4.18's gravitational distance, the estimated coefficient is negative and highly statistically significant and in line with our expectation, which indicates that an increase in the distance reduces inbound tourism flow. Similarly, Fourie and Santana-Gallego (2013) observed that distance is inversely associated with inbound tourism flow, as it is associated with cost.

In both Table 4.8 and 4.18, the tourism destination infrastructure coefficient is positive and statistically significant. However, Table 4.18 shows the magnitude of the coefficient is slightly higher compare to Table 4.8. Nevertheless, estimation results on both tables show that tourism infrastructure has an influence on inbound tourism flow, and agree with Witt and Witt (1995) and Lim (1997) who employed number of rooms as a proxy for infrastructure.

In Table 4.18, RPEX coefficients in columns (1), (2), (3) and (4) are negative and statistically significant at the 1% level except for column (4), which is in line with the law of demand because, by definition, the expected sign of price elasticity should be negative (Divisekera, 2011: p.77). However, according to Crouch (1996), the sign of the price elasticity could be positive if the income effect is stronger or if tourists perceived tourism consumption to be prestigious in the country in context.[45] Positive price elasticity of demand could be a sign of Giffen, which are inferior goods, or Veblen, which are luxury goods, depending on the income effect on the demand. While a positive income elasticity of demand suggests luxury goods, negative income elasticity of demand indicates inferior goods.

Estimation results on both tables show the cultural distance coefficient is positive in all models, and statistically highly significant in the first and third model. Therefore, it indicates that sharing a common language supports an increase in tourism flow, and tourists have a stronger preference for destination countries that share the same official language with the origin countries. Similarly, Gil-Pareja et al. (2007) and Ghalia et al. (2019) concluded that a common language encourages tourism flow.

The coefficient of openness that demonstrates the bilateral trade value between Egypt and a tourist's origin country is positive and statistically significant in Table 4.8 for model 1 and 4 but in Table 4.18 only for model 1. Thus, trade openness influences inbound tourism flow for Egypt. This result is in line with the research by Habibi et al. (2009) on Malayasia, Leitão (2010) on Portugal, and Chaisumpunsakul and Pholphirul (2017) on Thailand.

[45] Crouch (1996) extensively illustrated price elasticity impact on tourism demand in his paper.

Table 4.19 Empirical results for Morocco

Dependent variable: Tourism arrivals	Pooled OLS (1)	Fixed Effect (2)	Random Effect (3)	System GMM (4)
TA_{it-1}	-	-	-	0.722***
				(0.106)
GDP_{it}	0.753***	0.770***	0.950***	0.262**
	(0.0265)	(0.112)	(0.0490)	(0.109)
MSCIACWI	0.191	0.184***	0.164***	0.215***
	(0.140)	(0.0572)	(0.0571)	(0.0459)
Brent crude	-0.101	-0.0577	-0.0695*	-0.0273
	(0.0996)	(0.0405)	(0.0406)	(0.0244)
Distance	-1.265***	-	-1.508***	-0.434*
	(0.0453)		(0.151)	(0.231)
No of rooms	0.908***	1.211***	1.095***	0.234*
	(0.277)	(0.125)	(0.116)	(0.137)
RPEX	-0.0535***	0.0205	0.0120	0.00901
	(0.0107)	(0.0133)	(0.0128)	(0.0220)
Language	1.392***	-	1.652***	0.433**
	(0.0756)		(0.269)	(0.168)
Openness	0.167***	-0.00661	0.00309	0.0195
	(0.0206)	(0.0148)	(0.0148)	(0.0454)
Constant	4.197	-9.977***	3.051*	0.913
	(2.637)	(1.080)	(1.674)	(1.442)
Observations	1,081	1,081	1,081	1014
R-squared	0.8768	0.5477	0.864	
Number of countries		68	68	68
Number of instruments	-	-	-	61
AR(1) test,(p-value)	-	-	-	0.001
AR(2) test, (p-value)	-	-	-	0.724
Hansen test, (p-value)	-	-	-	0.259

Notes: Robust standard errors are reported in parentheses. Significant at *** 1%, ** 5% and* 10% level respectively. The dependent variable is tourism arrivals, and all the independent variables are in natural log form except language. Dynamic two-step system GMM estimator of (Blundell and Bond, 1998) with (Windmeijer, 2005) finite sample correction estimated. The Arellano-Bond AR(1) AR(2) test examines whether the transformed equation is serially correlated at the first order and at second order respectively. Hansen test examines the over-identification restriction for system GMM estimation.

Empirical results for Morocco:

The independent variables in column (1) of Table 4.19 present POLS estimations; column (2) represents the fixed effect estimations with country-specific effects; column (3) represents the random effect estimations, and column (4) represents the system GMM estimations by taking $Tourism_{-1}$ as an endogenous variable. However, neither the POLS, FE nor the RE estimators are perused any further because these estimators are prone to bias estimation when a lagged dependent variable is present in the model.

Results of diagnostic tests suggest that Morocco's p-value for AR(1) is 0.001, AR(2) is 0.724, Hansen is 0.259, and the number of the instruments is 61 and smaller than the number of the group which is 68 for the system GMM estimation. Therefore, it passes all the diagnostics checks and suggests that the estimators are valid and correctly specified.

In column (4) of Table 4.19, the coefficient of the dynamic panel variable lagged value of tourism is 0.722, which is positive and statistically highly significant at the 1% level, confirming repeat visits to the same destination. The income coefficient is 0.262 and is significant at the 5% level, indicating that a 1% increase in income of the country of origin would increase the number of tourist arrivals in Morocco by 26.2%. The estimated coefficient value of MSCIACWI is 0.215, which is positive and also highly significant at the 1% level, indicating that Morocco's inbound tourism would increase by 21.5% if the world benchmark equity index appreciated by 1%. The distance coefficient value is -0.434, which is negative and statistically significant at the 10% level, indicating an increase in distance causes a reduction in tourist arrival numbers in Morocco. The language coefficient is 0.433 and statistically highly significant at the 10% level, indicating a common official language has a strong positive influence on tourist flows across different regions of the world, and demand for tourism is greater in countries where a substantial share of the population speaks a common official language. The infrastructure coefficient for tourism is 0.234 and is also statistically significant at the 10% level, indicating that Morocco's inbound tourism would increase by 23.4% if the number of hotel rooms increased by 1%. The coefficient value of Brent crude is -0.0244, which is negative and statistically insignificant. The trade openness coefficient value is 0.095, which is negative and statistically insignificant. The estimated coefficient of RPEX, which is relative price standardised by the exchange rate, is 0.00901 and it is insignificant.

Compare findings on Morocco:

In both Table 4.9 and 4.19, the first column reports Pooled OLS, whereas the second column shows fixed effects, the third column shows random effects estimates, and the final column presents parameter estimates obtained using System GMM estimators which is a dynamic model.

In both Table 4.9 and 4.19, the lag dependent variable indicates tendency persistence, which is the impact the number of tourist arrivals in the previous year has on the number of tourist arrivals in the current year. The coefficient is positive and statistically highly significant. In this regard, Garin-Munoz (2007) argues that there could be two reasons: first tourists are risk adverse, so travelling to previous destinations is preferred as it undoubtedly leads to lower risks and less inconvenience than travelling to a new destination; and second, having knowledge of a destination helps mitigate other possible risks. Knowledge about a specific destination is thereafter shared with family and friends and helps them to reduce possible risks of travelling to that destination. Hence, Song et al. (2003) demonstrated that word of mouth might have a more significant impact on inbound tourism flow for a destination.

It is critical to note that when GDP is employed as a measure for income, the size of coefficients is slightly greater in magnitude for all the estimated models than those reported employing the market value of the economy from financial theory. This difference in magnitude of coefficients may be attributed mainly to the different way these two variables have been constructed. As mentioned earlier, GDP is a flow variable and only measures the current year's income, whereas MVECON is a stock variable that is forward looking and takes into account expected future income. Nevertheless, both of the variables are positive and statistically highly significant. Therefore, this supports our first hypothesis that the income of the tourism origin country has an impact on the inbound tourism flow of a destination country. In Table 4.19, the fixed effect model in column (2), which is the coefficient of income, is 0.950 and significant at 1% level, highest in all 8 models. As in Table 4.8 and table, 4.18 none of the coefficients exceeded unity, nor is income elasticity of demand for tourism less than one in magnitude. The estimated elasticities are plausible in terms of their economic signs, magnitudes and statistical significance in Morocco. Therefore, tourism to Morocco would represent a "necessity" or non-luxury product which is accessible to a large number of people rather than a luxury product which is accessible only to a few people. To illustrate, in economic theory terminology products with income-elastic demands are qualified as luxuries and products with income-inelastic demands are qualified as a necessities, which indicates that a luxury product can always be given up when restrictions on income are imposed and its budget can be reallocated to other purposes, while a necessity product is essential to the consumer, and budget restrictions affect the demand for this category of products only a little.

Our second hypothesis is the *wealth effect from the global financial asset is expected to have a positive impact on the inbound tourism flow*. In Table 4.9 and 4.19, all coefficients in columns (1), (2), (3) and (4) are positive and except for the Pooled OLS, and the coefficient in all models are statistically highly significant at the 1% level. Therefore, our estimation results are in line with Kim et al. (2011) and Song et al.'s (2010) findings, and price gains in capital assets worldwide will increase inbound tourism demand for a destination.

Control variables:

As per our third hypothesis, transportation cost variable coefficients are negative as expected; however, apart from Table 4.19 column (3), none are statistically significant. This shows that an increase in oil prices directly affects the travel cost for tourists, and therefore, tourists are less willing to come to Morocco for sightseeing.

In both Table 4.9 and 4.19, for gravitational distance the estimated coefficient is negative and statistically highly significant. It is thus in line with our expectation, which indicates that an increase in the physical distance reduces inbound tourism flow. Similarly, Fourie and Santana-Gallego (2013) observed that distance is inversely associated with inbound tourism flow as it is associated with cost.

In both Table 4.9 and 4.19, the tourism destination infrastructure coefficient is positive in all 8 models, and, except for Table 4.9 models 1 and 4, all other models are statistically significant. Furthermore, Table 4.19 shows the magnitude of the coefficient is higher compare to Table 4.9. Nevertheless, estimation results in both table show that tourism infrastructure has an influence on inbound tourism flow and results are in line with the findings of Witt and Witt (1995) and Lim (1997) who also employed the number of room as a proxy for infrastructure.

In Table 4.9, the RPEX coefficient in column (2) and (3) is positive and statistically significant at the 10% level which seems to violate the law of demand because the expected sign of the price elasticity should to be negative as in column (1) of Table 4.19. However, according to Crouch (1996), the sign of price elasticity could be positive if the income effect is stronger, or if tourists perceived tourism consumption to be prestigious in the country in context.[46] Positive

[46] Crouch (1996) extensively illustrated price elasticity impact on tourism demand in his paper.

price elasticity of demand can be an indication of Giffen, which are inferior goods, or Veblen, which are luxury goods, depending on the income effect on demand.

Estimation results on both Table 4.9 and 4.19 shows the cultural distance coefficient is positive and statistically highly significant in all 8 models. Therefore, there is strong evidence that sharing a common language supports an increase in the tourism flow and tourists have a stronger preference for destination countries that share the same official language with the origin countries. Similarly, Gil-Pareja et al. (2007), Ghalia et al. (2019) concluded that common language encourages tourism flow.

Considering the coefficient of openness that demonstrates the bilateral trade value between Morocco and a tourist's origin country, it is positive and statistically significant in Table 4.9 for model 1 and 4, but in Table 4.18 only for model 1. Thus, trade openness has an influence on inbound tourism flow for Morocco. This result is in line with the research by Habibi et al. (2009) on Malayasia, Leitão (2010) on Portugal and Chaisumpunsakul and Pholphirul (2017) on Thailand.

Table 4.20 Empirical results for South Africa

Dependent variable: Tourism arrivals	Pooled OLS (1)	Fixed Effect (2)	Random Effect (3)	System GMM (4)
TA_{it-1}	-	-	-	0.723***
				(0.0626)
GDP_{it}	0.557***	1.228***	0.983***	0.252***
	(0.0416)	(0.124)	(0.0575)	(0.0887)
MSCIACWI	-0.00161	0.0356	0.0476	0.121*
	(0.183)	(0.0638)	(0.0632)	(0.0653)
Brent crude	0.0148	0.0683*	0.0941**	-0.0323
	(0.107)	(0.0392)	(0.0369)	(0.0436)
Distance	-1.431***	-	-2.266***	-0.528*
	(0.123)		(0.303)	(0.269)
No of rooms	0.136	0.163	0.251**	-0.268***
	(0.363)	(0.132)	(0.125)	(0.0982)
RPEX	-0.0618***	-0.00243	-0.0302	0.00435
	(0.0121)	(0.0419)	(0.0286)	(0.0391)
Language	1.060***	-	1.281***	0.368***
	(0.0790)		(0.242)	(0.127)
Openness	0.363***	0.0270	0.0418*	0.0277
	(0.0321)	(0.0218)	(0.0217)	(0.0685)
Constant	17.05***	0.0813	20.35***	8.254***
	(3.810)	(1.281)	(2.997)	(2.331)
Observations	787	787	1,081	721
R-squared	0.842	0.440	0.4367	
Number of countries		66	66	66
Number of instruments	-	-	-	64
AR(1) test,(p-value)	-	-	-	0.000
AR(2) test, (p-value)	-	-	-	0.313
Hansen test, (p-value)	-	-	-	0.272

Notes: Robust standard errors are reported in parentheses. Significant at *** 1%, ** 5% and* 10% level respectively. The dependent variable is tourism arrivals, and all the variables are in natural log form except language. Dynamic two-step system GMM estimator of Blundell and Bond (1998) with Windmeijer (2005) finite sample correction estimated. The Arellano-Bond AR(1) AR(2)test examines whether the transformed equation is serially correlated at the first order and at second order respectively. Hansen test examines the over-identification restriction for system GMM estimation.

Empirical results for South Africa:

The estimation results suggest that for South Africa, the p-value of AR(1) is 0.00, AR(2) is 0.313, and it is 0.272 for Hansen. The number of instruments is 64 and the number of groups is 66. Therefore, the GMM estimation passes all the diagnostics check and suggests that the estimators are valid and correctly specified. However, neither POLS, FE nor RE estimators are perused any further because these estimators are prone to bias estimation when a lagged dependent variable is present in the model.

In column (4) of Table 4.20, the coefficient of the dynamic panel variable lagged value of tourism is 0.723, which is positive and statistically highly significant at the 1% level, confirming repeat visits to the same destination. The income coefficient is 0.252 and is significant at the 1% level, indicating that a 1% increase in income of the country of origin would increase the number of tourist arrivals in South Africa by 25.2%. The estimated coefficient value of MSCIACWI is 0.121, which is positive and significant at the 10% level, indicating that South Africa's inbound tourism would increase by 12.1% if the world benchmark equity index appreciated by 1%. The distance coefficient value is -0.528, which is negative and statistically significant at the 10% level, indicating an increase in distance causes a greater reduction in tourist arrival numbers in South Africa. The coefficient of infrastructure for tourism of -0.268 is negative and statistically highly significant at the 1% level indicating that South Africa's inbound tourism would decrease by 26.8% if the number of hotel rooms increased by 1%. The common language coefficient value is 0.368 and is statistically highly significant, indicating a common official language has a strong positive influence on tourist flows across different regions of the world, and demand for tourism is greater in countries where a substantial number of the population speaks a common official language. However, the price variable RPEX, trade openness and travel cost variables are statistically insignificant.

In 2010, South Africa hosted the football World Cup, which resulted in a 50% increase in the number of rooms in five-star hotels in Cape Town and a 20% increase in four-star hotel rooms between 2007 and 2010 (Ferreira and Boshoff, 2014). An oversupply of hotel rooms is the reason why our coefficient for the number of hotel rooms is negative and statistically significant at the 5% level. Saayman and Saayman (2008) also found a negative relationship between the number of hotel rooms available and European tourist arrivals in South Africa.

Compare findings on South Africa:

In both Table 4.10 and 4.20, the first column reports Pooled OLS, whereas the second column shows fixed effects, the third column shows random effects estimates, and the final column presents parameter estimates obtained using System GMM estimators which is a dynamic model.

In both Table 4.10 and 4.20 the lag dependent variable indicates tendency persistence, which is the impact the number of tourist arrivals in the previous year has on the number of tourist arrivals in the current year. The coefficient is positive and statistically highly significant. In this regard Garin-Munoz (2007) argues that there could be two reasons: first, tourists are risk adverse, so travelling to previous destinations is preferred as it undoubtedly leads to lower risks and less inconvenience than travelling to a new destination; and second, having knowledge of a destination helps mitigate other possible risks. Knowledge about a specific destination is thereafter shared with family and friends and helps them to reduce possible risks of travelling to that destination. Hence, Song et al. (2003) demonstrated that word of mouth might have a more significant impact on the inbound tourism flow of a destination.

It is critical to note that when GDP is employed as a measure for income, the size of coefficients is slightly greater in magnitude for all the estimated models than those reported employing the market value of the economy from financial theory. This difference in magnitude of coefficients may be attributed mainly to the different way these two variables have been constructed. As mentioned earlier, GDP is a flow variable and only measures the current year's income, whereas MVECON is a stock variable that is forward looking and takes into account expected future income. Nevertheless, both of the variables are positive and statistically highly significant. Therefore, this supports our first hypothesis that the income of the tourism origin country has an impact on inbound tourism flow for a destination country.

In Table 4.20, the coefficient of income in the fixed effect model in column (2) is 1.228 and significant at the 1% level, which is also above unity, so demand is income elastic and theoretically consistent. This result is consistent with Smeral's (2003) finding that shows that the income elasticity for international tourism is greater than unity. Therefore, as Crouch (1996) suggested, if the coefficient of income is above unity it would represent a luxury product. Thus, tourism to South Africa can be considered as a luxury. Moreover, the coefficient in column (3) for the random effect model is 0.983 which is almost equal to unity so represents a 'comfort' product. However, when we employed MVECON as a measure for income in Table 4.10, none of the coefficients exceeded unity, nor is the income elasticity of demand for tourism less than one in magnitude; therefore, tourism to South Africa represents a necessity product.

Our second hypothesis is the *wealth effect from the global financial asset is expected to have a positive impact on the inbound tourism flow*. In column (4) in both Table 4.10 and 4.20, the coefficients are positive and statistically significant at the 10% level, but none of the other models is statistically significant. Therefore, our estimation results are in line with Kim et al. (2011) and Song et al.'s (2010) findings and price gains of capital assets worldwide will increase inbound tourism demand for a destination. Thus, world price gains of capital assets will increase inbound tourism demand for a destination.

Control variables:

As per our third hypothesis, the transportation cost variable coefficients are negative and statistically significant, as expected, in Table 4.10. This shows that an increase in oil prices directly affects the travel cost for tourists, and therefore, tourists are less willing to come to South Africa for sightseeing. However, in Table 4.20 column (2) and (3) and in Table 4.10 column (2) the coefficient is positive and statistically significant. Therefore our finding contradicts the hypothesis, which asserts that *all other things being equal, transportation cost is expected to have a negative impact on the inbound tourism flow.*

In both Table 4.10 and 4.20 the estimated gravitational distance coefficient is negative and statistically highly significant, and thus in line with our expectation, which indicates that an increase in the physical distance reduces inbound tourism flow. Similarly, Fourie and Santana-Gallego (2013) observed that distance is inversely associated with inbound tourism flow as it is associated with cost.

In both Table 4.10 and 4.20 in column (4), the tourism destination infrastructure coefficient is negative and statistically highly significant. Our finding contradicts the hypothesis, which asserts that *infrastructure in tourism destination country influences tourism inflow in the destination country.* However, there may be an explanation for this occurrence. South Africa hosted the football World Cup, which resulted in a 50% increase in the number of rooms in five-star hotels in Cape Town and a 20% increase in four-star hotel rooms between 2007 and 2010 (Ferreira and Boshoff, 2014). An oversupply of hotel rooms is the reason why our coefficient for the number of hotel rooms is negative and statistically significant at the 5%

level. Saayman and Saayman (2008) also found a negative relationship between the number of hotel rooms available and European tourist arrivals in South Africa.

In Table 4.10, the RPEX coefficients in column (2) are positive and statistically significant at the 5% level which seems to violate the law of demand because the expected sign of the price elasticity should to be negative as in column (1), Table 4.20. However, according to Crouch (1996), the sign of the price elasticity could be positive if the income effect is stronger, or if tourists perceived tourism consumption to be prestigious in the country in context.[47] Positive price elasticity of demand might be an indication of Giffen which are inferior goods or Veblen which are luxury goods, depending on the income effect on the demand.

Estimation results in both Table 4.10 and 4.20 show that the cultural distance coefficient is positive and statistically highly significant in all 8 models. Therefore, there is strong evidence that sharing a common language supports an increase the tourism flow, and tourists have a stronger preference for destination countries that share the same official language with the origin countries. Similarly, Gil-Pareja et al. (2007) and Ghalia et al. (2019) concluded that common language encourages tourism flow.

Considering the coefficient of openness that demonstrates a bilateral trade value between South Africa and a tourist's origin country, it is positive and statistically significant in Table 4.10 and 4.20 on model 1 and 3. Thus, trade openness has an influence on inbound tourism flow for South Africa. This result is in line with the research by Habibi et al. (2009) on Malayasia, Leitão (2010) on Portugal and Chaisumpunsakul and Pholphirul (2017) on Thailand.

[47] Crouch (1996) extensively illustrated price elasticity impact on tourism demand in his paper.

4.1.7 The economic significance of MVECON compared to GDP

We further test for the economic significance of MVECON (the market value of the economy from financial theory) and the economic significance of GDP in every tourism country of origin to the destination country.

Economic significance is calculated using the formulas below:

$$\frac{\beta\text{Mvecon} * \sigma\text{Mvecon}}{\overline{TA}}$$

Where βMvecon represents the beta coefficient of MVECON, σMvecon is the standard deviation of MVECON and $\overline{TA}$ is the mean or average value of the dependent variable. To illustrate, first of all we take the beta coefficient value of MVECON from the estimated System GMM model then we multiply with standard deviation of Argentina's MVECON, and finally we divide these by average tourism arrival in Egypt from Argentina.

$$\frac{\beta\text{GDP} * \sigma\text{GDP}}{\overline{TA}}$$

Where βGDP represents the beta coefficient of GDP, σGDP, the standard deviation of GDP and $\overline{TA}$ is the mean or average value of the dependent variable number of tourism arrivals. To illustrate, first we take the beta coefficient value of GDP from the estimated System GMM model then we multiply with Standard deviation of Argentina's GDP and finally, we divide these by average tourism arrival from Argentina to Egypt.

For Egypt, the results for these tests are in Table 4.21. The results show that the market value of the economy from financial theory has a higher economic significance than the GDP for most countries. Thus, MVECON could be a better measure for income than conventional GDP in Egypt.

For Morocco, the results for these test are in Table 4.22. The results show that the market value of the economy from financial theory has a higher economic significance than the GDP for most countries. Thus, MVECON could be a better measure for income than conventional GDP in Morocco.

Finally, for South Africa, the results for these test are in Table 4.23. The results show that the market value of the economy from financial theory has a higher economic significance than the GDP for most countries. Thus, MVECON could be a better measure for income than conventional GDP in South Africa.

To sum up, the results from Egypt, Morocco and South Africa suggest the MVECON has more economic significance than GDP, thus, suggesting MVECON could be a better measure for income than GDP.

Table 4.21 Economic significance per country in Egypt

		Pooled-OLS		Fixed- effect		Random-effect		System- GMM	
Id	Country	$\frac{\beta Mvecon * \sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP * \sigma GDP}{\overline{TA}}$	$\frac{\beta Mvecon * \sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP * \sigma GDP}{\overline{TA}}$	$\frac{\beta Mvecon * \sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP * \sigma GDP}{\overline{TA}}$	$\frac{\beta Mvecon * \sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP * \sigma GDP}{\overline{TA}}$
1	Argentina	3.34%	1.79%	1.97%	2.17%	2.94%	1.89%	1.03%	0.66%
2	Australia	3.79%	1.49%	2.23%	1.80%	3.33%	1.57%	1.17%	0.55%
3	Austria	2.20%	0.85%	1.29%	1.03%	1.94%	0.90%	0.68%	0.31%
4	Bolivia	5.88%	2.77%	3.47%	3.35%	5.18%	2.93%	1.82%	1.02%
5	Brazil	6.10%	1.60%	3.59%	1.94%	5.37%	1.69%	1.89%	0.59%
6	Canada	3.19%	1.16%	1.88%	1.41%	2.81%	1.23%	0.99%	0.43%
7	Chile	5.00%	2.23%	2.94%	2.70%	4.40%	2.36%	1.54%	0.82%
8	China	6.68%	4.42%	3.94%	5.35%	5.89%	4.67%	2.07%	1.63%
9	Colombia	6.06%	1.89%	3.57%	2.28%	5.34%	1.99%	1.87%	0.69%
10	Costa Rica	6.30%	3.12%	3.71%	3.77%	5.55%	3.30%	1.95%	1.15%
11	Cyprus	3.36%	1.75%	1.98%	2.12%	2.96%	1.85%	1.04%	0.64%
12	Denmark	2.58%	0.70%	1.52%	0.85%	2.27%	0.74%	0.80%	0.26%
13	Dominican Republic	6.95%	3.88%	4.09%	4.69%	6.12%	4.10%	2.15%	1.43%
14	Ecuador	3.79%	2.22%	2.23%	2.68%	3.34%	2.34%	1.17%	0.82%
15	El Salvador	4.29%	1.83%	2.53%	2.22%	3.78%	1.94%	1.33%	0.68%
16	Ethiopia	5.59%	4.01%	3.30%	4.85%	4.93%	4.24%	1.73%	1.48%
17	Finland	3.17%	1.37%	1.87%	1.66%	2.79%	1.45%	0.98%	0.50%
18	France	2.24%	0.69%	1.32%	0.84%	1.97%	0.73%	0.69%	0.25%
19	Germany	1.52%	0.46%	0.89%	0.56%	1.34%	0.49%	0.47%	0.17%
20	Greece	4.73%	1.32%	2.79%	1.59%	4.16%	1.39%	1.46%	0.49%
21	Guatemala	6.67%	2.53%	3.93%	3.07%	5.87%	2.68%	2.06%	0.93%
22	Haiti	11.23%	0.87%	6.61%	1.06%	9.88%	0.92%	3.47%	0.32%
23	Honduras	7.14%	2.57%	4.21%	3.11%	6.29%	2.72%	2.21%	0.95%
24	Iceland	5.39%	2.82%	3.17%	3.42%	4.74%	2.98%	1.67%	1.04%
25	India	4.83%	2.94%	2.85%	3.56%	4.26%	3.11%	1.49%	1.08%
26	Indonesia	5.07%	1.90%	2.99%	2.30%	4.47%	2.01%	1.57%	0.70%
27	Ireland	5.71%	2.51%	3.36%	3.04%	5.03%	2.65%	1.76%	0.92%
28	Italy	2.46%	0.38%	1.45%	0.46%	2.16%	0.40%	0.76%	0.14%
29	Jamaica	5.81%	0.81%	3.42%	0.99%	5.11%	0.86%	1.80%	0.30%
30	Japan	1.13%	0.36%	0.67%	0.44%	1.00%	0.38%	0.35%	0.13%
31	Jordan	2.71%	2.27%	1.59%	2.74%	2.38%	2.40%	0.84%	0.83%
32	Kenya	5.48%	2.09%	3.23%	2.52%	4.83%	2.21%	1.70%	0.77%
33	Kuwait	3.30%	2.09%	1.94%	2.53%	2.90%	2.21%	1.02%	0.77%
34	Malawi	12.65%	3.91%	7.45%	4.73%	11.13%	4.14%	3.91%	1.44%
35	Malaysia	2.68%	2.27%	1.58%	2.74%	2.36%	2.40%	0.83%	0.83%
36	Malta	3.32%	1.83%	1.96%	2.22%	2.92%	1.94%	1.03%	0.67%
37	Mexico	5.79%	1.36%	3.41%	1.64%	5.10%	1.44%	1.79%	0.50%

Economic significance per country in Egypt Continued

		Pooled-OLS		Fixed- effect		Random-effect		System- GMM	
Id	Country	$\frac{\beta Mvecon * \sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP * \sigma GDP}{\overline{TA}}$	$\frac{\beta Mvecon * \sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP * \sigma GDP}{\overline{TA}}$	$\frac{\beta Mvecon * \sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP * \sigma GDP}{\overline{TA}}$	$\frac{\beta Mvecon * \sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP * \sigma GDP}{\overline{TA}}$
38	Morocco	3.57%	2.10%	2.11%	2.55%	3.15%	2.23%	1.11%	0.77%
39	Netherlands	2.60%	0.90%	1.53%	1.08%	2.29%	0.95%	0.80%	0.33%
40	New Zealand	3.90%	1.50%	2.30%	1.82%	3.43%	1.59%	1.21%	0.55%
41	Niger	9.35%	3.07%	5.51%	3.72%	8.23%	3.25%	2.89%	1.13%
42	Nigeria	6.33%	3.69%	3.73%	4.47%	5.57%	3.91%	1.96%	1.36%
43	Norway	3.07%	0.97%	1.81%	1.18%	2.70%	1.03%	0.95%	0.36%
44	Oman	4.59%	1.47%	2.70%	1.78%	4.04%	1.56%	1.42%	0.54%
45	Panama	5.32%	4.79%	3.14%	5.79%	4.69%	5.06%	1.65%	1.76%
46	Paraguay	6.58%	2.34%	3.87%	2.83%	5.79%	2.47%	2.03%	0.86%
47	Peru	6.50%	2.92%	3.83%	3.53%	5.72%	3.08%	2.01%	1.07%
48	Philippines	3.24%	1.90%	1.91%	2.30%	2.85%	2.01%	1.00%	0.70%
49	Poland	5.38%	1.68%	3.17%	2.03%	4.74%	1.78%	1.66%	0.62%
50	Portugal	4.25%	0.88%	2.50%	1.06%	3.74%	0.93%	1.31%	0.32%
51	Russian Federation	6.32%	1.72%	3.73%	2.08%	5.57%	1.81%	1.96%	0.63%
52	Saudi Arabia	2.32%	1.73%	1.37%	2.09%	2.04%	1.83%	0.72%	0.64%
53	Senegal	6.22%	2.84%	3.66%	3.43%	5.47%	3.00%	1.92%	1.04%
54	Sierra Leone	15.11%	5.16%	8.90%	6.25%	13.30%	5.46%	4.67%	1.90%
55	Singapore	3.19%	3.07%	1.88%	3.72%	2.81%	3.25%	0.99%	1.13%
56	South Africa	4.01%	1.58%	2.36%	1.91%	3.53%	1.67%	1.24%	0.58%
57	Spain	3.98%	1.27%	2.35%	1.53%	3.51%	1.34%	1.23%	0.47%
58	Sri Lanka	4.46%	2.83%	2.63%	3.42%	3.93%	2.99%	1.38%	1.04%
59	Sweden	2.40%	1.16%	1.41%	1.40%	2.11%	1.22%	0.74%	0.43%
60	Switzerland	1.77%	0.84%	1.05%	1.01%	1.56%	0.89%	0.55%	0.31%
61	Tanzania	7.40%	3.93%	4.36%	4.76%	6.51%	4.16%	2.29%	1.45%
62	Thailand	3.01%	1.98%	1.77%	2.40%	2.65%	2.10%	0.93%	0.73%
63	Togo	6.20%	2.13%	3.65%	2.57%	5.46%	2.25%	1.92%	0.78%
64	Tunisia	2.67%	2.00%	1.58%	2.42%	2.35%	2.11%	0.83%	0.73%
65	United Kingdom	1.76%	0.82%	1.03%	0.99%	1.55%	0.87%	0.54%	0.30%
66	United States	1.77%	0.97%	1.04%	1.17%	1.56%	1.02%	0.55%	0.36%
67	Uruguay	6.45%	1.91%	3.80%	2.31%	5.68%	2.02%	1.99%	0.70%
68	Venezuela, RB	8.34%	2.06%	4.91%	2.50%	7.34%	2.18%	2.58%	0.76%

Table 4.22 Economic significance per country in Morocco

		Pooled-OLS		Fixed- effect		Random-effect		System- GMM	
Id	Country	$\frac{\beta Mvecon * \sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP * \sigma GDP}{\overline{TA}}$	$\frac{\beta Mvecon * \sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP * \sigma GDP}{\overline{TA}}$	$\frac{\beta Mvecon * \sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP * \sigma GDP}{\overline{TA}}$	$\frac{\beta Mvecon * \sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP * \sigma GDP}{\overline{TA}}$
1	Argentina	2.90%	1.49%	1.30%	1.52%	2.60%	1.88%	0.97%	0.52%
2	Australia	3.62%	1.36%	1.63%	1.39%	3.25%	1.72%	1.21%	0.47%
3	Austria	2.23%	0.83%	1.00%	0.84%	2.01%	1.04%	0.75%	0.29%
4	Bolivia	6.78%	3.06%	3.05%	3.13%	6.09%	3.86%	2.27%	1.06%
5	Brazil	5.49%	1.38%	2.47%	1.41%	4.93%	1.74%	1.84%	0.48%
6	Canada	2.78%	0.97%	1.25%	0.99%	2.50%	1.22%	0.93%	0.34%
7	Chile	4.51%	1.92%	2.03%	1.97%	4.05%	2.43%	1.51%	0.67%
8	China	7.22%	4.57%	3.25%	4.67%	6.48%	5.77%	2.42%	1.59%
9	Colombia	6.64%	1.98%	2.99%	2.02%	5.97%	2.50%	2.22%	0.69%
10	Costa Rica	6.95%	3.30%	3.13%	3.37%	6.25%	4.16%	2.33%	1.15%
11	Cyprus	4.96%	2.47%	2.23%	2.53%	4.46%	3.12%	1.66%	0.86%
12	Denmark	2.50%	0.65%	1.12%	0.66%	2.24%	0.82%	0.84%	0.23%
14	Ecuador	4.41%	2.47%	1.98%	2.52%	3.96%	3.11%	1.48%	0.86%
15	El Salvador	4.96%	2.03%	2.23%	2.08%	4.46%	2.56%	1.66%	0.71%
16	Ethiopia	7.45%	5.12%	3.35%	5.23%	6.70%	6.45%	2.50%	1.78%
17	Finland	2.95%	1.22%	1.33%	1.25%	2.65%	1.54%	0.99%	0.42%
18	France	1.76%	0.52%	0.79%	0.53%	1.58%	0.66%	0.59%	0.18%
19	Germany	1.44%	0.42%	0.65%	0.43%	1.29%	0.53%	0.48%	0.15%
20	Greece	4.86%	1.30%	2.19%	1.33%	4.37%	1.64%	1.63%	0.45%
21	Guatemala	7.77%	2.83%	3.50%	2.89%	6.98%	3.57%	2.60%	0.98%
22	Haiti	9.23%	0.91%	4.15%	0.93%	8.29%	1.15%	3.09%	0.32%
23	Honduras	8.89%	3.06%	4.00%	3.13%	7.99%	3.86%	2.98%	1.07%
24	Iceland	4.66%	2.34%	2.10%	2.39%	4.19%	2.95%	1.56%	0.81%
25	India	5.35%	3.12%	2.41%	3.19%	4.81%	3.93%	1.79%	1.08%
26	Indonesia	6.06%	2.17%	2.73%	2.22%	5.45%	2.74%	2.03%	0.76%
27	Ireland	5.02%	2.12%	2.26%	2.16%	4.51%	2.67%	1.68%	0.74%
28	Italy	2.38%	0.35%	1.07%	0.36%	2.14%	0.44%	0.80%	0.12%
29	Jamaica	6.26%	0.84%	2.81%	0.86%	5.62%	1.06%	2.09%	0.29%
30	Japan	1.10%	0.33%	0.49%	0.34%	0.99%	0.42%	0.37%	0.12%
31	Jordan	3.23%	2.59%	1.45%	2.65%	2.90%	3.27%	1.08%	0.90%
32	Kenya	6.47%	2.36%	2.91%	2.41%	5.81%	2.97%	2.17%	0.82%
33	Kuwait	3.76%	2.28%	1.69%	2.33%	3.38%	2.88%	1.26%	0.79%
34	Malawi	16.66%	4.93%	7.50%	5.04%	14.97%	6.22%	5.58%	1.71%
35	Malaysia	3.08%	2.49%	1.38%	2.55%	2.76%	3.14%	1.03%	0.87%
36	Malta	3.43%	1.81%	1.54%	1.85%	3.08%	2.28%	1.15%	0.63%
37	Mexico	5.46%	1.22%	2.46%	1.25%	4.90%	1.54%	1.83%	0.43%
39	Netherlands	2.33%	0.77%	1.05%	0.79%	2.10%	0.97%	0.78%	0.27%

Economic significance per country in Morocco Continued

		Pooled-OLS		Fixed- effect		Random-effect		System- GMM	
Id	Country	$\frac{\beta Mvecon*\sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP*\sigma GDP}{\overline{TA}}$	$\frac{\beta Mvecon*\sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP*\sigma GDP}{\overline{TA}}$	$\frac{\beta Mvecon*\sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP*\sigma GDP}{\overline{TA}}$	$\frac{\beta Mvecon*\sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP*\sigma GDP}{\overline{TA}}$
40	New Zealand	3.79%	1.40%	1.71%	1.43%	3.41%	1.77%	1.27%	0.49%
41	Niger	5.97%	1.88%	2.68%	1.92%	5.36%	2.37%	2.00%	0.65%
42	Nigeria	7.63%	4.27%	3.43%	4.36%	6.85%	5.38%	2.55%	1.48%
43	Norway	2.87%	0.87%	1.29%	0.89%	2.58%	1.10%	0.96%	0.30%
44	Oman	4.81%	1.48%	2.16%	1.51%	4.32%	1.86%	1.61%	0.51%
45	Panama	6.06%	5.22%	2.73%	5.33%	5.44%	6.58%	2.03%	1.81%
46	Paraguay	7.83%	2.67%	3.52%	2.72%	7.04%	3.36%	2.62%	0.93%
47	Peru	6.43%	2.76%	2.89%	2.82%	5.77%	3.48%	2.15%	0.96%
48	Philippines	3.53%	1.99%	1.59%	2.03%	3.17%	2.51%	1.18%	0.69%
49	Poland	5.60%	1.67%	2.52%	1.71%	5.03%	2.11%	1.87%	0.58%
50	Portugal	3.19%	0.63%	1.43%	0.65%	2.86%	0.80%	1.07%	0.22%
51	Russian Federation	7.86%	2.04%	3.53%	2.09%	7.06%	2.57%	2.63%	0.71%
52	Saudi Arabia	2.36%	1.69%	1.06%	1.72%	2.12%	2.13%	0.79%	0.59%
53	Senegal	3.79%	1.66%	1.70%	1.69%	3.40%	2.09%	1.27%	0.58%
54	Sierra Leone	12.18%	4.00%	5.48%	4.09%	10.94%	5.04%	4.08%	1.39%
55	Singapore	3.51%	3.24%	1.58%	3.31%	3.15%	4.08%	1.17%	1.13%
56	South Africa	4.32%	1.63%	1.95%	1.67%	3.88%	2.06%	1.45%	0.57%
57	Spain	3.03%	0.92%	1.36%	0.94%	2.72%	1.16%	1.01%	0.32%
58	Sri Lanka	5.64%	3.42%	2.54%	3.50%	5.06%	4.32%	1.89%	1.19%
59	Sweden	2.23%	1.03%	1.00%	1.05%	2.00%	1.30%	0.75%	0.36%
60	Switzerland	1.64%	0.74%	0.74%	0.76%	1.47%	0.94%	0.55%	0.26%
61	Tanzania	10.60%	5.40%	4.77%	5.52%	9.53%	6.81%	3.55%	1.88%
62	Thailand	3.42%	2.15%	1.54%	2.20%	3.07%	2.71%	1.14%	0.75%
63	Togo	4.74%	1.56%	2.13%	1.59%	4.26%	1.97%	1.59%	0.54%
64	Tunisia	2.25%	1.61%	1.01%	1.65%	2.02%	2.03%	0.75%	0.56%
65	United Kingdom	1.64%	0.73%	0.74%	0.75%	1.47%	0.92%	0.55%	0.25%
66	United States	1.60%	0.84%	0.72%	0.86%	1.44%	1.06%	0.54%	0.29%
67	Uruguay	6.10%	1.73%	2.74%	1.77%	5.48%	2.18%	2.04%	0.60%
68	Venezuela, RB	7.67%	1.82%	3.45%	1.86%	6.89%	2.29%	2.57%	0.63%
69	Egypt	2.74%	1.93%	1.23%	1.98%	2.47%	2.44%	0.92%	0.67%

Table 4.23 Economic significance per country in South Africa

Id	Country	Pooled-OLS		Fixed- effect		Random-effect		System- GMM	
		$\frac{\beta Mvecon * \sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP * \sigma GDP}{\overline{TA}}$	$\frac{\beta Mvecon * \sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP * \sigma GDP}{\overline{TA}}$	$\frac{\beta Mvecon * \sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP * \sigma GDP}{\overline{TA}}$	$\frac{\beta Mvecon * \sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP * \sigma GDP}{\overline{TA}}$
1	Argentina	3.01%	1.09%	2.41%	2.40%	3.17%	1.92%	0.98%	0.49%
2	Australia	2.78%	0.55%	2.23%	1.22%	2.92%	0.97%	0.90%	0.25%
3	Austria	1.94%	0.36%	1.55%	0.79%	2.04%	0.63%	0.63%	0.16%
4	Bolivia	4.11%	1.39%	3.29%	3.07%	4.32%	2.46%	1.33%	0.63%
5	Brazil	4.27%	0.75%	3.42%	1.66%	4.50%	1.33%	1.39%	0.34%
6	Canada	2.31%	0.37%	1.85%	0.82%	2.43%	0.66%	0.75%	0.17%
7	Chile	3.66%	1.01%	2.93%	2.22%	3.85%	1.77%	1.19%	0.45%
8	China	4.05%	1.94%	3.24%	4.27%	4.26%	3.42%	1.31%	0.88%
9	Colombia	6.22%	1.31%	4.99%	2.89%	6.55%	2.32%	2.02%	0.59%
10	Costa Rica	4.87%	1.58%	3.90%	3.49%	5.12%	2.79%	1.58%	0.72%
11	Cyprus	3.21%	0.87%	2.57%	1.91%	3.38%	1.53%	1.04%	0.39%
12	Denmark	2.10%	0.23%	1.68%	0.51%	2.21%	0.41%	0.68%	0.11%
14	Ecuador	3.68%	1.53%	2.95%	3.37%	3.87%	2.69%	1.19%	0.69%
15	El Salvador	3.00%	0.95%	2.41%	2.08%	3.16%	1.67%	0.98%	0.43%
16	Ethiopia	3.35%	2.19%	2.69%	4.83%	3.53%	3.87%	1.09%	0.99%
17	Finland	2.61%	0.47%	2.09%	1.05%	2.74%	0.84%	0.85%	0.21%
18	France	1.87%	0.23%	1.50%	0.51%	1.97%	0.41%	0.61%	0.11%
19	Germany	1.31%	0.19%	1.05%	0.43%	1.38%	0.34%	0.43%	0.09%
20	Greece	3.67%	0.58%	2.94%	1.28%	3.86%	1.02%	1.19%	0.26%
21	Guatemala	4.95%	1.40%	3.97%	3.09%	5.21%	2.47%	1.61%	0.63%
22	Haiti	6.16%	0.38%	4.94%	0.85%	6.48%	0.68%	2.00%	0.17%
23	Honduras	6.43%	1.94%	5.15%	4.28%	6.76%	3.43%	2.09%	0.88%
24	Iceland	3.44%	1.09%	2.76%	2.40%	3.62%	1.92%	1.12%	0.49%
25	India	3.24%	1.38%	2.60%	3.05%	3.41%	2.44%	1.05%	0.63%
26	Indonesia	5.22%	1.28%	4.19%	2.82%	5.50%	2.25%	1.70%	0.58%
27	Ireland	3.36%	0.63%	2.69%	1.38%	3.54%	1.10%	1.09%	0.28%
28	Italy	2.14%	0.13%	1.72%	0.28%	2.25%	0.23%	0.69%	0.06%
29	Jamaica	2.51%	0.39%	2.01%	0.85%	2.64%	0.68%	0.81%	0.17%
30	Japan	1.05%	0.17%	0.84%	0.38%	1.11%	0.31%	0.34%	0.08%
31	Jordan	3.19%	1.82%	2.56%	4.01%	3.36%	3.21%	1.04%	0.82%
32	Kenya	3.07%	0.90%	2.46%	1.99%	3.23%	1.59%	1.00%	0.41%
33	Kuwait	4.56%	1.87%	3.66%	4.12%	4.80%	3.30%	1.48%	0.85%
34	Malawi	4.42%	0.95%	3.54%	2.10%	4.65%	1.68%	1.43%	0.43%
35	Malaysia	2.14%	1.08%	1.72%	2.37%	2.25%	1.90%	0.69%	0.49%
36	Malta	3.00%	0.74%	2.41%	1.63%	3.16%	1.31%	0.97%	0.34%
37	Mexico	2.83%	0.56%	2.27%	1.23%	2.98%	0.99%	0.92%	0.25%
38	Morocco	3.91%	1.48%	3.14%	3.27%	4.12%	2.62%	1.27%	0.67%
39	Netherlands	1.91%	0.27%	1.53%	0.59%	2.01%	0.48%	0.62%	0.12%
40	New Zealand	2.81%	0.53%	2.25%	1.17%	2.95%	0.94%	0.91%	0.24%

Economic significance per country in South Africa Continued

		Pooled-OLS		Fixed- effect		Random-effect		System- GMM	
Id	Country	$\frac{\beta Mvecon * \sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP * \sigma GDP}{\overline{TA}}$	$\frac{\beta Mvecon * \sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP * \sigma GDP}{\overline{TA}}$	$\frac{\beta Mvecon * \sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP * \sigma GDP}{\overline{TA}}$	$\frac{\beta Mvecon * \sigma Mvecon}{\overline{TA}}$	$\frac{\beta GDP * \sigma GDP}{\overline{TA}}$
41	Niger	8.81%	1.76%	7.06%	3.89%	9.27%	3.11%	2.86%	0.80%
42	Nigeria	5.34%	1.76%	4.28%	3.87%	5.62%	3.10%	1.73%	0.79%
43	Norway	2.42%	0.36%	1.94%	0.78%	2.55%	0.63%	0.79%	0.16%
44	Oman	5.78%	1.29%	4.63%	2.85%	6.08%	2.28%	1.88%	0.58%
45	Panama	3.93%	2.69%	3.15%	5.92%	4.14%	4.74%	1.28%	1.21%
46	Paraguay	5.43%	1.28%	4.35%	2.81%	5.72%	2.25%	1.76%	0.58%
47	Peru	4.46%	1.67%	3.58%	3.68%	4.70%	2.95%	1.45%	0.76%
48	Philippines	3.13%	1.11%	2.51%	2.44%	3.30%	1.95%	1.02%	0.50%
49	Poland	3.58%	0.96%	2.87%	2.13%	3.76%	1.70%	1.16%	0.44%
50	Portugal	2.33%	0.15%	1.87%	0.32%	2.46%	0.26%	0.76%	0.07%
51	Russian Federation	6.59%	1.14%	5.28%	2.52%	6.93%	2.02%	2.14%	0.52%
52	Saudi Arabia	2.74%	1.42%	2.19%	3.13%	2.88%	2.50%	0.89%	0.64%
53	Senegal	3.99%	1.11%	3.20%	2.44%	4.20%	1.96%	1.30%	0.50%
54	Sierra Leone	8.71%	2.18%	6.98%	4.81%	9.17%	3.85%	2.83%	0.99%
55	Singapore	2.17%	1.41%	1.74%	3.10%	2.29%	2.48%	0.71%	0.64%
57	Spain	3.04%	0.47%	2.43%	1.04%	3.20%	0.83%	0.99%	0.21%
58	Sri Lanka	3.85%	1.57%	3.08%	3.45%	4.05%	2.76%	1.25%	0.71%
59	Sweden	2.01%	0.44%	1.61%	0.98%	2.12%	0.79%	0.65%	0.20%
60	Switzerland	1.62%	0.41%	1.30%	0.90%	1.70%	0.72%	0.53%	0.18%
61	Tanzania	3.70%	1.39%	2.96%	3.06%	3.89%	2.45%	1.20%	0.63%
62	Thailand	2.61%	1.00%	2.09%	2.21%	2.75%	1.77%	0.85%	0.45%
63	Togo	4.29%	0.93%	3.44%	2.05%	4.51%	1.64%	1.39%	0.42%
64	Tunisia	2.90%	1.32%	2.32%	2.91%	3.05%	2.33%	0.94%	0.60%
65	United Kingdom	1.08%	0.27%	0.87%	0.60%	1.14%	0.48%	0.35%	0.12%
66	United States	0.92%	0.30%	0.74%	0.67%	0.97%	0.53%	0.30%	0.14%
68	Venezuela, RB	5.35%	1.41%	4.29%	3.11%	5.63%	2.49%	1.74%	0.64%
69	Egypt	2.77%	1.19%	2.22%	2.63%	2.91%	2.11%	0.90%	0.54%

Discussion and conclusion

In this study, we aimed at investigating the determinants of tourism demand in the three African countries of Egypt, Morocco and South Africa. For Egypt, we examined 68 country pairs and corresponding determinants for the period from 1995 to 2011. For Morocco, we used 68 country pairs and corresponding determinants for the period from 1995 to 2011. Finally, for South Africa, we used 65 country pairs and corresponding determinants for the period from 2000 to 2011. The system GMM estimator of Blundell and Bond (1998) is employed for the study. The lagged dependent variable has shed light on the persistence of tourism flows over time. Tourism destination countries can receive a large number of tourists year after year, even if these tourists are always different individuals. Most of our variables are significant and have the expected signs. This is the first study to include the market value of the economy from financial theory as a proxy for income and the global financial asset index as a proxy to measure financial wealth. We have also estimated all the models using another measure of income, namely GDP, which is the conventional measure for income and employed by a large number of studies in tourism demand. We found that the market value of the economy from financial theory, global financial assets, distance, number of rooms, language and openness were significant, but that relative price was insignificant in all of our countries. Nevertheless, when we employed GDP as a proxy for income we found that the coefficients of the relative price are negative, statistically significant and consistent with the law of demand theory in the Polled OLS model for all three destination countries, but the Polled OLS approach is prone to estimation bias, and therefore appropriate econometric methods of estimation, like System GMM, are employed to avoid biased results and spurious regression. Furthermore, the fixed effect and random effect models also supported the law of demand theory only in the case of Egypt, but when estimated with the robust System GMM estimation method, the law of demand theory did not hold and results were statistically insignificant. However, we have not found any more statistical evidence for Morocco and South Africa on the law of demand. The market value of the economy from financial theory is the stock variable which is forward looking and incorporates expected future income. It also takes into account the effects of production costs, output value, depreciation and expected losses. On the other hand, GDP is a flow variable, gross of depreciation and provisions for loss, and does not make a distinction between production costs and the value of output. GDP only accounts for the current year's income and reflects the behaviour of just those tourists who are not forward looking in making travel decisions. Furthermore, at the individual country level market value of the economy from financial theory has more economic significance than GDP. Therefore, the market value of the economy from financial theory is a more appropriate measure of income than the GDP.

Our findings regarding tourism infrastructure, whereby the number of hotel rooms in South Africa increases as demand for tourism decreases, seems to contradict the findings of Hiemstra and Ismail (1994) and Tsai et al. (2006), who found that an increase in total hotel rooms available will increase tourism demand. However, this can be explained by the fact that in 2010 South Africa hosted the football World Cup, which resulted in a 50% increase in the number of five-star hotel rooms and a 20% increase in the number of four-star hotel rooms in Cape Town between 2007 and 2010 (Ferreira and Boshoff, 2014). Oversupply of hotel rooms is the reason why our coefficient for tourism infrastructure is negative and statistically significant at the 5% level. This finding provides empirical evidence to support the analysis for the oversupply of the number of hotel rooms for mega-events such as the 2010 football World Cup in South Africa by Ferreira and Boshoff (2014), who pointed out that successful bids to host mega-events created high optimism in South Africa in preparing for a flood of visitors to attend these events. Furthermore, positive economic trends in South Africa from 1999 to 2007 motivated developers to invest heavily in hotel infrastructure. Nevertheless, overdependence on long-haul holiday tourists who were going through the worst economic recession since 1930, could be the reason why hotel developers were trapped in a ‘fallacy of composition’.

Lorde et al. (2016), Mangion et al. (2005), De Vita (2014) and Dogru et al. (2017) used relative price as CPI of destination relative to CPI of tourist country of origin and standardised exchange rate between countries, and found a statistically significant coefficient. However, in our study, we have not found RPEX to be statistically significant for any of our countries. One of the reasons for this could be the variable of trade openness, which is the ratio of trade between tourism country of origin and destination country to the market value of the tourism destination country. According to Romer (1993), there is an inverse relationship between trade openness and inflation. Thus, it can be argued that even when RPEX is insignificant it can convey information that is important for the tourism demand model.

We further test for the economic significance of the market value of the economy from financial theory, and the economic significance of GDP in every tourism country of origin for the tourism destinations of Egypt, Morocco and South Africa. The results show that the MVECON from financial theory has more economic significance than GDP for most of the countries. Thus, MVECON could be a better measure for income than conventional GDP.

Chapter 5: Influence of financial factors

Introduction

Attempts by researchers to find determinants of tourism mostly concentrate on the estimation of demand equations. The influence of country risk is somewhat neglected in the study of tourism (Sequeira and Nunes, 2008). Some studies have focused on overall country risk rating, comprising of political risk, economic risk, and financial risk, but most of the studies on tourism focus only on the political risk rating, which is undoubtedly an important factor.[48] However, the financial risk factor that plays a predominant role in attracting foreign investors to invest money in a particular country has received minimal attention in tourism research. This is the first study to fill this research gap by investigating the influence of financial risk on inbound tourism flows while giving adequate controls for other variables, including income and price.[49] In this study, we have followed Clark and Kassimatis (2015) to construct a financial risk premium for each country and each year that is analogous to Merton's (1974) structural model for the corporate default risk premium. Although many rating agencies provide financial risk ratings, these are often proven to be biased. Ferri et al. (1999) demonstrated that rating agencies become excessively conservative and downgrade countries' ratings more than the economic fundamentals would justify. Hence, our technique is robust to the rating agencies biases. Financial risk can be defined as the capacity of the country to generate enough foreign exchange to maintain required levels of imports and service its foreign debt obligation that includes principal and interest payment. Although the financial risk premium does not include a specific measure of tourism earnings for countries, the importance of tourism earnings and tourism development can still be traced through the financial risk premium components. Since

[48] See for example Shareef and Hoti (2005), Hoti et al. (2007) and Sequeira and Nunes (2008).

[49] Income and price are the two most important determinants of tourism (see, for example, Crouch (1994) and Lim (1999).

tourism constitutes a trade in services, earnings from tourism exports are accommodated in the current account balance, which is a critical component for measuring the market value of the economy from financial theory. In order to calculate the financial risk premium, we need to employ the market value of the economy from financial theory. Therefore, higher tourism earnings lead to a higher current account balance and lower financial risk premiums and increase the creditworthiness of a country as it is more likely to meet its foreign debt obligations. When the financial risk premium of a country decreases, this results in a higher inflow of foreign capital and investment. It also becomes easier for a country to raise capital through the international financial markets, which will promote the country's economic development. An increasing appetite for yield drives investors to look for ways to boost income through international investment. When a country manages to keep its financial risk premium low, it can encourage investors to lend them more money. Foreign exchange earnings from international tourism contribute significantly to meet foreign debt obligations. In their empirical study, Brewer and Rivoli (1990) suggested that the perceptions of the determinants of country risk play a significant role in influencing the supply and cost of international capital flows. In this study, we look at countries financial risk premiums directly and investigate whether and to what extent they affect the inbound tourism flows of a country. We examine the three African countries of Egypt, Morocco and South Africa.

As we mentioned in Chapter 3, income, prices and exchange rates are the key components for inbound tourism, and therefore we include this key variable in our model and investigate whether three financial variables namely financial risk premium, bank deposit to GDP ratio and year-on-year stock market returns have an effect on the inbound tourism demand for a country.

The rest of this chapter is organised as follows. Section 4.2 reviews the literature on financial factors and tourism demand. Section 4.3 presents the estimation of financial risk premium. Section 4.4 presents a description of the data and variables. Section 4.5 presents the methodology used in the estimation. Section 4.6 reports and discusses the empirical findings, and section 4.6 provides discussion and conclusion.

Literature review

There are a number of country risk rating agencies that use different strategies and methods to determine country risk ratings. According to country risk theory, there is a relationship between a country's risk rating and the cost of borrowing; when a country has a good risk rating ceteris paribus, that country can borrow money at a lower rate of interest while a country with a poor risk rating ceteris paribus can borrow money only at a higher rate of interest. However, the importance of country risk analysis is underscored by the existence of many well-known risk rating agencies. The main aim for country risk analysis is to measure the ability and willingness of countries to service their foreign obligations, but the accuracy of risk rating agencies in measuring country risk is open to question, especially after the financial crash of 2008. Nevertheless, international country risk rating agencies are still some of the most influential players in the world of finance. The International Country Risk Guide (ICRG) published by the PRS Group has been employed by many researchers to study tourism economies and country risk. In their study, Shareef and Hoti (2005) employed ICRG's monthly composite risk rating that includes economic, financial and political risk rating for a comparison study of six small island tourism economies to analyse the relationship between country risk and economic growth. They found that economic growth was positively correlated with risk ratings in 13 out of 24 cases, contradicting the country risk literature which states that increases in risk ratings influence higher economic growth. In their empirical study, Hoti et al. (2007) used monthly ICRG composite risk ratings as a proxy to measure country risk to investigate volatility spillover and the relationship between Cyprus and Malta in terms of the shocks to tourism growth and country risk returns. Their findings suggested that the shocks to tourism growth rates and the shocks to country risk returns were independent of each other and that the tourism growth rates of Malta (Cyprus) were independent of the shocks to the country risk returns of Cyprus (Malta). Therefore shocks to tourism growth rates are related more than country risk returns for Malta and Cyprus.

The ICRG index allows for cross-country comparison and is widely used in the literature.[50] To examine the impact of political instability on tourism demand, Saha and Yap (2014) employed a sample of 139 countries and data from 1999 to 2009. They concluded that political instability has an adverse effect on tourism demand. Although they used the ICRG's political risk variables, their composite political instability index significantly differed from the ICRG political risk index because they took 6 components from the 12 components in the ICRG political risk index.

A number of studies have employed the bank deposit to GDP ratio as a proxy for financial development, as this is one of the standard measures used in the literature to measure financial depth (King and Levine, 1993). Ohlan (2017) argued that inbound tourism is becoming increasingly important as it has a significant influence on national economies and the size of the tourist market is growing rapidly. In his empirical study, he investigated the relationship

[50] See for example, Knack and Keefer (1995) who investigated institutions and economic performance, Dal Bó and Rossi (2007) who examined for corruption, Braun and Tella (2004) who investigated inflation variability and corruption and Swaleheen (2011) who examined economic growth with endogenous corruption, by employing the ICRG index.

between tourism, financial development and economic growth. The aggregate money supply (M3) to GDP ratio was employed as a proxy for financial development, and the findings of the study suggested that economic growth, tourism and financial development are cointegrated. However, Cannonier and Burke (2017) argued that the relationship between tourism and financial development has received scant attention, and therefore, using data that ranged from 1980 to 2013, they focused on whether tourism promotes financial development by employing M3 money supply to GDP and M2 money supply to GDP as proxies for financial development. They found that tourism has a positive and significant impact on financial development. In other related literature, the bank deposit to GDP ratio has been employed as a proxy for the financial development indicator. Aggarwal et al. (2011) provided substantial evidence of a positive and significant relationship between remittances and financial development in developing countries but, according to Karikari et al. (2016), remittances have a positive impact on financial development in the short run but an adverse effect in the long run in Africa as remittances are used by the recipient for survival.

Empirical studies on tourism demand have employed tourism expenditure, but many researchers found that tourism expenditure performed poorly as a dependent variable in such studies because of multicollinearity and autocorrelation, and they concluded that the best tourist data for such research is tourist arrivals data, which often does not suffer from the multicollinearity and autocorrelation problem (Ghartey (2013). Hence, for the purposes of our study, the number of tourist arrivals is more appropriate.

One of the most important macroeconomic variables that we have employed as possible determinants of inbound tourism demand is the GDP of that country. Many empirical studies have focused on causality between tourism and economic development (for example, (Brida et al., 2016; Kim, Hyun Jeong et al., 2006; Mérida and Golpe, 2016; Tugcu, 2014). While some studies found unidirectional causality from tourism development to economic growth (see, for example, (Cortes-Jimenez and Pulina, 2010; De Vita and Kyaw, 2016), other studies found economic growth to tourism development (for example, (Aslan, 2014). Other studies found bidirectional causality (Lee, Chien-Chiang and Chang, 2008; Tang and Ozturk, 2017) and yet other studies concluded that there was no causality between economic growth and tourism development (see, for example, (Mérida and Golpe, 2016; Tugcu, 2014). More recently Santamaria and Filis (2019) employed the DCC-GARCH model to investigate tourism growth and macroeconomic conditions of the destination country and found the relationship is time-varying and volatile in sign and magnitude. Ghartey (2013) examined the causal relationship between changes in tourism and economic growth and concluded that tourism causes expansion in economic growth. Lee and Chien (2008) investigates whether regime changes can break down the stability of tourism development and real GDP. They provided empirical evidence that political shocks, economic shocks and tourism incidents would break down the stability of the long-run relationship between tourism development and economic growth. They also assessed the direction of causality between tourism and economic growth and concluded that causality was bidirectional. Song and Witt (2006) suggested that tourism and GDP are endogenous, and a single-equation forecast of one or the other could be misleading.

It is widely accepted that tourism goods and services have a negative relationship with tourism demand and are sensitive to changes in domestic tourism prices in the country of origin (Kim, Jewoo and Lee, 2017; Patsouratis et al., 2005; Qu and Lam, 1997). For example, Kim and Lee (2017) identified price indicators for the demand model for inbound tourism and concluded that the model with relative prices and exchange rates but without transport costs produced a better result. Choong-Ki et al. (1996) found that the significant effect of relative prices on tourism demand varies and depends on tourism country of origin. According to De Vita and Kyaw (2013), the specific measure of exchange rates is somewhat ambiguous and inconsistent in the tourism demand literature. Nevertheless, exchange rates are one of the key factors that influence inbound tourism demand, and many studies investigate the link between tourism demand and exchange rates (see, for example, (Dritsakis and Gialetaki, 2004; Wang, 2009). In general, when the currency of a country appreciates, this makes its exports more expensive for the importer and, in the case of tourism, when a tourist destination country's currency appreciates, its price competitiveness decreases and the inbound tourism flow decreases. Ceteris paribus, when a tourist destination country's currency depreciates, its price becomes more competitive and attracts more inbound tourists (De Vita and Kyaw, 2013; De Vita, 2014). Exchange rates have significant effects on tourism demand (Rosselló et al., 2005; Wang, 2009). However, Lee (1996) developed several demand models to examine inbound tourism but concluded that exchange rate results were inconsistent. Therefore, the effect of exchange rates is not symmetric across countries, and this is the case even in different markets in a single country.

It is widely accepted in the tourism literature that relative prices and exchange rates should be included in tourism demand models, but the discussion about whether prices and relative exchange rates that reflect the cost of living should be investigated separately or combined as effective relative prices is still far from reaching a conclusion (Durbarry and Sinclair, 2003; Tan et al., 2002). A number of studies argue that relative prices adjusted by exchange rates are better proxies for prices as they give a better picture of prices in a destination (see, for example, (De Vita, 2014; Dogru et al., 2017; Durbarry and Sinclair, 2003; Hiemstra, Stephen and Wong, 2002; Kim, Jewoo and Lee, 2017). On the other hand, Kim and Lee (2017) attempt to identify price variables that affect inbound tourism by comparing six different tourism demand models each with different price variables. Their results suggest that separate inclusion of relative prices and exchange rates is more effective. Eilat and Einav (2004) stated that tourists are more likely to have up-to-date information regarding exchange rates than relative prices, and tourists are more likely to use exchange rates to estimate their costs of travel. Therefore prices and exchange rates should be included separately in tourism demand models. O'Hagan and Harrison (1984) and Witt and Witt (1995) among others also have a similar view that exchange rates should be treated separately rather than combining them.

In addition, numerous studies have found evidence that tourism demand is significantly responsive to the wealth effect. Earlier we mentioned that in their empirical study Kim et al. (2012) investigated whether the wealth effect was a determinant for outbound tourism, using real estate and the stock market index as a proxy. Their findings suggested that the wealth effect did indeed influence outbound tourism. A similar study was conducted by Fereidouni et al. (2017) using Malaysian outbound tourism and real estate. They concluded that there was a positive and significant relationship between outbound tourism and the wealth effect. In this study we focus on the overall stock market performance of a tourism country of origin as the inbound tourism flow of a destination will increase or decrease with the country of origin's stock market performance.

Generating the financial risk premium of a country

The financial risk premium is one of the key variables employed in this study. We analyse the characteristics of the financial risk premium in African countries. We calculate the financial risk premium for each country for each year of the sample period and examine the impact it has on the inbound tourism flow of a country. The methodology of the financial risk premium is borrowed from the country risk literature and employed by Clark and Kassimatis (2015) is analogous to the corporate default risk premium. This methodology considers the combined effect of changes in the market value, foreign debt levels, economic stability and the rate of return of all the economies of the tourism countries of origin and destination countries. In brief, the volatility of the economy is calculated from the country's rate of return and used along with the country's macroeconomic value in the option pricing model to estimate the theoretical financial risk premium for each country and each year of the sample period. The main argument of this model is that the shareholder will default on debt if the shareholder equity value falls below the debt to be paid on the day of expiration. Shareholder gain is the difference between the debt payout and the value of the equity that shareholder no longer owns, meaning that the shareholder may be left with nothing after the default process is finished. On the other hand, if a country defaults on its debts or loan repayments, because of international law it is unrealistic to assume that creditors can confiscate or take over assets owned by the sovereign debtor. Nevertheless, from a theoretical point of view, this may not be as realistic as it seems. In light of this, Eaton et al. (1986) pointed out that although a country's assets cannot be used as collateral when the debtor is the government of a country, the amount of debt a government can or is willing to appropriate can be used as a constraint on the amount borrowed. Furthermore, foreign creditors can take significant legal action against the country, which can turn out to be very costly, can reduce access to export and import financing and international financial markets, etc. Consequently, the borrowing country is vulnerable through the exposure of the overall economy to its external sector. Therefore, if the proportion of the total value of the economy accruing to the external sector is denoted as δ and the amount at risk is denoted as δV_T^* , then by using δV_T^* as the underlying security, the market value of the country's debt can be calculated using the Black–Scholes (1973) option pricing formula:

$$B_0 = \delta V_0^* N(-d_1) + Ee^{-rt} N(d_2) \tag{4.1}$$

Where, B_0 represents the USD market value of the debt, *r* is the USD risk-free interest, *t* is the expiry date and *E* is the total nominal value of outstanding debt including principal and interest payments. *N(d)* is standardised normal cumulative distribution and will be evaluated at *d*. d_1 and d_2 are given by:

$$d_1 = \frac{\ln\left(\frac{\delta V_0}{E}\right) + \left(r + \frac{\sigma^2}{2}\right)t}{\sigma\sqrt{t}} \tag{4.2}$$

and

$$d_2 = \frac{ln\left(\frac{\delta V_0}{E}\right) + \left(r - \frac{\sigma^2}{2}\right)t}{\sigma\sqrt{t}} \tag{4.3}$$

Once we know the market value of the country's foreign debt, the risk-adjusted required rate of return on the country's foreign debt can be calculated as :

$$r_a = \frac{ln\left(\frac{E}{B_0}\right)}{t} \tag{4.4}$$

Where B_0, *E* and *t* are defined as before. The risk-adjusted required rate of return on foreign debt equates the present value of nominal debt with its market value. The financial risk premium is the difference between the risk-adjusted cost of debt and risk-free interest rate.

The estimates of the total value of economy accruing to the external sector δV^*, the volatility of a country's economy, the total nominal value of outstanding debt including principal and interest payments *E* and expiry date *t* are needed to estimate the financial risk premium for each year for each country in our sample.

By multiplying V^* by the percentage of imports in GDP, we can find δV^*. Clark and Kassimatis (2015) also suggested an alternative value for δ, which produced similar results, could be the ratio of total imports plus exports divided by two over GDP. The volatility of the economy is estimated by the standard deviation of the log-returns of the economy measured over two to three trade cycles.

As total outstanding country debt has different coupons and maturities, in order to make debt data consistent with its application in the option pricing formula, Clark and Kassimatis (2015) defined *E* as the economy's total nominal foreign debt that includes the sum of principal repayments and the sum of the interest payments over the life of all outstanding debt. Principle and interest payment projections are available in Global Development Finance (formerly known as World Debt Tables).

As we are dealing with a series of discrete payments rather than a zero-coupon bond, we need to estimate the maturity of the debt. The maturity of debt is calculated as its risk neutral duration by using the formula below:

$$Ee^{-rt} = \sum_{T=1}^{n} CF_T \ e^{-rT} \tag{4.5}$$

Where, *E* represents the nominal value of total outstanding debt that includes principal and interest, the maturity of the debt is given by *t*, *r* is the continuously compounded USD risk-free interest rate and CF_T is the debt service payment for each year. We then solve the maturity of debt equation (4.5) for *t* to find the maturity of debt's or risk neutral duration, that gives:

$$t = \frac{\ln(E/ \sum_{T=1}^{n} \mathrm{CF}_T \ e^{-rT})}{r} \tag{4.6}$$

Subsequently, an appropriate risk-free interest rate for each country and each year is needed, but each country's debt maturity is not single as assumed by zero coupon liabilities of options pricing theory. Clark (2002) stated that if the yield curve is normal or inverted but not flat, then each cash flow projected needs to be discounted at the spot rate corresponding to its maturity, where spot rates are the interest rates on risk-free zero coupon bond. As we have used US dollars as our base currency, the risk-free rate must be associated with US government security. In this light, Clark and Kassimatis(2015) explained that 'US government instruments of this type are available only for a limited number of maturities. Thus, a more practical estimate of the risk-free rate would be the yield to maturity on a government bond whose cash flow profile mimics that of the country's service (i.e. the percentage of total payments period by period is the same for both).' In this circumstance, the value of *t*, which represents risk neutral duration for the country's debt, would be similar to the duration of a bond. Furthermore, Clark (2002) argues that annual average yield to maturity on a US government 10-year constant maturity could be a reliable proxy even though the cash flow profile of this security generally differs from that of an individual country's debt, but this security's yield to maturity reflects the relevant term structure over its life. Therefore, we have employed this yield to implement equation 4.1 and 4.5.

Figures 4.1 to 4.16 represent the financial risk premium for all the countries in our sample.

Figures: Financial risk premiums by country are given below:

Figure 5.1 Argentina

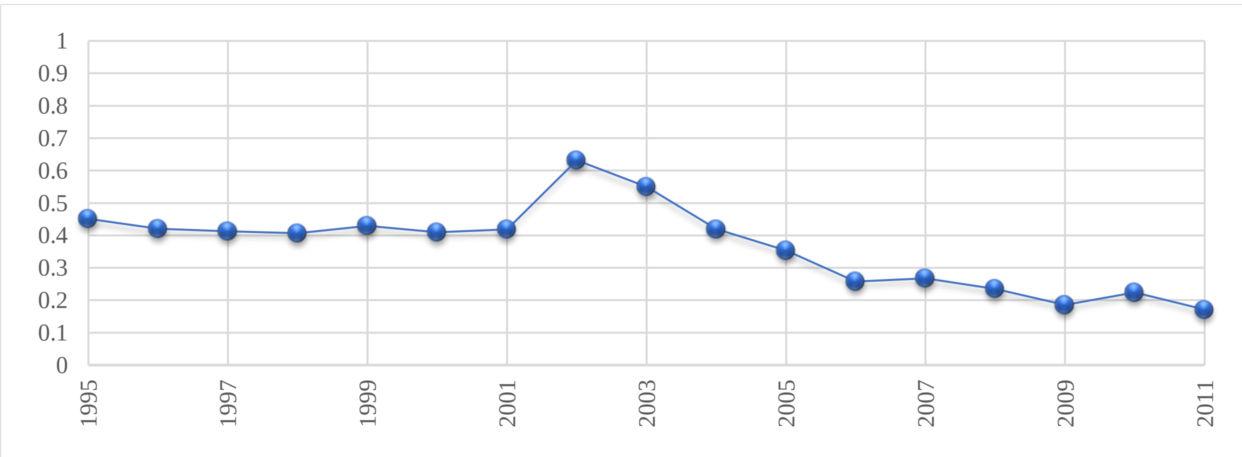


Figure 5.2 Brazil

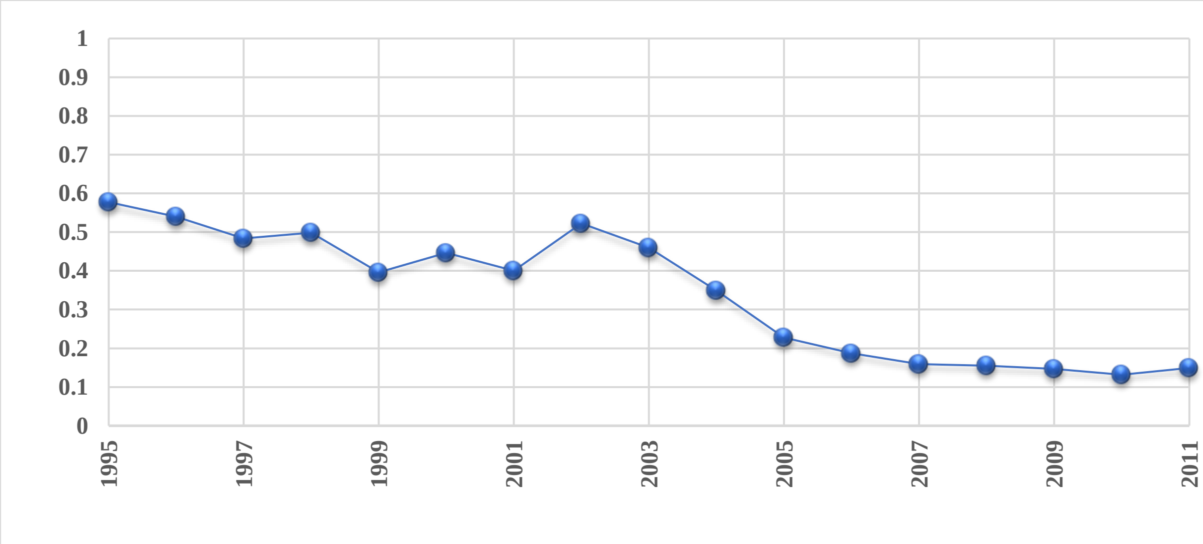


Figure 5.3 Chile

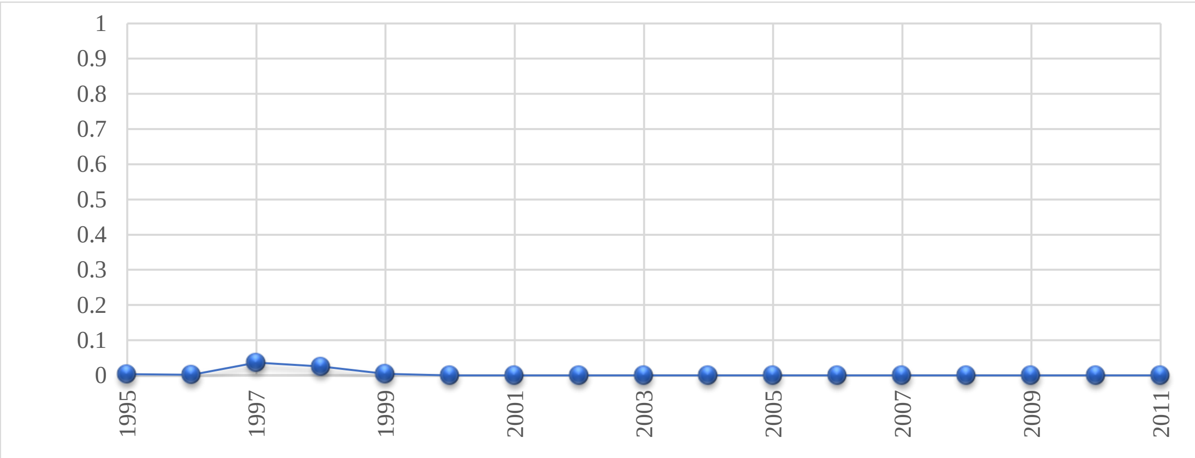


Figure 5.4 China

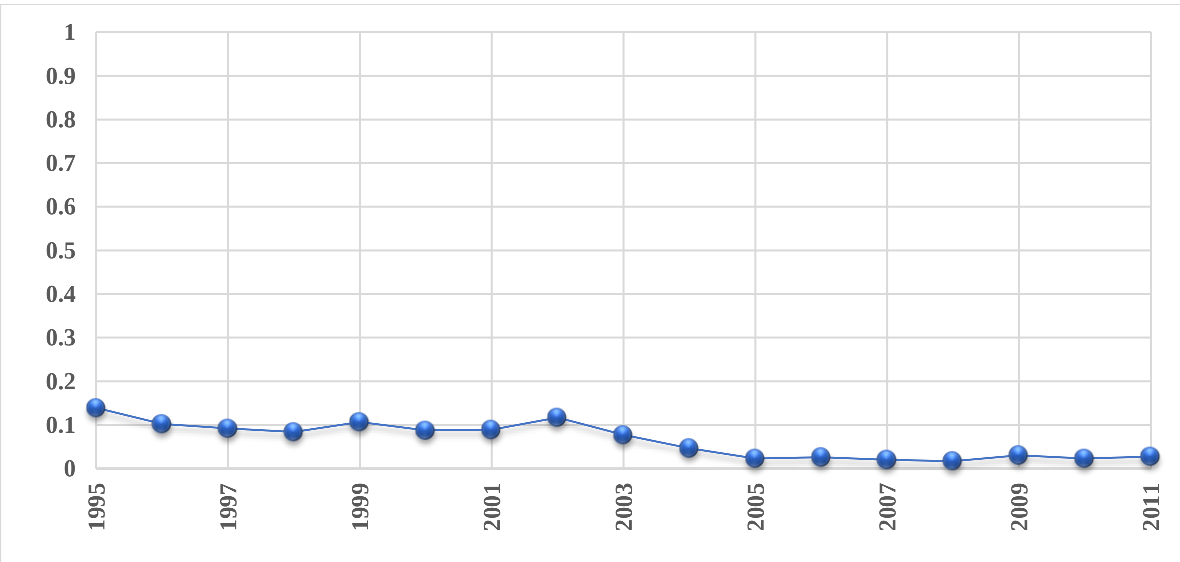


Figure 5.5 Colombia

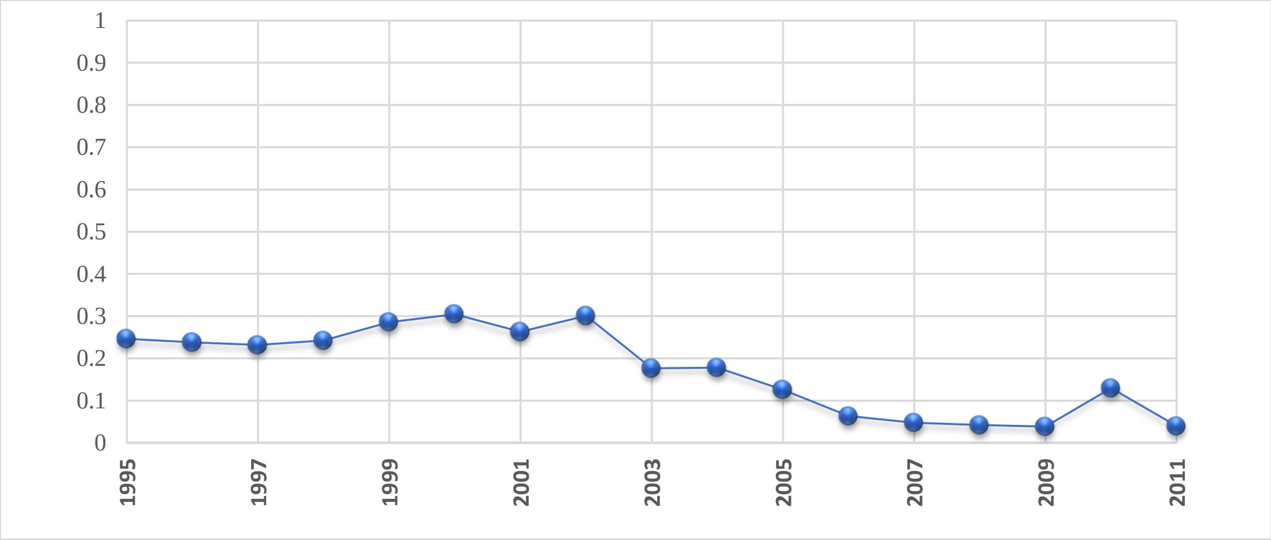


Figure 5.6 Egypt

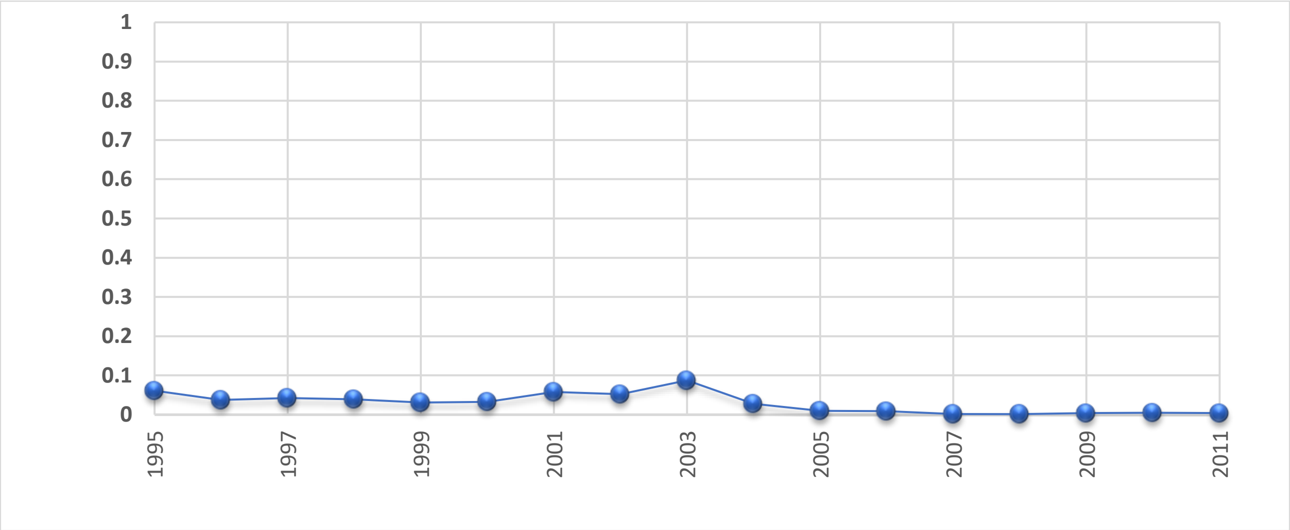


Figure 5.7 Indonesia

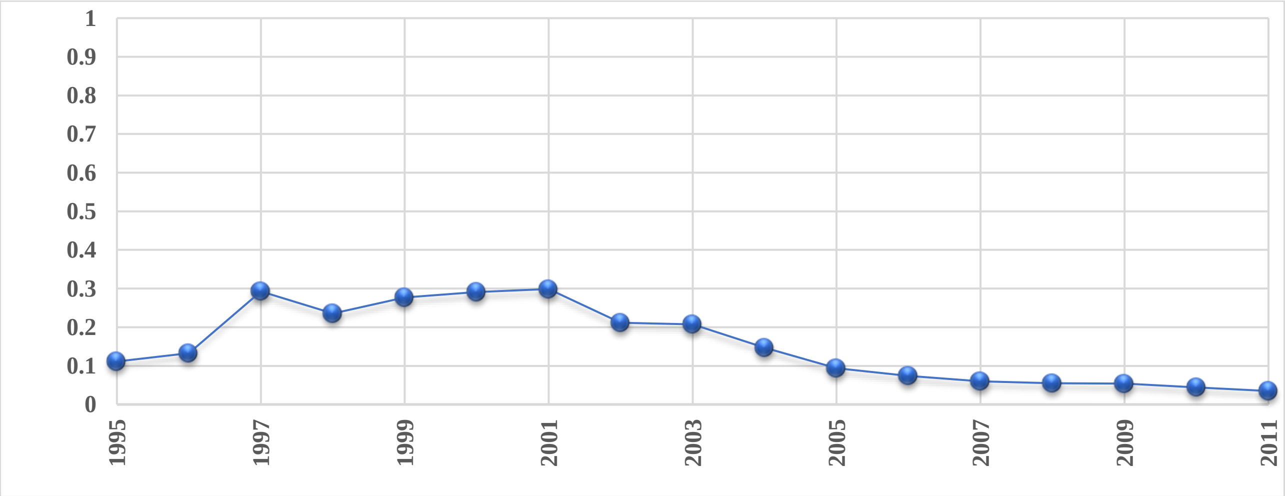


Figure 5.8 Mexico

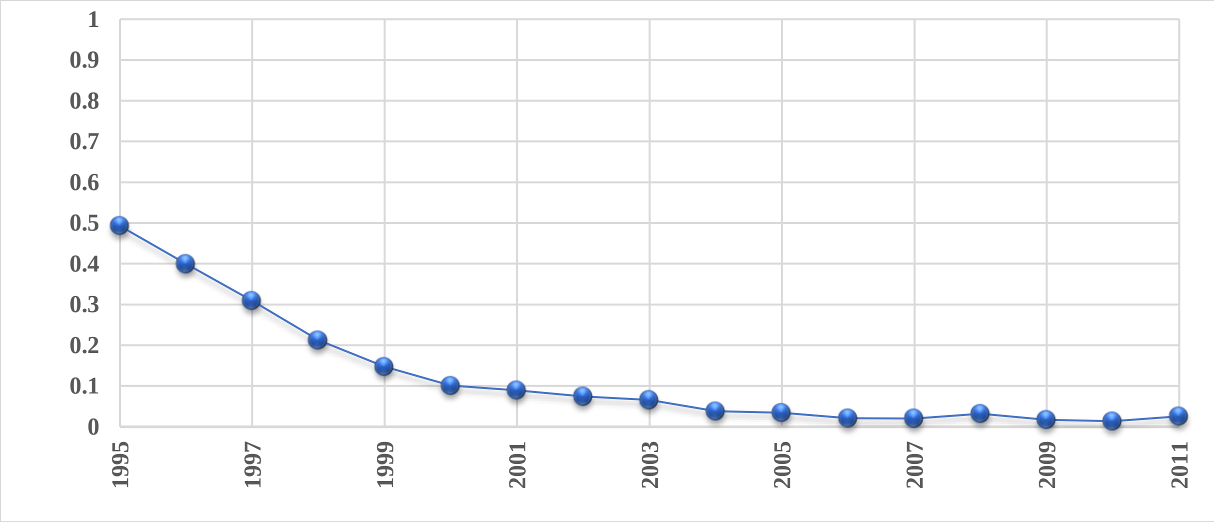


Figure 5.9 Morocco

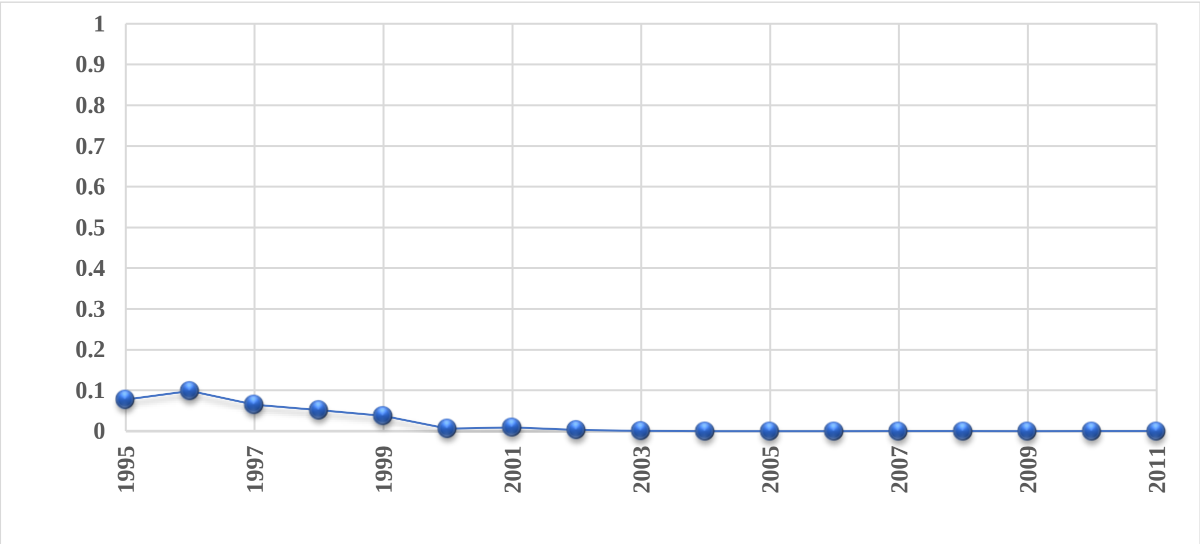


Figure 5.10 Nigeria

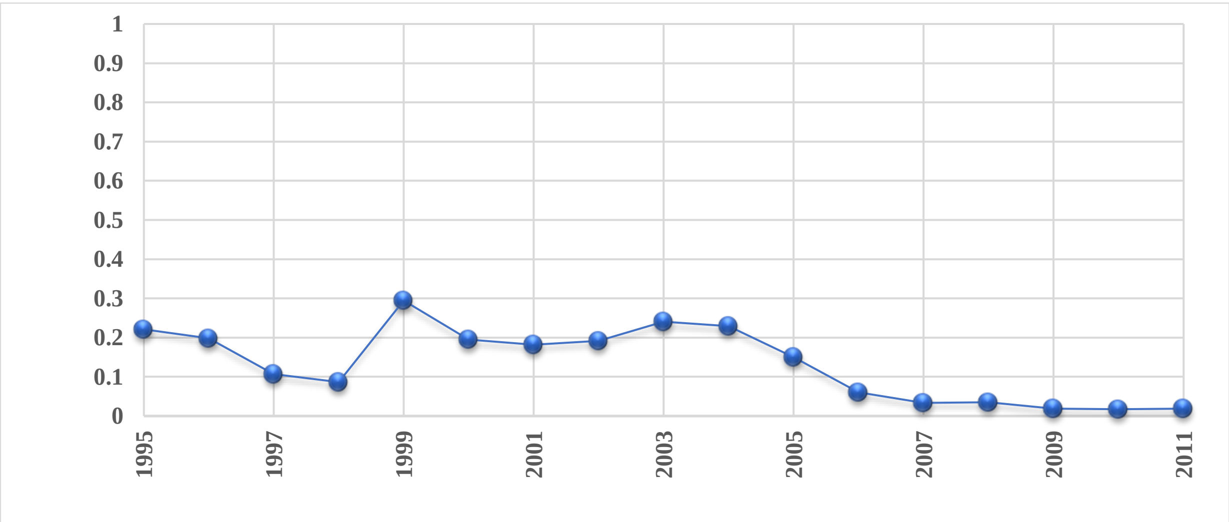


Figure 5.11 Philippines

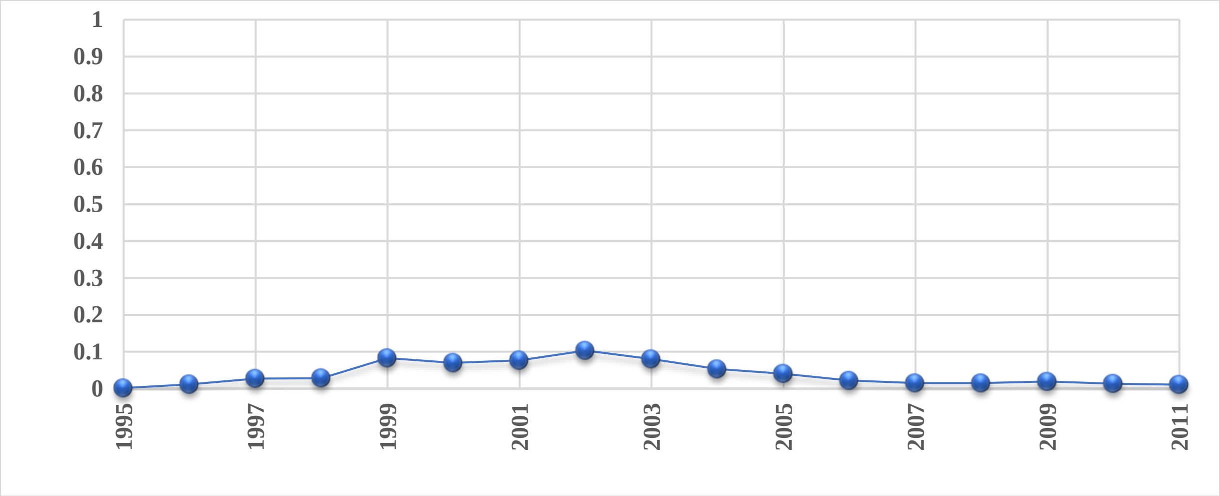


Figure 5.12 Poland

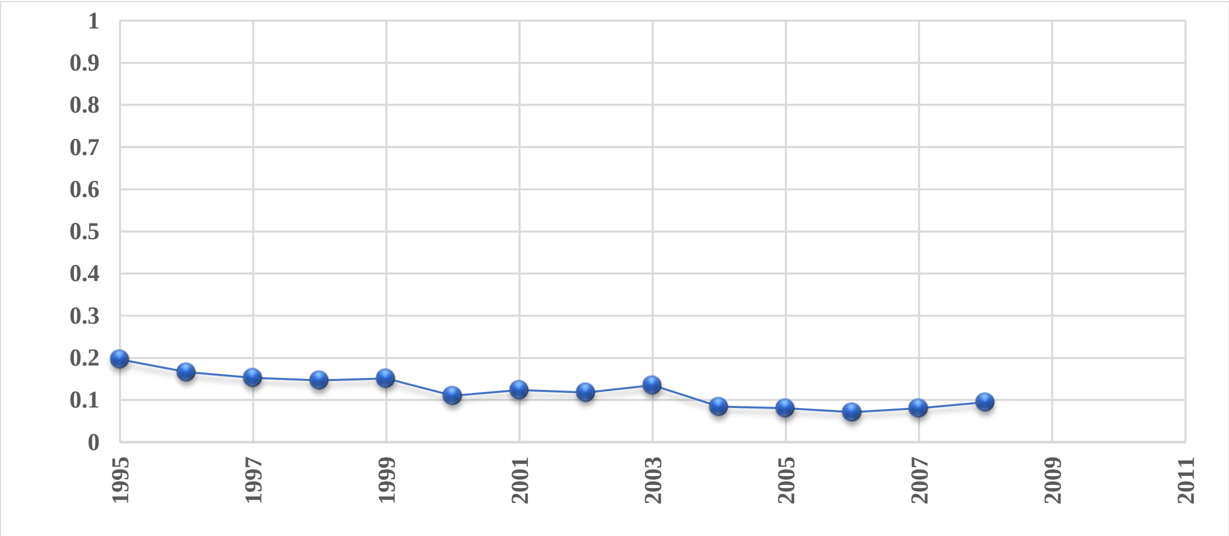


Figure 5.13 Russian Federation

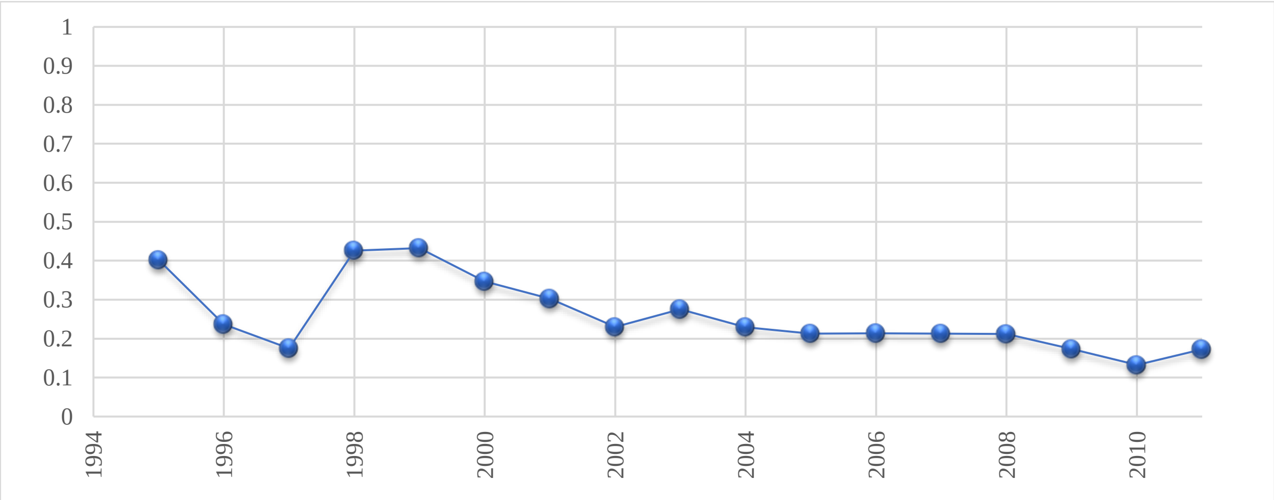


Figure 5.14 South Africa

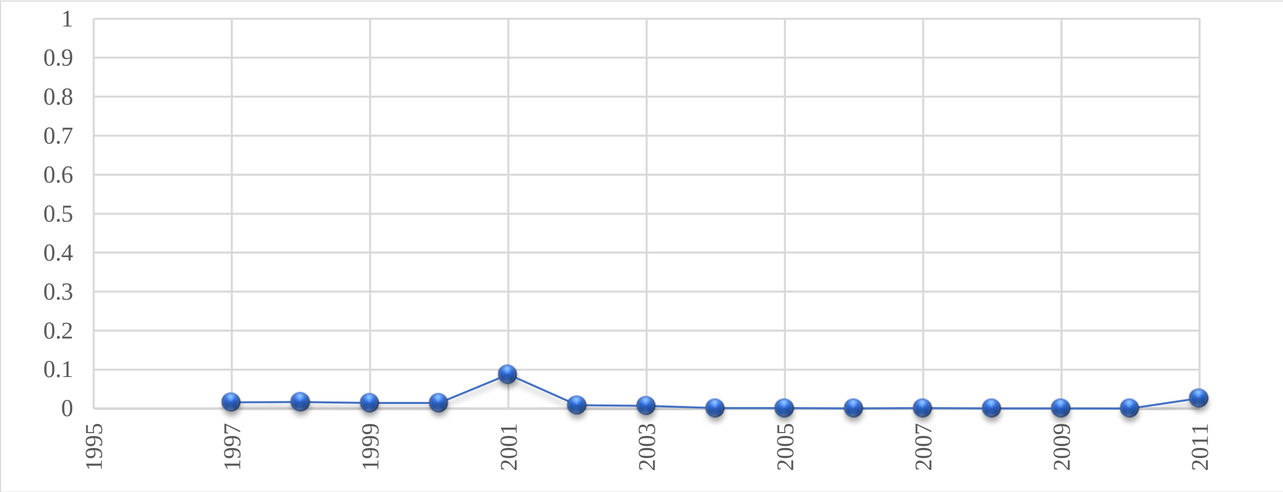


Figure 5.15 Tunisia

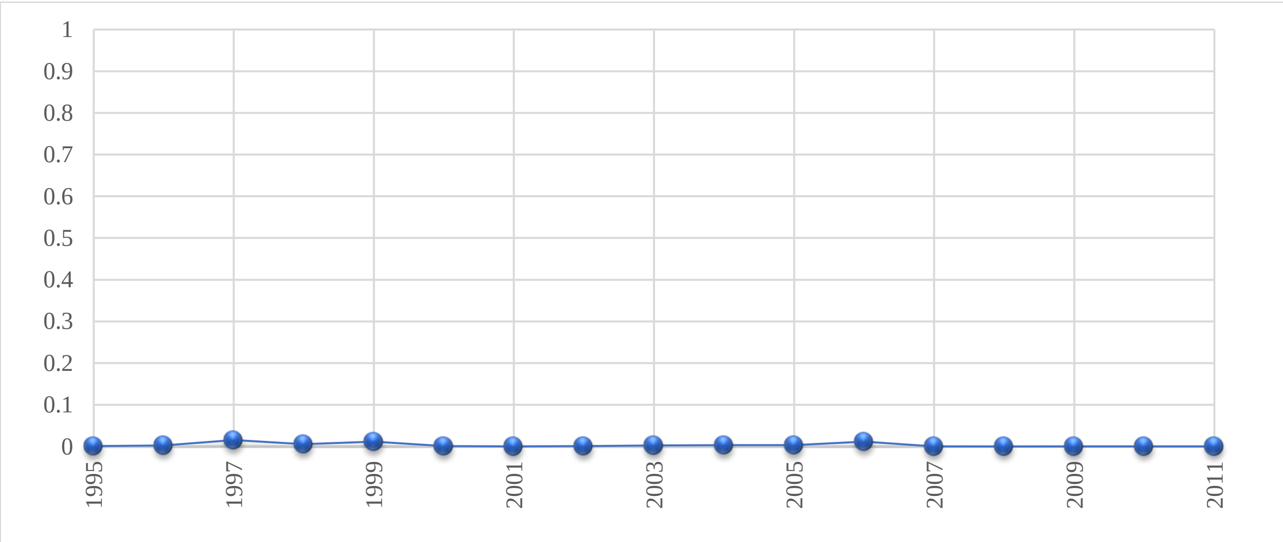
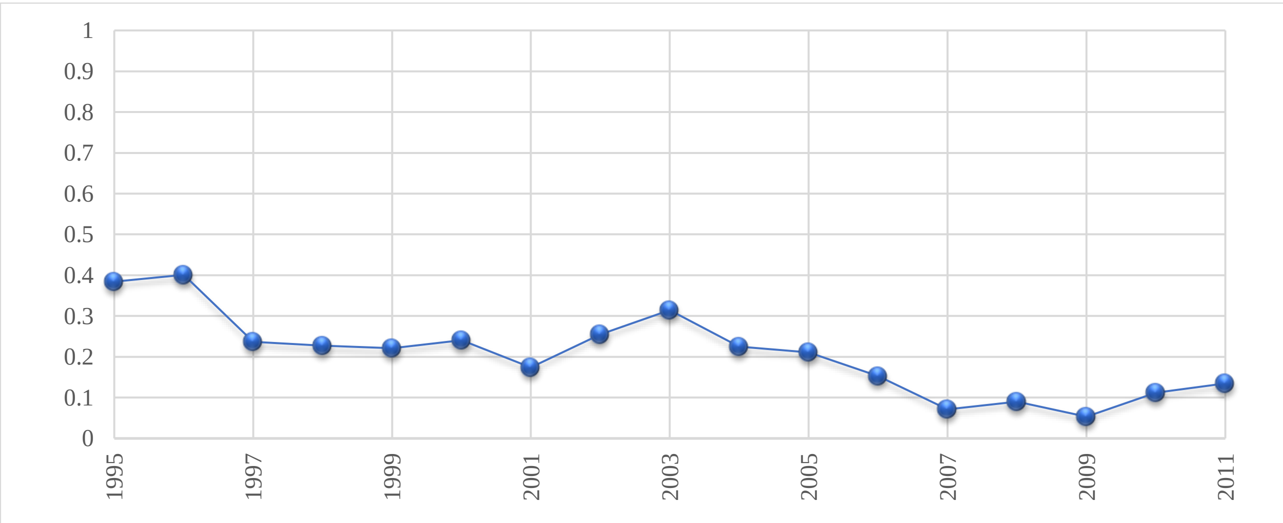


Figure 5.16 Venezuela



Data and variables

The estimated period in this study is varied due to the availability of data for three tourist destination countries. Egypt's and Morocco's datasets include tourist arrivals from 15 countries and the corresponding determinants from 1995 to 2011. However, due to data constraints, South Africa's dataset includes tourist arrivals from 15 countries and the corresponding determinants from 2000 to 2011. The number of tourist arrivals in South Africa from different tourism countries of origin was not available from 1995 to 1999 on the UNWTO database. We have employed a panel data approach for this study. A list of tourism countries of origin and destination is given in Appendix C.

In order to construct the financial risk premium for each country and year, we need to use data from the World Bank's World Debt Table reports of countries' external debt, currently entitled Global Development Finance. As we focus on emerging and developing countries in this study, we constructed financial risk premiums for all the emerging and developing countries in our sample.[51]

The theoretical and empirical analyses suggest a large number of explanatory variables that can be employed to investigate inbound tourism flows, despite the fact that while all these variables are possible, it is not practically possible to include all of the explanatory variables in the empirical models. Hence, it is necessary to recognise the most appropriate and potentially informative explanatory variables before conducting an empirical analysis.

[51] Newly titled developed countries such as Chile and Poland are exceptions. We calculated the financial risk premiums for these countries up until they became developed countries. Most of the developed market's financial risk premium is close to zero.

5.1.1 Specification of variables

Dependent variable

Tourism arrivals: as discussed in the previous chapter, pairwise tourism arrivals in the destination country is a proxy for measuring tourism flows or tourism demand.

Explanatory variables

The financial risk premium of tourism country of origin:

The inclusion of the financial risk premium of a tourism country of origin as an explanatory variable is connected with the idea that if macroeconomic fundamentals are strong then a country can borrow at a low rate of interest from the international capital market. However, there is a significant difference in the interest rates that emerging market governments pay for their external debt (Hilscher and Nosbusch, 2010). Given that most of the tourism countries of origin in our sample are emerging or developing market, it is important to consider the macroeconomic fundamentals of these countries. If the financial risk premium of a country increases, this discourages tourism activity.[52] Conversely, as the financial risk premium goes down, this will have more incentives for tourism. Clark and Kassimatis (2004, 2015) found that the financial risk premium is an important macroeconomic factor.

The financial risk premium of tourist destination countries:

The financial risk premium of a tourist destination country also plays a role in tourism flows. When the governments of tourism destination countries can borrow at a low rate of interest from the international capital market they can make more investments in tourism infrastructure

[52] The financial risk premium is a significant explanatory variable that accounts for about 12% variation of in the stock market indices (Clark and Kassimatis, 2004).

and attract more tourism inflows. Hence, as the financial risk premium of a tourism destination country decreases, the inbound tourism flow increases.

The Bank deposit to GDP (%) of tourism country of origin

The bank deposit to GDP ratio is one of the standard measures for analysing the financial depth of a country. In the tourism literature, the financial development indicator is employed by Ohlan (2017) and Cannonier and Burke (2017). The bank deposit to GDP ratio is employed as a proxy for financial development. The number of tourist arrivals increases with an increase in financial development and conversely tourist arrivals decrease with a decrease in financial development.

RPEX (Relative price standardised by exchange rate)

As mentioned earlier, price is one of the most important factors that influence tourism.[53] Relative price standardised by the exchange rate is a better proxy for measuring price (see, for example, De Vita, 2014; Lorde et al., 2016; Dogru et al., 2017). Most of the studies in the tourism literature employ price as a significant determinant of tourism flows. In this study, we employ RPEX as a proxy for the price factor.

Stock market return (% year on year) of tourism country of origin

As mentioned earlier, the effect of asset wealth such as stock is an important financial source for tourism consumption. The stock market returns of each tourism country of origin year on year are included to measure the wealth effect.[54] Kim et al. (2012) and Lee (2011) employed the stock market index as a proxy for the wealth effect.

Table 4.1 presents more detailed descriptions of the data and sources.

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[53] See, for example, Crouch (1994) and Lim (1997).
[54] A list of tourism destinations and countries of origin is given in Appendix C.

Table 5.1 Data descriptions and sources of research variable

Variables	Descriptions	Data Source
TA_{ijt}	Tourism inflows from the country of origin *i* to the country of destination *j*	World Tourism Organization (UNWTO), The Compendium of Tourism Statistics database, 2015
FRP_{it}	Financial risk premium in tourism country of origin	countrymetrics countrymetrics.com
FRP_{jt}	Financial risk premium in the tourism destination country	countrymetrics countrymetrics.com
$GDPi_t$	Gross domestic product of tourism country of origin (GDP constant 2010 USD)	World Bank, World Development Indicators (WDI) database
GDP_{jt}	Gross domestic product of tourist destination country (GDP constant 2010 USD)	World Bank, World Development Indicators (WDI) database

$BDTGDP_{it}$	The ratio of bank deposit to GDP (%) of tourist country of origin. This variable shows the demand, time and savings deposited in banks as a share of GDP of tourism country of origin and calculated using the deflation method: $$\frac{(0.50) * [\frac{D_t}{CPI\_e_t} + \frac{D_{t-1}}{CPI\_e_{t-1}}]}{\frac{GDP\_O_t}{CPI\_a_t}}$$ Where D denotes as demand, time and saving deposits, CPI_e is consumer price index at the end of the period, and CPI_a is the average annual consumer price index. GDP_O is the gross domestic product of tourism country of origin.	International Financial Statistics (IMF) & Global Financial Development Indicators (World Bank)
$RPEX_{ijt}$	Measured by the ratio of the consumer price index in destination country *j* over the consumer price index in the country of origin *i* at time *t* standardised by the bilateral exchange rate and calculated by the following formula: $$\frac{CPI_{jt}}{CPI_{it} \times exchange\ rate}$$ Represents relative price standardised by the exchange rate (Dogru et al., 2017)	World Bank, World Development Indicators (WDI) database and International Monetary Fund (IMF)
$STMKTRTN_{it}$	Stock market return (% year on year) of tourism country of origin. The stock market return is the growth rate of the annual average stock market index, which is constructed by taking the average of the daily stock market indexes.	World Bank, Global Financial Development Indicators

Table 5.2 Descriptive statistics of variables for Egypt, 1995-2011

Variables	Obs.	Mean	Std. Dev.	Minimum	Maximum	Skewness	Kurtosis
TA_{ijt}	248	86250.04	308871.2	871	2855723	6.05236	43.43706
FRP_{it}	250	0.1361652	0.144041	-8.33E-17	0.63173	1.145691	3.589779
FRP_{jt}	255	0.029737	0.024699	0.001456	0.087546	.5929951	2.539427
GDP_{it}	255	6.65E+11	9.62E+11	2.22E+10	6.68E+12	3.382819	17.04936
GDP_{jt}	255	1.58E+11	3.67E+10	1.06E+11	2.23E+11	.3985134	1.931259
$BDTGDP_{it}$	255	34.82824	15.56151	8.480824	85.62935	.383651	2.812035
$RPEX_{ijt}$	255	149.0195	466.6408	0.138414	3573.452	4.139366	21.91655
$STMKTRTN_{it}$	235	17.49568	32.67993	-55.0162	220.1382	1.649596	9.808542

Notes: Values for descriptive statistics are in levels. Tourism arrivals (TA) numbers are in thousands. A list of tourism countries of origin is given in Appendix C.The average ratio of bank deposits to GDP of tourism countries of origin is 34.83, but the standard deviation of 15.57 indicates that there is heterogeneity across countries in our sample

Tabel 5.3 reports Egypt's pairwise correlation analysis and the degree of correlation varies among variables. The highest relationship with tourism arrival is the explanatory variable GDP of tourism countries of origin and destination. Whereas, negative and significant relationship with FRP_{jt}, $BDTGDP_{it}$, $RPEX_{ijt}$ and $STMKTRTN_{it}$.

Table 5.3 Egypt's cross-correlation between variables, 1995-2011

	TA_{ijt}	FRP_{it}	FRP_{jt}	GDP_{it}	GDP_{jt}	$BDTGDP_{it}$	$RPEX_{ijt}$	$STMKTRTN_{it}$
TA_{ijt}	1							
FRP_{it}	0.0507	1						
FRP_{jt}	-0.1653	0.3358	1					
GDP_{it}	0.1504	0.0561	-0.1341	1				
GDP_{jt}	0.2173	-0.3854	**-0.7137**	0.1752	1			
$BDTGDP_{it}$	-0.0458	-0.4523	-0.1064	0.0406	0.1347	1		
$RPEX_{ijt}$	-0.0638	0.068	0.013	-0.0668	-0.0317	0.0472	1	
$STMKTRTN_{it}$	-0.0065	0.1477	-0.0652	-0.0022	-0.0329	-0.2511	-0.0523	1

Notes: The correlation coefficients greater than 0.5 are shown in bold.

Table 5.4 Descriptive statistics of variables for Morocco, 1995-2011

Variables	Obs.	Mean	Std. Dev.	Minimum	Maximum	Skewness	Kurtosis
TA_{ijt}	255	6918.741	8901.878	354	49933	2.28682	8.026381
FRP_{it}	250	0.136792	0.14346	-8.33E-17	0.63173	1.157229	3.615479
FRP_{jt}	255	0.020516	0.031681	4.78E-12	0.098677	1.295776	3.198101
GDP_{it}	255	6.71E+11	9.59E+11	2.22E+10	6.68E+12	3.406178	17.20161
GDP_{jt}	255	6.97E+10	1.53E+10	4.71E+10	9.81E+10	.3441693	1.87092
$BDTGDP_{it}$	255	35.27976	16.16349	8.480824	80.12536	.400808	2.570426
$RPEX_{ijt}$	255	115.5705	349.0163	0.13801	2413.181	3.674452	16.66385
$STMKTRTN_{it}$	231	18.36829	35.27821	-55.0162	220.1382	1.688493	9.048134

Notes: Values for descriptive statistics are in levels. Tourism arrivals (TA) numbers are in thousands. A list of tourism countries of origin is given in Appendix C. The average ratio of bank deposits to GDP of tourist countries of origin is 35.28, but the standard deviation of 16.17 indicates that there is heterogeneity across countries in our sample

Tabel 5.5 reports Morocco's pairwise correlation analysis and the degree of correlation varies among variables. The highest relationship with tourism arrival is the GDP of the tourism destination country. Whereas, the negative and significant correlation between tourism FRP_{jt}, $BDTGDP_{it}$, $RPEX_{ijt}$ and $STMKTRTN_{it}$.

Table 5.5 Morocco's cross-correlation between variables, 1995-2011

	TA_{ijt}	FRP_{it}	FRP_{jt}	GDP_{it}	GDP_{jt}	$BDTGDP_{it}$	$RPEX_{ijt}$	$STMKTRTN_{it}$
TA_{ijt}	1							
FRP_{it}	-0.1901	1						
FRP_{jt}	-0.2463	0.3164	1					
GDP_{it}	-0.0458	-0.0322	-0.0842	1				
GDP_{jt}	0.3322	-0.4122	**-0.6875**	0.1698	1			
$BDTGDP_{it}$	0.321	-0.4464	-0.1485	0.0501	0.1335	1		
$RPEX_{ijt}$	-0.2112	0.0428	0.0184	-0.0744	-0.0225	0.0404	1	
$STMKTRTN_{it}$	-0.0462	0.1256	-0.0111	-0.0069	-0.0042	-0.1431	-0.03	1

Notes: The correlation coefficients greater than 0.5 are shown in bold.

Table 5.6 Descriptive statistics of variables for South Africa from 2000 to 2011

Variables	Obs.	Mean	Std. Dev.	Minimum	Maximum	Skewness	Kurtosis
TA_{ijt}	180	10772.18	14953.68	223	84862	2.214377	7.960407
FRP_{it}	177	0.1115022	0.1266023	-8.33E-17	0.6317296	1.483842	5.122501
FRP_{jt}	180	0.0097422	0.0179868	0.0002193	0.0645485	2.367109	7.357776
GDP_{it}	180	7.36E+11	1.09E+12	2.91E+10	6.68E+12	3.070319	13.71519
GDP_{jt}	180	3.29E+11	4.12E+10	2.67E+11	3.88E+11	-.1006974	1.501105
$BDTGDP_{it}$	180	37.61492	17.99558	12.51985	85.62935	.5387501	2.715753
$RPEX_{ijt}$	180	114.1504	334.5908	0.115856	1591.383	3.328067	12.80057
$STMKTRTN_{it}$	178	18.99913	33.44816	-55.0162	169.9122	1.238413	6.306383

Notes: Values for descriptive statistics are in levels. Tourism arrivals (TA) numbers are in thousands. A list of tourism countries of origin is given in Appendix C. The average ratio of bank deposits to GDP of tourism countries of origin is 37.61, but the standard deviation of 18 indicates that there is heterogeneity across countries in our sample

Tabel 5.7 reports South Africa's pairwise correlation analysis and the degree of correlation varies among variables. The hight relationship with tourism arrival is the explanatory variable GDP of the tourist origin country. Whereas, the negative and significant correlation between tourism and FRP_{it}, FRP_{jt}, $RPEX_{ijt}$ and $STMKTRTN_{it}$.

Table 5.7 South Africa's cross-correlation between variables, 2000-2011

	TA_{ijt}	FRP_{it}	FRP_{jt}	GDP_{it}	GDP_{jt}	$BDTGDP_{it}$	$RPEX_{ijt}$	$STMKTRTN_{it}$
TA_{ijt}	1							
FRP_{it}	-0.0167	1						
FRP_{jt}	-0.0183	0.1105	1					
GDP_{it}	**0.7393**	-0.0269	-0.03	1				
GDP_{jt}	0.1914	-0.3808	-0.3249	0.1484	1			
$BDTGDP_{it}$	-0.04	-0.4354	-0.0027	0.0102	0.0951	1		
$RPEX_{ijt}$	-0.1541	0.0518	-0.0058	-0.0674	-0.0043	-0.0719	1	
$STMKTRTN_{it}$	-0.0782	0.13	-0.2756	-0.0293	-0.0277	-0.138	0.0368	1

Notes: The correlation coefficients greater than 0.5 are shown in bold.

Methodology

This study developed inbound tourism demand models for Egypt, Morocco and South Africa. In order to find financial factors that determine inbound tourism demand, this study employed financial risk premium, bank deposit to GDP ratio and stock market returns. In addition, based on classical demand theory in which demand is a function of income and price that influence tourism demand were also added to the model as follows:

$$TA_{ijt} = \beta_1 + \beta_2 FRP_{it} + \beta_2 FRP_{jt} + \beta_4 GDP_{it} + \beta_5 GDP_{jt} + \beta_6 BDTGDP_{it} + \beta_7 RPEX_{ijt} + \beta_8 STMKTRTN_{it} + \varepsilon_{ijt} \tag{4.7}$$

Where *i* is tourism country of origin, *j* is the country of destination and *t* denotes time. TA_{ijt} represents the tourism inflows from the country of origin *i* to the country of destination at time *t*. FRP_{it} and FRP_{jt} denote the financial risk premium in the tourism country of origin and the financial risk premium in the tourism destination country respectively. $GDPi_{t}$ and GDP_{jt} denote the Gross domestic products of the tourism countries of origin and destination respectively. $BDTGDP_{it}$ denotes the ratio of bank deposit to GDP of tourism country of origin, $RPEX_{ijt}$ denotes the price variable and finally, $STMKTRTN_{it}$ denotes the year-on-year stock market returns on tourism country of origin.

Since all the countries in our sample are at various stages of development, different structures and characteristic problems can arise from heteroscedasticity and serial correlation. After running several diagnostic tests, we found that our model suffers from heteroscedasticity and serial correlation. Consistency and efficiency of the model are required for rigorous econometric estimation. Therefore, FGLS is employed for the estimation as it corrects for cross-section heteroscedasticity and serial correlation. The feasible generalised least squares estimation approach was described by Parks (1967) and since then has been employed by many researchers. This estimator is consistent and asymptotically efficient when the number of time periods is larger than the cross-sectional unit. Wooldridge (2002) pointed out that the FGLS estimator is robust to serial correlation in idiosyncratic errors and also to heteroscedasticity. Baltagi (2013) indicated that the FGLS estimator controls for individual heterogeneity, increases degrees of freedom, reduces collinearity and improves efficiency.

However, Beck and Katz (1995) pointed out that, in a finite sample case, FGLS produces unreliable standard error estimates. Consequently, they proposed an alternative estimator that performs better in finite samples cases. The Panel corrected standard error (PCSE) estimator is an alternative estimator that accounts for both cross-sectional and serial correlation. The PCSE estimator produces reliable standard errors without any loss in its efficiency compared to the FGLS estimation approach (Beck and Katz, 1995). In the tourism literature, Santana-Jiménez and Hernández (2011) employed the PCSE estimation technique, but Chen et al. (2010) argued that PCSE is less efficient than FGLS in estimating standard errors. Given the difficulty of choosing between the two estimators, in this study, we employ both the FGLS and PCSE estimators. Preston and Almutairi (2013) also employed the FGLS and PCSE estimation techniques for their study of transport policy. Moreover, following Ren and Dewan (2015), to correct for autocorrelation under either FGLS or PCSE, we employ both first-order autocorrelation (AR1) and panel-specific first-order autocorrelation (PSAR1).

Following a popular approach, the number of tourist arrivals is used to measure tourism demand.

Empirical results

Tables 5.8 to 5.10 present the empirical results for Egypt, Morocco and South Africa using static panel data regression.

Table 5.8 Egypt's FGLS and PCSE Analysis

Dependent Variables	FGLS		PCSE	
TA_{ijt}	(AR1)	(PSAR1)	(AR1)	(PSAR1)
FRP_{it}	-0.983*	-1.181**	-0.795*	-1.109***
	(0.502)	(0.468)	(0.414)	(0.306)
FRP_{jt}	-4.113***	-3.994***	-4.759**	-4.048**
	(1.193)	(1.134)	(2.041)	(1.675)
GDP_{it}	0.206**	0.254***	0.316***	0.220***
	(0.0923)	(0.0634)	(0.0546)	(0.0559)
GDP_{jt}	0.930***	0.927***	1.075***	0.949***
	(0.280)	(0.214)	(0.416)	(0.263)
$BDTGDP_{it}$	0.674***	0.878***	0.912***	0.830***
	(0.181)	(0.138)	(0.118)	(0.100)
$RPEX_{ijt}$	-0.0806**	-0.00342	-0.0268	-0.00474
	(0.0378)	(0.0225)	(0.0228)	(0.0149)
$STMKTRTN_{it}$	0.0399*	0.0528**	0.0957***	0.0957***
	(0.0215)	(0.0209)	(0.0287)	(0.0211)
Constant	-21.75***	-23.90***	-29.61***	-23.55***
	(6.871)	(5.220)	(10.99)	(6.755)
Observations	152	152	152	152
Number of countries	15	15	15	15
R-squared	-	-	0.927	0.991
Wald Chi-square	89.88***	190.83***	99.77***	256.10***

Notes: Standard errors are reported in parentheses. Significant at *** 1%, ** 5% and* 10% level respectively. The dependent variable is tourism arrivals, and all the variables are natural log form except the financial risk premium of tourism countries of origin and destination. AR1 (First-order autocorrelation) and PSAR1 (Panel-specific first-order autocorrelation).

Table 5.8 presents the results for Egypt's inbound tourism flow. The results of the FGLS(AR1), FGLS(PSAR1), PCSE(AR1) and PCSE(PSAR1) estimation methods are relatively consistent. Thus, we discuss only FGLS(AR1). The primary variable of concern in our investigation is the financial risk premium of tourism countries of origin and destination. The financial risk premium coefficient for tourism country of origin (-0.983) is negative and statistically significant, and the destination country's financial risk premium coefficient (-4.113) is negative and statistically significant at the 1% level. This confirms that increases in countries' financial risk premiums discourage tourism activities. The GDP of tourist countries of origin coefficient (0.206) is positive and statistically significant at the 5% level. The destination country's GDP coefficient (0.930) is positive and statistically highly significant at the 1% level. This confirms that as host countries become wealthier or their income increases, this attracts more inbound tourism. The financial development indicator of the variable bank deposit to GDP ratio coefficient (0.674) is positive and significant at the 1% level, confirming that as countries develop financially, then more funds are allocated to tourism activities abroad. The RPEX coefficient (-0.0806) is negative and significant at the 5% level. This is in line with the classic law of demand theory which states that the expected sign of price elasticity should be negative (Crouch, 1996). Therefore, it can be seen that price increases in Egypt reduce the demand for inbound tourism. The stock market returns coefficient (0.0399) is positive and statistically significant at the 5% level. Consequently, as the financial wealth of a country increases then more funds are allocated to tourism activities abroad.

Table 5.9 Morocco's FGLS and PCSE analysis

Dependent Variables	FGLS		PCSE	
TA_{ijt}	(AR1)	(PSAR1)	(AR1)	(PSAR1)
FRP_{it}	-0.871***	-1.101***	0.00898	-0.513**
	(0.292)	(0.255)	(0.421)	(0.256)
FRP_{jt}	-2.060**	-1.529*	-1.950*	-2.372*
	(0.952)	(0.875)	(1.177)	(1.364)
GDP_{it}	-0.121*	-0.154**	-0.0547	-0.201***
	(0.0681)	(0.0635)	(0.0435)	(0.0235)
GDP_{jt}	1.386***	1.251***	1.656***	1.688***
	(0.195)	(0.174)	(0.273)	(0.276)
$BDTGDP_{it}$	0.373***	0.378***	0.611***	0.241***
	(0.119)	(0.0867)	(0.142)	(0.0574)
$RPEX_{ijt}$	-0.293***	-0.367***	-0.216***	-0.319***
	(0.0300)	(0.0249)	(0.0195)	(0.0183)
$STMKTRTN_{it}$	0.0436***	0.0349***	0.0405*	0.0276
	(0.0141)	(0.0124)	(0.0237)	(0.0182)
Constant	-24.04***	-19.62***	-33.66***	-28.93***
	(4.734)	(4.198)	(6.554)	(6.615)
Observations	153	153	153	153
Number of countries	15	15	15	15
R-squared			0.962	0.990
Wald Chi-square	262.13***	453.70***	203.46***	503.69***

Notes: Standard errors are reported in parentheses. Significant at *** 1%, ** 5% and* 10% level respectively. The dependent variable is tourism arrivals, and all the variables are in natural log form except the financial risk premium of tourism countries of origin and destination. AR1 (First-order autocorrelation) and PSAR1 (Panel-specific first-order autocorrelation).

Table 5.9 presents the results for Morocco's inbound tourism flow. The results of the FGLS(AR1), FGLS(PSAR1), PCSE(AR1) and PCSE(PSAR1) estimation methods are relatively consistent. Thus, we discuss only FGLS(AR1). The primary variables of concern in our investigation are the financial risk premium of tourist country of origin coefficient (-0.871), which is negative and statistically significant at the 1% level, and the destination country's financial risk premium coefficient (-2.060), which is negative and statistically significant at the 5% level. This confirms that as countries' financial risk premiums increase, this discourages tourism activities. The GDP of tourist countries of origin coefficient (-0.121) is statistically significant at the 10% level. The host country's GDP coefficient (1.386) is positive and significant at the 1% level, confirming that as host countries become wealthier or income increases, this attracts more inbound tourism. The financial development indicator variable bank deposit to GDP ratio coefficient (0.373) is positive and significant at the 1% level, confirming that as countries develop financially then more funds are allocated to tourism activities abroad. The RPEX coefficient (-0.293) is negative and significant at the 1% level. This is in line with the classic law of demand theory which states that the expected sign of price elasticity should be negative (Crouch, 1996). Therefore, as prices increase in Morocco, this reduces the demand for inbound tourism. The stock market returns coefficient is positive and statistically highly significant at the 1% level.

Table 5.10 South Africa's FGLS and PCSE analysis

Dependent Variable	FGLS		PCSE	
TA_{it}	(AR1)	(PSAR1)	(AR1)	(PSAR1)
FRP_{it}	-0.137	0.811*	1.027**	2.110***
	(0.465)	(0.420)	(0.466)	(0.393)
FRP_{jt}	-5.349**	-1.920	-6.967*	-3.552*
	(2.221)	(1.692)	(3.755)	(1.867)
GDP_{it}	0.905***	0.946***	0.823***	0.826***
	(0.0597)	(0.0614)	(0.0370)	(0.0334)
GDP_{jt}	0.709*	0.984***	1.070**	1.506***
	(0.362)	(0.298)	(0.427)	(0.372)
$BDTGDP_{it}$	0.441***	0.450***	0.308*	0.565***
	(0.135)	(0.152)	(0.159)	(0.0857)
$RPEX_{ijt}$	-0.0830***	-0.00148	0.00810	0.0197**
	(0.0285)	(0.0231)	(0.0271)	(0.00811)
$STMKTRTN_{it}$	0.0298	0.00334	0.0166	0.0318
	(0.0205)	(0.0166)	(0.0545)	(0.0239)
Constant	-35.98***	-44.33***	-43.02***	-55.69***
	(8.983)	(7.528)	(11.07)	(9.783)
Observations	121	121	121	121
Number of countries	15	15	15	15
R-squared			0.931	0.990
Wald Chi-square	333.96***	315.98***	931.23***	1232.98***

Notes: Standard errors are reported in parentheses. Significant at *** 1%, ** 5% and* 10% level respectively. The dependent variable is tourism arrivals, and all the variables are in natural log form except the financial risk premium of tourism countries of origin and destination. AR1 (First-order autocorrelation) and PSAR1 (Panel-specific first-order autocorrelation)

Table 5.10 presents the results for South Africa's inbound tourism flow. The results of the FGLS (AR1), FGLS (PSAR1), PCSE (AR1) and PCSE (PSAR1) estimation methods are relatively consistent. Thus, we discuss only FGLS (AR1). The primary variables of concern in our investigation are the financial risk premium of tourism countries of origin coefficient (-0.137), which is negative but statistically insignificant, and the destination country's financial risk premium coefficient (-5.349), which is negative and statistically significant at the 5% level. This confirms that as countries' financial risk premiums increase, this discourages tourism activities. The GDP of tourism countries of origin coefficient (0.905) is positive and statistically significant at the 1% level. In contrast, the tourism destination country's GDP coefficient (0.709) is positive and significant at the 10% level, confirming that as host country become wealthier or income increases, this attracts more inbound tourism. The financial development indicator variable bank deposit to GDP ratio coefficient (0.441) is positive and significant at the 1% level, confirming that as countries develop financially, then more funds are allocated to tourism activities abroad. The RPEX coefficient (-0.0830) is negative and significant at the 5% level, which is in line with the classic law of demand theory which states that the expected sign of price elasticity should be negative (Crouch, 1996). Therefore as prices increase in South Africa, this decreases the demand for inbound tourism. Stock market returns are not statistically significant.

Interpretation of the empirical results

The findings in this chapter shed light on the importance of including financial factors in tourism demand models. The most striking finding of the chapter is that all the potential financial factors that we have identified, namely financial risk premium (FRP), financial assets (STMKTRTN) and the financial development indicator (BDTGDP) significantly influence the inbound tourism flows of Egypt, Morocco and South Africa.

The financial risk premium of the tourism countries of origin to all three destination countries has a negative sign, which shows that as the financial risk of a tourism country of origin goes down, then more funds become available for outbound tourism.

The financial risk premium of all tourism destination countries is also negative and significant, which indicates that a tourism destination can increase tourism inflow by reducing its financial risk.

This finding provides empirical evidence to support the view that an increase in financial assets (stock market returns) in tourism countries of origin will increase inbound tourism flows in tourism destination countries as more funds are available for tourism. This finding is in line with Lee (2011), who also found that stock market increases in tourism countries of origin result in more tourists being attracted to the destination.

Turning to the financial development of tourism countries of origin (bank deposit to GDP ratio), the results indicate that all the tourism destination countries receive more tourists as the financial development of tourism countries of origin countries increases.

The findings also provide empirical evidence to support the theory of tourism demand that income is the single most important determinant of tourism, as the GDP of tourism countries of origin and the GDP of tourism destination countries are significant and positive. This finding is also in line with Crouch (1994) and Lim (1997).

A novel finding in this chapter is that the explanatory variable RPEX (relative price standardised by bilateral exchange rate) is statistically significant with a negative sign, whereas in Chapter 3 it was not statistically significant. One of the reasons for this could be the variable trade openness, which is the ratio of trade between tourism countries of origin and destination to GDP of the destination country. According to Romer (1993), there is an inverse relationship between openness and inflation. In this study, CPI is employed as a measure of inflation when we construct relative prices. Thus, it can be argued that even when RPEX is statistically insignificant it could still convey information that is necessary for tourism demand models. This finding also suggests that as prices in tourism destination countries increase compared to those in tourism countries of origin, then tourism is discouraged.

5.1.2 An alternative measure of risk – robustness check

The importance of country financial risk analysis is emphasised by numerous prominent risk rating agencies. Financial risk ratings of a country are considered important, especially for those seeking foreign investment. Issuing sovereign bonds or other fixed-income securities on the international financial markets is one way governments raise capital. Consequently, big corporations and financial institutions consider the financial risk rating of a country before making investment decisions, so financial risk rating has a substantial influence on a government's ability to raise capital in the international market. The International Country Risk Guide (ICRG) financial risk rating of the tourism origin and destination country are employed.

According to ICRG (2014), Financial risk rating is composed of five components as below:

Foreign debt (% of GDP)

The estimated gross foreign debt for a particular year, exchanged into mean USD, is expressed as a percentage of GDP transformed into US dollars at the average exchange rate for that particular year.

Exchange rate stability

The appreciation or depreciation of a currency (i.e. British Pound) against the USD over a year or for the latest twelve-month period is calculated as a change in percentage.

Debt service (% of XGS)

The estimated foreign debt service, for a particular year, exchanged into mean USD, is expressed as a percentage of estimated total exports of goods and services for that particular year, transformed into US dollars at the average exchange rate for that particular year.

Current account (% of XGS)

The balance of the current account of a country's BOP for a particular year exchanged into USD at the mean exchange rate for that year, is transformed as a percentage of total estimated exports of goods and services, converted into USD at the mean exchange.

International liquidity

The total estimated official reserves including holdings of gold and excluding IMF credits for a particular year exchanged into mean USD rate is divided by the mean monthly merchandise import cost, transformed into USD at the mean exchange rate for the relevant period.

ICRG (2014, p.1-17)

It is worth highlighting that although the ICRG rating system does not include a specific measure of tourism earnings for countries, the importance of tourism earnings and growth can still be extracted with the ICRG economic and financial components. Tourism is export in service, and earnings from tourism are accommodated in the country's current account balance of payments; one of the five components in the ICRG financial rating system. Higher tourism earnings means a higher current account balance and a higher composite risk rating. The higher rating would translate into higher creditworthiness of a country. Egypt, Morocco and South Africa's foreign debt obligations are largely serviced by earnings from the tourism industry. According to the World Bank's development indicators in 2018,[55] international tourism receipts as a percentage of total export for Egypt was about 24.61%, Morocco 22.08% and South Africa 8.89%. Therefore, any negative shock to tourism earnings could lead to considerable difficulty in servicing foreign debt obligations. Therefore, it is important to examine the relationship between financial risk rating and tourism flows. The composite ICRG

[55] World development indicators 2020.

rating system is composed of twenty-two variables. There are five economic, five financial risk and twelve political risk components. ICRG's composite risk rating is created using each set of variables. The points are awarded to each risk component on a scale from zero to a pre-set maximum. In every case the lower the risk point total, the higher the risk, and the higher the risk point total, the lower the risk. The composite risk ratings are obtained by dividing the sum of the three components of risk rating by two. Therefore, financial risk and economic risk accounts for twenty-five per cent each, and political risk accounts for fifty points. We are focusing on financial risk, and actual financial risk from ICRG is based on a maximum of fifty points, where fifty is the lowest risk and zero is the maximum risk. We convert ICRG's fifty point financial risk into a one-hundred-point scale for the purpose of convenience in econometric interpretation and also for comparison with the financial risk premium that we have constructed. To illustrate, in 2005 the ICRG financial risk rating in Argentina was 32.13 out of 50 points and we converted it into 64.26 out of 100 points. Therefore, this transformation can be justified given ICRG's financial risk index is based on a maximum 50 points scale which can cause inconvenience to econometric interpretation and comparability.

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5.1.3 Importance of dynamic model specification

The static specification explicitly addresses the causal relationships between the tourism demand, and the factors influencing it. The static regression provides several statistics to measure the accuracy and validity of the model and improve it depending on these statistics (Frechtling, 1996). However, tourism demand data tends to be trended, or nonstationary, and therefore more likely to generate a spurious relationship between the dependent and explanatory variables, and this could invalidate the diagnostic statistics of the model (Li, 2009). Furthermore, the static model does not allow for dynamic changes in tourists' behaviour and ignores the dynamics of the demand system by assuming that tourism demand is not affected by the values of the economic variables. In tourism demand literature, dynamic model specification includes the lagged dependent variable or an autoregressive term in the model specification. The fundamental of habit formation/persistence is that consumers' current utility is determined by their current consumption and the habit stock formed by their own past consumption (Liu, 2019). In this regard, Dynan (2000) illustrated how habit formation creates a positive relationship between consumption in two consecutive periods, and then how habit formation makes consumers gradually adjust their consumption to an economic shock. A lagged dependent variable has been employed in many empirical studies on tourism (see Syriopoulos, 1995; Alegre and Juaneda, 2006; Garin-Munoz and Amaral, 2000; He and Song, 2009; Naudé and Saayman, 2005; Oppermann, 2000; Pearce, 2012; Sönmez and Graefe, 1998; Song et al., 2003; Balli et al., 2015 and Dogru et al., 2017). More recently Liu (2019) pointed out that if such a crucial variable is ignored or omitted from the tourism demand analysis then the conclusions about the variables incorporated in the model may be incorrect. Lin and Chou (2012) illustrate that consumers attempt to continue a steady pattern of consumption spending over a period of some years or even their entire lifespan. In order to find this pattern it is important to estimate the consumption function. A number of scholars presented a hypothesis to explain this steady pattern, such as the life cycle hypothesis of Ando and Modigliani (1963), the permanent income hypothesis of Friedman (1957), the habit-persistence hypothesis put forward by Brown (1952) and so on. Although some empirical studies have shown that tourism demand relationships can be reasonably approximated by a linear functional form (Smeral et al., 1992), the large majority of studies applied log-linear functional forms for their analysis. Therefore, as estimation results of the dynamic model specification are important and necessary, we adopted and estimated both static and dynamic model specifications in this chapter.

Table 5.11 Data descriptions and sources of research variable

Variables	Descriptions	Data Source
TA_{ijt}	Tourism inflows from the country of origin *i* to the country of destination *j*	World Tourism Organization (UNWTO), The Compendium of Tourism Statistics database, 2015
$ICRG_{it}$	Financial risk rating in tourism country of origin	ICRG
$ICRG_{jt}$	Financial risk rating in the tourism destination country	ICRG
$GDPi_{t}$	Gross domestic product of tourism country of origin (GDP constant 2010 USD)	World Bank, World Development Indicators (WDI) database
GDP_{jt}	Gross domestic product of tourist destination country (GDP constant 2010 USD)	World Bank, World Development Indicators (WDI) database

$BDTGDP_{it}$	The ratio of bank deposit to GDP (%) of tourist country of origin. This variable shows the demand, time and savings deposited in banks as a share of GDP of tourism country of origin and calculated using the deflation method: $$\frac{(0.50) * [\frac{D_t}{CPI\_e_t} + \frac{D_{t-1}}{CPI\_e_{t-1}}]}{\frac{GDP\_O_t}{CPI\_a_t}}$$ Where D denotes as demand, time and saving deposits, CPI_e is consumer price index at the end of the period, and CPI_a is the average annual consumer price index. GDP_O is the gross domestic product of tourism country of origin.	International Financial Statistics (IMF) & Global Financial Development Indicators (World Bank)
$RPEX_{ijt}$	Measured by the ratio of the consumer price index in destination country *j* over the consumer price index in the country of origin *i* at time *t* standardised by the bilateral exchange rate and calculated by the following formula: $$\frac{CPI_{\ jt}}{CPI_{it} \times exchange\ rate}$$ Represents relative price standardised by the exchange rate (Dogru et al., 2017)	World Bank, World Development Indicators (WDI) database and International Monetary Fund (IMF)
$STMKTRTN_{it}$	Stock market return (% year on year) of tourism country of origin. The stock market return is the growth rate of the annual average stock market index, which is constructed by taking the average of the daily stock market indexes.	World Bank, Global Financial Development Indicators

Table 5.12 Descriptive statistics of variables for Egypt, 1995-2011

Variables	Obs.	Mean	Std. Dev.	Minimum	Maximum	Skewness	Kurtosis
TA_{ijt}	248	86250.04	308871.2	871	2855723	6.05236	43.43706
FRR_{it}	255	75.09678	9.537162	35.42	96.26	-0.233299	4.191497
FRR_{jt}	255	78.4902	4.331253	70.16666	85.25	-0.1278393	1.999348
GDP_{it}	255	6.65E+11	9.62E+11	2.22E+10	6.68E+12	3.382819	17.04936
GDP_{jt}	255	1.58E+11	3.67E+10	1.06E+11	2.23E+11	.3985134	1.931259
$BDTGDP_{it}$	255	34.82824	15.56151	8.480824	85.62935	0.383651	2.812035
$RPEX_{ijt}$	255	149.0195	466.6408	0.138414	3573.452	4.139366	21.91655
$STMKTRTN_{it}$	235	17.49568	32.67993	-55.0162	220.1382	1.649596	9.808542

Notes: Values for descriptive statistics are in levels. Tourism arrivals (TA), GDP number are in billion USD. A list of tourism countries of origin is given in Appendix C.The average ratio of bank deposits to GDP of tourism countries of origin is 34.83, but the standard deviation of 15.57 indicates that there is heterogeneity across countries in our sample

Tabel 5.13 reports Egypt's pairwise correlation analysis and the degree of correlation varies among variables. The highest relationship with tourism arrival is the explanatory variable GDP of tourism countries of origin and destination. Whereas, negative and significant relationship with FRP_{jt}, $BDTGDP_{it}$, $RPEX_{ijt}$ and $STMKTRTN_{it}$.

Table 5.13 Egypt's cross-correlation between Variables, 1995-2011

	TA_{ijt}	FRR_{it}	FRR_{jt}	GDP_{it}	GDP_{jt}	$BDTGDP_{it}$	$RPEX_{ijt}$	$STMKTRTN_{it}$
TA_{ijt}	1							
FRR_{it}	0.2371	1						
FRR_{jt}	0.1963	0.4129	1					
GDP_{it}	0.1456	0.3794	0.1382	1				
GDP_{jt}	0.2305	0.4775	**0.7945**	0.1609	1			
$BDTGDP_{it}$	-0.0364	0.0323	0.1381	0.0336	0.1649	1		
$RPEX_{ijt}$	-0.0676	-0.2111	-0.0159	-0.0648	-0.0417	0.0395	1	
$STMKTRTN_{it}$	-0.0125	0.0855	-0.0252	-0.0006	-0.0411	-0.2511	-0.0499	1

Notes: The correlation coefficients greater than 0.5 are shown in bold.

Table 5.14 Descriptive statistics of variables for Morocco, 1995-2011(ICRG Financial risk rating)

Variables	Obs.	Mean	Std. Dev.	Minimum	Maximum	Skewness	Kurtosis
TA_{ijt}	255	6918.741	8901.878	354	49933	2.28682	8.026381
FRR_{it}	255	75.17418	9.518391	35.41666	96.24994	-0.25499	4.23232
FRR_{jt}	255	77.26824	5.559218	66.66	84.5	-0.35958	1.839402
GDP_{it}	255	6.71E+11	9.59E+11	2.22E+10	6.68E+12	3.406178	17.20161
GDP_{jt}	255	6.97E+10	1.53E+10	4.71E+10	9.81E+10	0.344169	1.87092
$BDTGDP_{it}$	255	35.27976	16.16349	8.480824	80.12536	0.400808	2.570426
$RPEX_{ijt}$	255	115.5705	349.0163	0.13801	2413.181	3.674452	16.66385
$STMKTRTN_{it}$	231	18.36829	35.27821	-55.0162	220.1382	1.688493	9.048134

Notes: Values for descriptive statistics are in levels. Tourism arrivals (TA) numbers are in thousands. A list of tourism countries of origin is given in Appendix C. The average ratio of bank deposits to GDP of tourist countries of origin is 35.28, but the standard deviation of 16.17 indicates that there is heterogeneity across countries in our sample

Tabel 5.15 reports Morocco's pairwise correlation analysis and the degree of correlation varies among variables. The highest relationship with tourism arrival is the GDP of the tourism destination country. Whereas, a negative and significant correlation between tourism FRP_{jt}, $BDTGDP_{it}$, $RPEX_{ijt}$ and $STMKTRTN_{it}$.

Table 5.15 Morocco's cross-correlation between variables, 1995-2011

	TA_{ijt}	FRR_{it}	FRR_{jt}	GDP_{it}	GDP_{jt}	$BDTGDP_{it}$	$RPEX_{ijt}$	$STMKTRTN_{it}$
TA_{ijt}	1							
FRR_{it}	0.027	1						
FRR_{jt}	0.2637	0.4448	1					
GDP_{it}	-0.0522	0.3716	0.1124	1				
GDP_{jt}	0.3625	0.4892	**0.8119**	0.1556	1			
$BDTGDP_{it}$	0.3127	0.0511	0.1346	0.0428	0.1629	1		
$RPEX_{ijt}$	-0.2023	-0.1902	-0.0183	-0.0722	-0.033	0.0326	1	
$STMKTRTN_{it}$	-0.0619	0.051	0.1053	-0.0052	-0.0132	-0.1453	-0.0277	1

Notes: The correlation coefficients greater than 0.5 are shown in bold.

Table 5.16 Descriptive statistics of variables for South Africa from 2000 to 2011 (ICRG Financial risk rating)

Variables	Obs.	Mean	Std. Dev.	Minimum	Maximum	Skewness	Kurtosis
TA_{ijt}	180	10772.18	14953.68	223	84862	2.214377	7.96041
FRR_{it}	180	77.73009	9.319674	35.41666	96.24994	-0.571726	5.18066
FRR_{jt}	180	76.4375	2.825243	71.33333	80.91667	-0.159909	1.94646
GDP_{it}	180	7.36E+11	1.09E+12	2.91E+10	6.68E+12	3.070319	13.7152
GDP_{jt}	180	3.29E+11	4.12E+10	2.67E+11	3.88E+11	-0.100697	1.50111
$BDTGDP_{it}$	180	37.61492	17.99558	12.51985	85.62935	0.5387501	2.71575
$RPEX_{ijt}$	180	114.1504	334.5908	0.115856	1591.383	3.328067	12.8006
$STMKTRTN_{it}$	178	18.99913	33.44816	-55.0162	169.9122	1.238413	6.30638

Notes: Values for descriptive statistics are in levels. Tourism arrivals (TA) numbers are in thousands. A list of tourism countries of origin is given in Appendix C. The average ratio of bank deposits to GDP of tourism countries of origin is 37.61, but the standard deviation of 18 indicates that there is heterogeneity across countries in our sample

Tabel 5.17 reports South Africa's pairwise correlation analysis and the degree of correlation varies among variables. The hight relationship with tourism arrival is the explanatory variable GDP of the tourist origin country. Whereas, a negative and significant correlation between tourism and FRP_{it}, FRP_{jt}, $RPEX_{ijt}$ and $STMKTRTN_{it}$.

Table 5.17 South Africa's cross-correlation between variables, 2000-2011

	TA_{ijt}	FRR_{it}	FRR_{jt}	GDP_{it}	GDP_{jt}	$BDTGDP_{it}$	$RPEX_{ijt}$	$STMKTRTN_{it}$
TA_{ijt}	1							
FRR_{it}	0.4133	1						
FRR_{jt}	0.1144	0.336	1					
GDP_{it}	**0.7392**	0.4015	0.0739	1				
GDP_{jt}	0.1877	0.4448	0.5531	0.142	1			
$BDTGDP_{it}$	-0.0406	0.0542	0.0255	0.0082	0.1036	1		
$RPEX_{ijt}$	-0.1535	-0.1444	0.021	-0.0659	-0.0108	-0.0745	1	
$STMKTRTN_{it}$	-0.0769	0.0175	0.4017	-0.027	-0.0358	-0.1408	0.0394	1

Notes: The correlation coefficients greater than 0.5 are shown in bold.

5.1.4 Empirical results

After conducting the static panel data model to estimate the impact of financial factors, including our own constructed financial risk premium, on inbound tourism in Egypt, Morocco and South Africa, this research employs a dynamic panel data model using FGLS and PCSE estimation techniques.[56] As mention earlier the dynamic model is able to capture the persistent nature of the tourists, while the static model does not allow for dynamic changes in tourists' behaviour and ignores the dynamics of the demand system by assuming that tourism demand is not affected by the value of economic variables. In tourism demand literature, dynamic model specification includes an autoregressive term in the model specification. The fundamental of habit formation/persistence is that consumers' current utility is determined by their current consumption and the habit stock formed by their own past consumption.

Tables 5.18 to 5.20 represents panel data regression results for Egypt. Table 5.18 is dynamic panel data regression, Table 5.19 shows the static panel data regression for an alternative measure of financial risk, and Table 5.20 represents the dynamic panel data regression for an alternative measure of financial risk.

[56] Dynamic panel estimator system GMM was our first preference for estimation but our sample has large *T* and small *N* panels, or many time periods and few individuals. In this regard Roodman (2009) pointed out that system GMM dynamic panel estimators designed for situations with small *T* and large *N* panels (few time periods and many individuals). Furthermore, Roodman (2009) also concluded that if *T* is large, the dynamic panel bias becomes insignificant and the number of instruments in the difference and system GMM tends to explode with *T*. Furthermore, if *N* is small, the cluster-robust standard errors and Arellano-Bond autocorrelation test may be unreliable.

Tables 5.21 to 5.23 represents panel data regression results for Morocco. Table 5.21 is dynamic panel data regression, Table 5.22 shows the static panel data regression for an alternative measure of financial risk, and Table 5.23 represents the dynamic panel data regression for an alternative measure of financial risk.

Tables 5.24 to 5.26 represents panel data regression results for South Africa. Table 5.24 is dynamic panel data regression, Table 5.25 shows the static panel data regression for an alternative measure of financial risk, and 5.26 represents the dynamic panel data regression for an alternative measure of financial risk.

Empirical results for Egypt

Table 5.18 Dynamic Panel data regression for Egypt

Dependent Variables	FGLS		PCSE	
TA_{ijt}	(AR1)	(PSAR1)	(AR1)	(PSAR1)
TA_{ijt-1}	**0.997*** **	**0.993*** **	**1.003*** **	**1.002*** **
	(0.0174)	(0.0178)	(0.0131)	(0.0115)
FRP_{it}	-0.312	-0.205	-0.468**	-0.451**
	(0.229)	(0.214)	(0.195)	(0.207)
FRP_{jt}	-1.007	-1.127	-1.016	-1.547
	(1.149)	(1.026)	(2.877)	(2.174)
GDP_{it}	0.0364**	0.0338**	0.0409**	0.0342**
	(0.0173)	(0.0165)	(0.0160)	(0.0150)
GDP_{jt}	-0.286**	-0.378***	-0.412	-0.534**
	(0.129)	(0.118)	(0.301)	(0.241)
$BDTGDP_{it}$	0.0307	0.0493	0.0327	0.0115
	(0.0527)	(0.0500)	(0.0428)	(0.0336)
$RPEX_{ijt}$	-0.00118	-0.00331	0.00406	-0.000498
	(0.00704)	(0.00569)	(0.00633)	(0.00430)
$STMKTRTN_{it}$	0.0973***	0.0990***	0.120***	0.112***
	(0.0245)	(0.0228)	(0.0289)	(0.0268)
Constant	6.232*	8.649***	9.226	12.70**
	(3.354)	(3.078)	(7.872)	(6.315)
Observations	146	146	146	152
Number of countries	15	15	15	15
R-squared	-	-	0.928	0.9832
Wald Chi-square	4142.94***	4336.64***	14271.50***	132.12***

Notes: Standard errors are reported in parentheses. Significant at *** 1%, ** 5% and* 10% level respectively. The dependent variable is tourism arrivals, and all the variables are natural log form except the financial risk premium of tourism countries of origin and destination. AR1 (First-order autocorrelation) and PSAR1 (Panel-specific first-order autocorrelation).

Table 5.18 presents the results of a dynamic panel data regression for Egypt's inbound tourism flow. The results of the FGLS(AR1), FGLS(PSAR1), PCSE(AR1) and PCSE(PSAR1) estimation methods are relatively consistent. In Table 5.18, the lag dependent variable indicates tendency persistence, which is the impact of the number of tourist arrivals in the previous year on the number of tourist arrivals in the current year. The coefficients are positive and statistically highly significant. Therefore, the estimated results are in line with Garin-Munoz (2007) and Song et al.'s (2003) findings on tendency persistence. The primary variable of concern in our investigation is the financial risk premium of tourism countries of origin and destination. As mentioned earlier, our financial risk premium is constructed so that in every case the lower the risk point total, the lower the risk, and the higher the risk point total, the higher the risk. Therefore a negative coefficient sign would indicate lower financial risk and encourage higher tourism activities. In Table 5.18, the financial risk premium coefficient for tourism country of origin is -0.468 for PCSE(AR1) and -0.451 for PCSE(PSAR1) which is negative and statistically significant, and the destination country's financial risk premium coefficient of -1.016 and -1.547 is negative but statistically not significant. This confirms that a decrease in financial risk premium would encourage more tourism activities in Egypt.

The GDP of tourist countries of origin coefficient is relatively similar, positive and statistically significant at the 5% level in all four models. In Table 5.18, the destination country's GDP coefficient in all models is negative and statistically significant except for PCSE(AR1) which contradicts our hypothesis that as host countries become wealthier, or their income increases, they attract more inbound tourism. However, this could also indicate that tourism in Egypt is an inferior good, or the demand model is not specified correctly. The financial development indicator of the variable bank deposit to GDP ratio coefficient is positive but statistically not significant. The RPEX coefficient is negative in all models except for PCSE(AR1) but none of the models is statistically significant. Although, this is in line with the classic law of demand theory, which states that the expected sign of price elasticity should be negative (Crouch, 1996), we could not prove it statistically. Therefore, it can be seen that price increases in Egypt reduce the demand for inbound tourism. The stock market returns coefficient is positive and statistically highly significant, which suggests as the financial wealth of a country increases then more funds are allocated to tourism activities abroad.

Table 5.19 Alternative measure of financial risk for Egypt

Dependent Variables	FGLS		PCSE	
TA_{ijt}	(AR1)	(PSAR1)	(AR1)	(PSAR1)
$ICRG_{it}$	1.003**	0.952**	0.298	1.013***
	(0.408)	(0.370)	(0.525)	(0.319)
$ICRG_{jt}$	1.399**	1.760***	1.696	1.912*
	(0.580)	(0.555)	(1.262)	(1.033)
GDP_{it}	0.154	0.230***	0.284***	0.0767
	(0.0955)	(0.0878)	(0.0631)	(0.0766)
GDP_{jt}	0.863***	0.765***	1.335**	0.876**
	(0.291)	(0.250)	(0.557)	(0.374)
$BDTGDP_{it}$	0.715***	0.986***	0.969***	0.813***
	(0.183)	(0.129)	(0.146)	(0.113)
$RPEX_{ijt}$	-0.0548	-0.0425	-0.0302	-0.0224
	(0.0368)	(0.0290)	(0.0246)	(0.0163)
$STMKTRTN_{it}$	0.0510**	0.0614***	0.100***	0.0843***
	(0.0225)	(0.0216)	(0.0365)	(0.0263)
Constant	-29.55***	-31.48***	-44.57***	-30.83***
	(6.762)	(5.604)	(12.98)	(8.858)
Observations	152	152	152	152
Number of countries	15	15	15	15
R-squared	-	-	0.928	0.9832
Wald Chi-square	77.91***	174.72***	80.45***	132.12***

Notes: Standard errors are reported in parentheses. Significant at *** 1%, ** 5% and* 10% level respectively. The dependent variable is tourism arrivals, and all the variables are natural log form except the financial risk premium of tourism countries of origin and destination. AR1 (First-order autocorrelation) and PSAR1 (Panel-specific first-order autocorrelation)

Table 5.19 presents the results for an alternative measure of financial risk for Egypt's inbound tourism flow. The results of the FGLS(AR1), FGLS(PSAR1), PCSE(AR1) and PCSE(PSAR1) estimation methods are relatively consistent. The primary variable of concern in our investigation is the financial risk of tourism countries of origin and destination. ICRG's financial risk rating is constructed so that in every case the lower the risk point total, the higher the risk, and the higher the risk point total the lower the risk, which is the opposite of the financial risk we have constructed. Therefore, we should expect the opposite coefficient sign when using the two different measures of risk, as it goes without saying that the opposite coefficient sign will indicate a similar conclusion about a country's financial situation from the two different measures of risk in Egypt. In Table 5.19 all the models, except PCSE(AR1) for the financial risk coefficient for the tourism country of origin are positive and statistically significant. Similarly, the destination country's financial risk premium coefficient is positive and statistically significant. This confirms that as financial risk decreases it encourage more tourism activities. The GDP for the tourist countries of origin coefficient is positive in all models, but statistically highly significant at the 1% level in the FGLS(PSAR1) and PCSE(AR1) models. The destination country's GDP coefficient in all models is positive and statistically highly significant, which is in line with our hypothesis that as host countries become wealthier, or their income increases, they will attract more inbound tourism. The financial development indicator of the variable bank deposit to GDP ratio coefficient is positive and statistically highly significant at the 1% level, as expected. This is in line with our hypothesis that, all other things being equal, financial development is expected to have a positive impact on the inbound tourism flow of a destination. The RPEX coefficient is negative in all models, but none of the models is statistically significant. Therefore, there is not enough evidence to confirm that price increases in Egypt reduce the demand for inbound tourism. The stock market returns coefficient is positive and statistically highly significant at the 1% level. This suggests as financial wealth of a country increases, more funds are allocated for tourism activities abroad.

Table 5.20 Dynamic Panel data regression with an alternative measure of financial risk on Egypt

Dependent Variables	FGLS		PCSE	
TA_{ijt}	(AR1)	(PSAR1)	(AR1)	(PSAR1)
TA_{ijt-1}	0.992***	0.991***	0.997***	0.988***
	(0.0169)	(0.0157)	(0.0128)	(0.0107)
$ICRG_{it}$	0.578***	0.526***	0.524***	0.570***
	(0.209)	(0.201)	(0.199)	(0.182)
$ICRG_{jt}$	-0.197	-0.203	0.0191	0.137
	(0.592)	(0.489)	(1.413)	(1.098)
GDP_{it}	0.0113	0.00829	0.0154	0.00859
	(0.0156)	(0.0172)	(0.0161)	(0.0177)
GDP_{jt}	-0.275*	-0.384***	-0.388	-0.475
	(0.156)	(0.129)	(0.379)	(0.314)
$BDTGDP_{it}$	0.0558	0.0516	0.0780*	0.0335
	(0.0505)	(0.0487)	(0.0439)	(0.0323)
$RPEX_{ijt}$	-9.79e-05	-0.000902	0.00654	-0.00108
	(0.00670)	(0.00516)	(0.00647)	(0.00585)
$STMKTRTN_{it}$	0.107***	0.114***	0.119***	0.117***
	(0.0235)	(0.0222)	(0.0274)	(0.0264)
Constant	4.839*	8.003***	6.743	8.737*
	(2.550)	(2.218)	(5.917)	(5.155)
Observations	150	150	150	150
Number of countries	15	15	15	15
R-squared	-	-	0.9649	0.9960
Wald Chi-square	4546.94***	5636.62***	10863.73***	30037.28***

Notes: Standard errors are reported in parentheses. Significant at *** 1%, ** 5% and* 10% level respectively. The dependent variable is tourism arrivals, and all the variables are natural log form except the financial risk premium of tourism countries of origin and destination. AR1 (First-order autocorrelation) and PSAR1 (Panel-specific first-order autocorrelation).

Table 5.20 presents the dynamic panel data regression with an alternative measure of financial risk on Egypt's inbound tourism flow. The results of the FGLS(AR1), FGLS(PSAR1), PCSE(AR1) and PCSE(PSAR1) estimation methods are relatively consistent. In Table 4.20 the lag dependent variable indicates tendency persistence for the impact of the number of tourist arrivals in the previous year on the number of tourist arrivals in the current year. The coefficient is positive and statistically highly significant. Therefore, the estimated results are in line with Garin-Munoz (2007) and Song et al.'s (2003) findings on tendency persistence. The primary variable of concern in our investigation is the financial risk premium of tourism countries of origin and destination. In Table 5.20 in all the models the financial risk coefficient for the tourism country of origin are positive and statistically highly significant at the 1% level, but the destination country's financial risk premium coefficient is not statistically significant. This confirms that if the financial risk rating in the tourism origin country increases positively (less risk) it encourages more tourism activities. The GDP of tourist country of origin coefficient is relatively similarly positive but not statistically significant. The destination country's GDP coefficient in all models is negative but statistically significant on both FGLS estimations, which contradicts our hypothesis that as host countries income increases, this attracts more inbound tourism. The financial development indicator of the variable bank deposit to GDP ratio coefficient is positive statistically significant only on PCSE(AR1), which is in line with our hypothesis that all, other things being equal, financial development is expected to have a positive impact on the inbound tourism flow of a destination. The RPEX coefficient is negative in all models except for PCSE(AR1), but none of the models is statistically significant. Although this is in line with the classic law of demand theory which states that the expected sign of price elasticity should be negative (Crouch, 1996), we could not statistically prove it. Therefore, it can be seen that price increases in Egypt reduce the demand for inbound tourism. The stock market returns coefficient is positive and statistically highly significant at the 1% level, suggesting that as the financial wealth of a country increases, more funds are allocated to tourism activities abroad.

Compare findings on Egypt

In addition to the classical factors, we identify financial factors as relevant influencers of tourism demand. Tables 5.8, 5.18, 5.19 and 5.20 present the results for Egypt's inbound tourism flow. The results of the FGLS(AR1), FGLS(PSAR1), PCSE(AR1) and PCSE(PSAR1) are relatively consistent. In both Tables 5.18 and 5.20, the lag dependent variable indicates tendency persistence for the impact the number of tourist arrivals in the previous year has on the number of tourist arrivals in the current year. The coefficient is positive and statistically highly significant. In this regard, Garin-Munoz (2007) argues that there could be two reasons: first, tourists are risk adverse, so travelling to previous destinations is preferred as it undoubtedly leads to lower risks and less inconvenience than travelling to a new destination; and second, having knowledge of a destination helps mitigate other possible risks. Knowledge about a specific destination is thereafter shared with family and friends and helps them to reduce possible risks of travelling to that destination. Hence, Song et al. (2003) demonstrated that word of mouth might have a more significant impact on inbound tourism flow of a destination.

Hypothesis 1A states: The financial risk of the tourism origin country has an influence on inbound tourism flow of the destination country.

The primary variable of concern in our investigation is the financial risk premium for the tourism countries of origin and destination. As mentioned earlier, ICRG's financial risk rating is constructed so that in every case the lower the risk point total, the higher the risk, and the higher the risk point total the lower the risk, whereas our own financial risk premium is constructed so that in every case the lower the risk point total, the lower the risk, and the higher the risk point total the higher the risk. Therefore, we should expect the opposite coefficient sign when using the two different measures of risk as the opposite coefficient sign will indicate a similar conclusion about a country's financial situation from the two different measures of risk.

As discussed previously, it is complex and time-consuming to construct our own financial risk premium, so why did we do so when rating agencies can provide us with the rating? The answer to this question is that rating agencies are often proven to be biased and have come under increased scrutiny since the Asian financial crisis. Concerns about the accuracy and stability of the rating process have increased significantly. Rating agencies were held responsible for aggravating the liquidity crisis of several Asian countries by downgrading these issuers' ratings by as many as ten notches within 2 months (Gaillard, 2011). In this regard, Ferri et al. (1999) argue that rating agencies became excessively conservative and downgrade countries ratings more than the economic fundamentals would justify. Furthermore, Reisen and von Maltzan (1999) stated that "The 1990s have witnessed pronounced boom-bust cycles in emerging-markets lending, culminating in the Asian financial and currency crisis of 1997-98. The sovereign rating industry, much as it did during the Mexican crisis three years earlier, was heavily criticised for failing to predict these currency crises." Governments seek a rating in order to ease their access to the international capital market. Institutional investors, in particular, are less likely to invest in a country unless it has adequate rating from a reliable rating agency. Although governments generally cooperate with the rating agencies, bitter disputes over ratings do occur if the governments feel their rating is unjustified. In 2001 Japan lost its AAA rating, and Haruhiko Kuroda, Ministry of Finance Vice-Minister for International Affairs, was bluntly public about his opinion regarding the rating agencies. "Considering the strong fundamentals of the Japanese economy, the current ratings of Japanese Government Bonds are already too low and any further downgrading is unwarranted. Your explanations regarding rating decisions are mostly qualitative in nature and lack objective criteria, which invite questions about the larger issue of the reliability of ratings itself'.[57] Thus, our technique is robust without the rating agencies biases.

Results from Tables 5.8, 5.18, 5.19 and 5.20 indicate that the financial risk coefficient for the tourism country of origin is statistically significant, and the sign of the coefficient was negative when we employed our own constructed financial risk premium variable. By construction the lower the financial risk, the better the country's financial situation, and for the ICRG financial risk rating, by construction, the higher the country risk rating, the better the country's financial situation. This confirms that as financial risk rating increases positively (less risk) it encourages more tourism activities.

Hypothesis 1B states: The financial risk rating of the tourism destination country has an influence on its inbound tourism flow.

Similarly, results from Table 5.8, 5.18, 5.19 and 5.20 indicate that the financial risk coefficient for the tourism destination country is statistically significant in most of the models. The sign of the coefficients was negative when we employed our own constructed financial risk premium variable. This confirms that as the financial risk rating of the destination county increases positively (less risk) it encourages more international tourism inflows.

Hypothesis 1D states: Financial development is expected to have a positive impact on the inbound tourism flow of a destination.

For most of the models in Tables 5.8, 5.18, 5.19 and 5.20, the financial development indicator coefficient is positive and statistically significant as expected. This is in line with our hypothesis that, all other things being equal, financial development is expected to have a positive impact on the inbound tourism flow of a destination.

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[57] Ministry of Finance, Japan (2002)
Source: https://www.mof.go.jp/about_mof/other/other/rating/p140430e.htm

Hypothesis 1C states: Price gains of capital assets will increase inbound tourism demand for the destination.

The stock market returns coefficient is positive and statistically significant for all 16 models in Tables 5.8, 5.18, 5.19 and 5.20. These results are in line with Kim et al. (2011) and Song et al.'s (2010) findings, suggesting that as the financial wealth of a country increases then more funds are allocated to tourism activities abroad.

Sub-hypothesis

The first sub-hypothesis is the income of the tourism origin country is expected to have a positive impact on the inbound tourism flow of a destination country. In Tables 5.8, 5.18, 5.19 and 5.20, for most of the models, the coefficients of income are significant and consistent with demand theory. However, none of the coefficients exceeded unity nor is income elasticity of demand for tourism less than one in magnitude, therefore, tourism to Egypt represents a necessity product.

The second sub-hypothesis is the income of the tourism destination country is expected to have a positive impact on its inbound tourism flow. In Tables 5.8, 5.18, 5.19 and 5.20, for most of the models, the coefficient of destination's income is positive and statistically significant, which is in line with our hypothesis that as host countries become wealthier, or their income increases, this attracts more inbound tourism.

The third sub-hypothesis is that price increases in the tourism destination has a negative impact on inbound tourism. In Tables 5.8, 5.18, 5.19 and 5.20 , for most of the models, the coefficients have a negative sign as expected, but only the Table 5.8 FGLA(AR1) model was statistically significant. Therefore, the results are still ambiguous. According to the law of demand, the expected sign of the price elasticity should be negative; however, according to Crouch (1996), the sign of price elasticity could be positive if the income effect is stronger, or if tourists perceived tourism consumption to be prestigious in the country in context.[58] Positive price elasticity of demand could be an indication of Giffen, which are inferior goods, or Veblen, which are luxury goods, depending on the income effect on the demand. While a positive income elasticity of demand suggests luxury goods, negative income elasticity of demand indicates inferior goods.

[58] Crouch (1996) extensively illustrated price elasticity impact on tourism demand in his paper.

Empirical results for Morocco

Table 5.21 Dynamic panel data regression on Morocco

Dependent Variables	**FGLS**		**PCSE**	
TA_{ijt}	(AR1)	(PSAR1)	(AR1)	(PSAR1)
TA_{ijt-1}	0.975***	0.974***	0.979***	0.969***
	(0.0216)	(0.0212)	(0.0205)	(0.0215)
FRP_{it}	-0.212	-0.238**	-0.189	-0.185
	(0.146)	(0.119)	(0.177)	(0.163)
FRP_{jt}	1.720***	1.925***	1.930	2.050
	(0.598)	(0.567)	(1.448)	(1.287)
GDP_{it}	0.0211*	0.0251**	0.0343***	0.0417**
	(0.0121)	(0.0119)	(0.0126)	(0.0176)
GDP_{jt}	0.224***	0.219***	0.295	0.267
	(0.0859)	(0.0806)	(0.189)	(0.169)
$BDTGDP_{it}$	0.0646*	0.0317	0.0732**	0.0544*
	(0.0367)	(0.0324)	(0.0358)	(0.0307)
$RPEX_{ijt}$	0.00353	0.00374	0.00220	0.00358
	(0.00762)	(0.00793)	(0.00432)	(0.00460)
$STMKTRTN_{it}$	0.0382**	0.0411***	0.0419**	0.0429**
	(0.0149)	(0.0134)	(0.0181)	(0.0183)
Constant	-6.193***	-6.048***	-8.405*	-7.766*
	(2.053)	(1.926)	(4.719)	(4.162)
Observations	150	150	150	150
Number of countries	15	15	15	15
R-squared	-	-	0.9722	0.9957
Wald Chi-square	14416.68***	8408.48***	27370.11***	11391.16***

Notes: Standard errors are reported in parentheses. Significant at *** 1%, ** 5% and* 10% level respectively. The dependent variable is tourism arrivals, and all the variables are natural log form except the financial risk premium of tourism countries of origin and destination. AR1 (First-order autocorrelation) and PSAR1 (Panel-specific first-order autocorrelation).

Table 5.21 presents the results of a dynamic panel data regression for Morocco's inbound tourism flow. The results of the FGLS(AR1), FGLS(PSAR1), PCSE(AR1) and PCSE(PSAR1) estimation methods are relatively consistent. In Table 4.21 the lag dependent variable indicates tendency persistence, which is the impact of the number of tourist arrivals in the previous year on the number of tourist arrival in the current year. The coefficients are positive and statistically highly significant. Therefore, the estimated results are in line with Garin-Munoz (2007) and Song et al.'s (2003) findings on tendency persistence. The primary variable of concern in our investigation is the financial risk premium of tourism countries of origin and destination. As previously mentioned, our own financial risk premium is constructed so that in every case the lower the risk point total, the lower the risk, and the higher the risk point total, the higher the risk. Therefore a negative coefficient sign would indicate lower financial risk and encourage higher tourism activities. In Table 5.21 FGLS(PSAR1), the financial risk premium coefficient for tourism country of origin is -0.238 which is negative and statistically significant, and this confirms that a decrease in financial risk premiums would encourage more tourism activities in Morocco. However, the destination country's financial risk premium coefficient is positive and statistically significant on both the FGLS models, which contradicts our hypothesis.

As expected the GDP of tourist countries of origin coefficient is relatively similar, positive and statistically significant in all four models. The destination country's GDP coefficient in all models is positive but statistically significant on FGLS, which is consistent with our hypothesis that as host countries become wealthier or their income increases, they attract more inbound tourism flows. The financial development indicator variable coefficient is positive and statistically significant except for FGLS(PSAR1), which is in line with our hypothesis that, all other things being equal, financial development is expected to have a positive impact on the inbound tourism flow of a destination. None of the models have a statistically significant RPEX. The stock market returns coefficient is positive and statistically highly significant suggesting that as the financial wealth of a country increases then more funds are allocated to tourism activities abroad.

Table 5.22 Alternative measure of financial risk on Morocco

Dependent Variables	FGLS		PCSE	
TA_{ijt}	(AR1)	(PSAR1)	(AR1)	(PSAR1)
$ICRG_{it}$	0.824***	0.758***	-0.206	0.511***
	(0.236)	(0.194)	(0.337)	(0.175)
$ICRG_{jt}$	-0.190	-0.176	0.569	0.495
	(0.447)	(0.398)	(0.920)	(0.870)
GDP_{it}	-0.160**	-0.219***	-0.0443	-0.208***
	(0.0638)	(0.0526)	(0.0483)	(0.0268)
GDP_{jt}	1.766***	1.677***	1.736***	1.627***
	(0.216)	(0.187)	(0.390)	(0.307)
$BDTGDP_{it}$	0.476***	0.476***	0.606***	0.316***
	(0.119)	(0.0844)	(0.134)	(0.0549)
$RPEX_{ijt}$	-0.280***	-0.346***	-0.221***	-0.285***
	(0.0278)	(0.0220)	(0.0241)	(0.0212)
$STMKTRTN_{it}$	0.0327**	0.0267**	0.0365	0.0211
	(0.0149)	(0.0125)	(0.0269)	(0.0201)
Constant	-35.76***	-31.58***	-37.50***	-31.92***
	(4.390)	(3.743)	(7.748)	(5.774)
Observations	157	157	157	157
Number of countries	15	15	15	15
R-squared			0.9618	0.9903
Wald Chi-square	265.52***	448.59***	175.09***	305.92***

Notes: Standard errors are reported in parentheses. Significant at *** 1%, ** 5% and* 10% level respectively. The dependent variable is tourism arrivals, and all the variables are in natural log form except the financial risk premium of tourism countries of origin and destination. AR1 (First-order autocorrelation) and PSAR1 (Panel-specific first-order autocorrelation).

Table 5.22 presents the results for Morocco's inbound tourism flow using a dynamic model. The results of the FGLS(AR1), FGLS(PSAR1), PCSE(AR1) and PCSE(PSAR1) estimation methods are relatively consistent. The primary variable of concern in our investigation is the financial risk premium of tourism countries of origin and destination. As pointed out previously, ICRG's financial risk rating is constructed so that in every case the lower the risk point total, the higher the risk, and the higher the risk point total the lower the risk which is the opposite of financial risk rating we have constructed. Therefore, we should expect the opposite coefficient sign when using the two different measures of risk, as the opposite coefficient sign will indicate a similar conclusion about a country's financial situation from the two different measures of risk in Morocco. In Table 5.22 all the models, except PCSE(AR1) the financial risk coefficient for tourism country of origin, are positive and statistically significant, however none of the destination country's financial risk premium coefficients are statistically significant. This confirms that as financial risk rating increases positively (less risk) it encourages more tourism activities. The GDP of tourist countries of origin coefficients are negative in all models and statistically highly significant except for the PCSE(AR1) model, which violates the law of demand. The destination country's GDP coefficient in all models are positive and statistically highly significant, which is in line with our hypothesis that as host countries become wealthier or their income increases, this attracts more inbound tourism. The financial development indicator of the variable bank deposit to GDP ratio coefficient is positive and statistically highly significant at the 1% level as expected, which is in line with our hypothesis that all other things being equal, financial development is expected to have a positive impact on the inbound tourism flow of a destination. The RPEX coefficient is negative in all models and is statistically significant which could indicate that tourism in Morocco is an inferior good. There is, therefore, not enough evidence to confirm that price increases in Morocco reduce the demand for inbound tourism. The stock market returns coefficient is positive in all models but statistically highly significant only on the FGLS model suggesting that as the financial wealth of a country increases then more funds are allocated for tourism activities abroad.

Table 5.23 Dynamic panel data regression with an alternative measure of financial risk on Morocco

Dependent Variables	**FGLS**		**PCSE**	
TA_{ijt}	(AR1)	(PSAR1)	(AR1)	(PSAR1)
TA_{ijt-1}	0.975***	0.977***	0.976***	0.974***
	(0.0221)	(0.0205)	(0.0261)	(0.0235)
$ICRG_{it}$	0.257	0.243*	0.247	0.190
	(0.164)	(0.135)	(0.152)	(0.142)
$ICRG_{jt}$	0.304	0.345	0.698	0.661
	(0.295)	(0.291)	(0.634)	(0.583)
GDP_{it}	0.0152	0.0128	0.0278**	0.0285**
	(0.0130)	(0.0122)	(0.0127)	(0.0129)
GDP_{jt}	-0.0163	-0.0523	-0.138	-0.136
	(0.114)	(0.116)	(0.219)	(0.199)
$BDTGDP_{it}$	0.0899**	0.0459	0.0842**	0.0613*
	(0.0391)	(0.0360)	(0.0419)	(0.0360)
$RPEX_{ijt}$	0.00414	0.00520	0.00201	0.00464
	(0.00806)	(0.00811)	(0.00711)	(0.00607)
$STMKTRTN_{it}$	0.0274*	0.0284**	0.0318*	0.0299*
	(0.0150)	(0.0140)	(0.0177)	(0.0176)
Constant	-2.529	-1.555	-1.505	-1.077
	(1.884)	(1.940)	(3.521)	(3.255)
Observations	154	154	154	154
Number of countries	15	15	15	15
R-squared	-	-	0.9610	0.9911
Wald Chi-square	12346.20***	7570.71***	17066.34***	10869.93.28***

Notes: Standard errors are reported in parentheses. Significant at *** 1%, ** 5% and* 10% level respectively. The dependent variable is tourism arrivals, and all the variables are natural log form except the financial risk premium of tourism countries of origin and destination. AR1 (First-order autocorrelation) and PSAR1 (Panel-specific first-order autocorrelation).

Table 5.23 presents the dynamic panel data regression with an alternative measure of financial risk for Morocco's inbound tourism flow. The results of the FGLS(AR1), FGLS(PSAR1), PCSE(AR1) and PCSE(PSAR1) estimation methods are relatively consistent. In Table 4.23 the lag dependent variable indicates tendency persistence for the impact of the number of tourist arrivals previous year has on the number of tourist arrivals in the current year. The coefficient is positive and statistically highly significant. Therefore, the estimated results are in line with Garin-Munoz (2007) and Song et al.'s (2003) findings on tendency persistence. The primary variable of concern in our investigation is the financial risk premium of tourism countries of origin and destination. In Table 5.23 in all the models the financial risk coefficient for tourism country of origin is positive but only GFLS(PSAR1) is statistically significant at the 10% level, however, the destination country's financial risk premium coefficient is not statistically significant. This confirms that as the financial risk rating in the tourism origin country increases positively (less risk) it encourages more tourism activities. The GDP of tourist countries of origin coefficient is positive and statistically significant on the PCSE estimation which is in line with the law of demand. The destination country's GDP coefficient in all models is not statistically significant. The financial development indicator of the variable bank deposit to GDP ratio coefficient is positive and statistically significant in all models except for PCSE(AR1), which is in line with our hypothesis that, all other things being equal, financial development is expected to have a positive impact on the inbound tourism flow of a destination. The RPEX coefficients are statistically not significant. The stock market returns coefficients are all positive and statistically significant suggesting that as the financial wealth of a country increases then more funds are allocated to tourism activities abroad.

Compare findings on Morocco

In addition to the classical factors, we identify financial factors as relevant influencers of tourism demand. Tables 5.9, 5.21, 5.22 and 5.23 presents the results for Morocco's inbound tourism flow. The results of the FGLS(AR1), FGLS(PSAR1), PCSE(AR1) and PCSE(PSAR1) are relatively consistent. In both Table 5.21 and 5.23, the lag dependent variable indicates tendency persistence for the impact of the number of tourist arrivals in the previous year on the number of tourist arrivals in the current year. The coefficient is positive and statistically highly significant. In this regard Garin-Munoz (2007) argued that there could be two reasons: first tourists are risk adverse, so travelling to previous destinations is preferred as it undoubtedly leads to lower risks and less inconvenience than travelling to a new destination; and second, having knowledge of a destination helps mitigate other possible risks. Knowledge about a specific destination is thereafter shared with family and friends and helps them to reduce possible risks of travelling to that destination. Hence, Song et al. (2003) demonstrated that word of mouth might have a more significant impact on inbound tourism flow of a destination.

Hypothesis 1A states: The financial risk of the tourism origin country has an influence on inbound tourism flow of the destination country.

The primary variable of concern in our investigation is the financial risk premium for the tourism countries of origin and destination. Results from Tables 5.9, 5.21, 5.22 and 5.23 indicate that the financial risk coefficient for the tourism country of origin is statistically significant, and the sign of the coefficients was negative when we employed our own constructed financial risk premium variable. By construction the lower the financial risk, the better the country's financial situation, and for the ICRG financial risk rating, by construction, the higher the country risk rating, the better the country's financial situation. This confirms that as financial risk rating increases positively (less risk) it encourages more tourism activities.

Hypothesis 1B states: The financial risk rating of the tourism destination country has an influence on its inbound tourism flow.

Results from Tables 5.9, 5.21, 5.22 and 5.23 indicate that the financial risk coefficient for the tourism destination country is statistically significant in 6 out of the 16 models. The coefficient sign was negative when we employed our own constructed financial risk premium variable. This confirms that as the financial risk rating of destination county increases positively (less risk) it encourages more international tourism inflows.

Hypothesis 1D states: Financial development is expected to have a positive impact on the inbound tourism flow of a destination.

Out of 16 models, 14 models in Tables 5.9, 5.21, 5.22 and 5.23 have the financial development indicator coefficient as positive and statistically significant as expected, which is in line with our hypothesis that all other things being equal, financial development is expected to have a positive impact on the inbound tourism flow of a destination.

Hypothesis 1C states: Price gains of capital assets will increase inbound tourism demand for the destination.

A total of 13 out of 16 models in Tables 5.9, 5.21, 5.22 and 5.23 had a stock market returns coefficient which was positive and statistically significant. These results are in line with Kim et al. (2011) and Song et al.'s (2010) findings, suggesting that as the financial wealth of a country increases then more funds are allocated to tourism activities abroad.

Sub-hypothesis

The first sub-hypothesis is the income of the tourism origin country is expected to have a positive impact on the inbound tourism flow of a destination country. In Tables 5.9 and 5.22, the income coefficients are negative and statistically significant except the PCSE(AR1) model, which is against the law of demand but indicates that tourism in Morocco is an inferior good. However, in both dynamic models in Tables 5.21 and 5.23, the income variables are positive and statistically significant except Table 5.23’s FGLS models. It is therefore, consistent with demand theory; however, none of the coefficients exceeded unity, nor is income elasticity of demand for tourism less than one in magnitude, therefore, tourism to Morocco represents a necessity product.

The second sub-hypothesis is the income of the tourism destination country is expected to have a positive impact on its inbound tourism. In Tables 5.9, 5.21, 5.22 and 5.23, most of the models coefficient of destination’s income is positive and statistically significant, which is in line with our hypothesis that as host countries become wealthier, or their income increases, this attracts more inbound tourism.

The third sub-hypothesis is that price increases in the tourism destination has a negative impact on inbound tourism flow. In Tables 5.9 and 5.22 all the model the coefficients have a negative sign as expected and are statistically highly significant at a 1% level; thus, indicating that as price in Morocco increases it decreases inbound tourism demand. None of the dynamic models' coefficients in Table 5.21 and 5.23 are significant.

Empirical results for South Africa

Table 5.24 Dynamic Panel data regression on South Africa

Dependent Variables	**FGLS**		**PCSE**	
TA_{ijt}	(AR1)	(PSAR1)	(AR1)	(PSAR1)
TA_{ijt-1}	0.969***	0.973***	0.972***	0.981***
	(0.0253)	(0.0261)	(0.0113)	(0.0126)
FRP_{it}	-0.359	-0.528**	-0.426***	-0.233*
	(0.266)	(0.263)	(0.157)	(0.140)
FRP_{jt}	-5.010**	-3.205*	-5.529***	-4.209***
	(2.235)	(1.942)	(1.622)	(1.441)
GDP_{it}	0.0379	0.0262	0.0381**	0.0254*
	(0.0281)	(0.0277)	(0.0150)	(0.0138)
GDP_{jt}	0.299	0.292	0.0618	0.356*
	(0.186)	(0.189)	(0.225)	(0.184)
$BDTGDP_{it}$	-0.0534	-0.0775	-0.0256	0.00980
	(0.0446)	(0.0484)	(0.0243)	(0.0314)
$RPEX_{ijt}$	-0.0116	-0.00709	-0.00435	0.00213
	(0.00784)	(0.00728)	(0.00718)	(0.00651)
$STMKTRTN_{it}$	0.0253	0.0247	0.0514***	0.0333**
	(0.0229)	(0.0192)	(0.0164)	(0.0153)
Constant	-8.404*	-7.858	-2.331	-9.963**
	(4.866)	(5.056)	(5.954)	(4.938)
Observations	110	110	110	110
Number of countries	15	15	15	15
R-squared			0.957	34368.23
Wald Chi-square	8564.38	5506.86	40576.55	0.9946

Notes: Standard errors are reported in parentheses. Significant at *** 1%, ** 5% and* 10% level respectively. The dependent variable is tourism arrivals, and all the variables are natural log form except the financial risk premium of tourism countries of origin and destination. AR1 (First-order autocorrelation) and PSAR1 (Panel-specific first-order autocorrelation).

Table 5.24 presents the results of a dynamic panel data regression for South Africa's inbound tourism flow. The results of the FGLS(AR1), FGLS(PSAR1), PCSE(AR1) and PCSE(PSAR1) estimation methods are relatively consistent. In Table 4.24 the lag dependent variable indicates tendency persistence, which is the impact of the number of tourist arrivals in the previous year has on the number of tourist arrivals in the current year. The coefficients are positive and statistically highly significant. Therefore, the estimated results are in line with Garin-Munoz (2007) and Song et al.'s (2003) findings on tendency persistence. The primary variable of concern in our investigation is the financial risk premium of tourism countries of origin and destination. As explained earlier, our own financial risk premium is constructed in a way so that in every case the lower the risk point total, the lower the risk, and the higher the risk point total the higher the risk. Therefore a negative coefficient sign would indicate lower financial risk and encourage higher tourism activities. In Table 5.24 the financial risk premium coefficient for tourism country of origin is negative and statistically significant for all the models except FGLS(AR1), and this confirms that increases in the country's financial risk premium discourages tourism activities. Similarly, the destination country's financial risk premium coefficient is negative and statistically significant for all models, which, in line with our hypothesis.This confirms that a decrease in financial risk premiums would encourage more tourism activities in South Africa.

The GDP of tourist countries of origin coefficient is positive and statistically significant in both the PCSE models which is in line with the law of demand theory. However, in the destination country's GDP coefficient only the PCSE(PSAR1) model is significant statistically, which is consistent with our hypothesis that as host countries become wealthier or their income increases, this attracts more inbound tourism flow. The financial development indicator variable coefficients are not significant. None of the models are statistically significant for the RPEX. The stock market returns coefficient in the PCSE models are positive and statistically significant, which suggests that as the financial wealth of a country increases then more funds are allocated to tourism activities abroad.

Table 5.25 Alternative measure of financial risk on South Africa

Dependent Variable	FGLS		PCSE	
TA_{it}	(AR1)	(PSAR1)	(AR1)	(PSAR1)
$ICRG_{it}$	0.259	0.285	-0.444	-0.914**
	(0.351)	(0.264)	(0.643)	(0.466)
$ICRG_{jt}$	2.552***	1.897***	4.671**	3.206***
	(0.782)	(0.647)	(1.850)	(1.032)
GDP_{it}	0.906***	0.881***	0.845***	0.930***
	(0.0590)	(0.0513)	(0.0542)	(0.0466)
GDP_{jt}	0.207	0.126	0.205	0.237
	(0.419)	(0.333)	(0.867)	(0.471)
$BDTGDP_{it}$	0.442***	0.405***	0.223	0.292
	(0.164)	(0.152)	(0.221)	(0.188)
$RPEX_{ijt}$	-0.0680**	0.0117	-0.00271	-0.00317
	(0.0342)	(0.0260)	(0.0332)	(0.0148)
$STMKTRTN_{it}$	0.00459	-0.00337	-0.00423	0.0225
	(0.0210)	(0.0187)	(0.0563)	(0.0312)
Constant	-34.89***	-29.23***	-38.55*	-33.51***
	(10.03)	(8.054)	(21.22)	(10.60)
Observations	123	123	123	123
Number of countries	15	15	15	15
R-squared			0.9416	0.9908
Wald Chi-square	309.46***	381.41***	573.73***	1007.71***

Notes: Standard errors are reported in parentheses. Significant at *** 1%, ** 5% and* 10% level respectively. The dependent variable is tourism arrivals, and all the variables are in natural log form except the financial risk premium of tourism countries of origin and destination. AR1 (First-order autocorrelation) and PSAR1 (Panel-specific first-order autocorrelation)

Table 5.25 presents the results for an alternative measure of financial risk for South Africa's inbound tourism flow. The results of the FGLS(AR1), FGLS(PSAR1), PCSE(AR1) and PCSE(PSAR1) estimation methods are relatively consistent. The primary variable of concern in our investigation is the financial risk premium of tourism countries of origin and destination. As mentioned previously, ICRG's financial risk rating is constructed so that in every case the lower the risk point total, the higher the risk, and the higher the risk point total, the lower the risk, which is the opposite of financial risk we have constructed. Therefore, we should expect the opposite coefficient sign when using the two different measures of risk, as the opposite coefficient sign will indicate a similar conclusion about a country's financial situation from the two different measures of risk in South Africa. In Table 5.25 the coefficient for the financial risk of tourism origin country in all the models is positive as expected but statistically not significant except for the PCSE(PSAR1) model where the coefficient is negative and statistically significant which contradicts our hypothesis. However, the destination country's financial risk premium coefficients are all positive and statistically highly significant. This confirms that as a tourism destination country's financial risk decreases it encourages more tourism activities.

The GDP of tourist countries of origin coefficients are negative in all models and statistically highly significant except for the PCSE(AR1) model, which violates the law of demand. However, this indicates that tourism in South Africa is an inferior good. The destination country's GDP coefficient in all models is positive and statistically highly significant, which is in line with our hypothesis that as host countries become wealthier, or their income increases, they attract more inbound tourism. The financial development indicator coefficient is positive and statistically highly significant at the 1% level as expected in both the FGLS models, which is in line with our hypothesis that, all other things being equal, financial development is expected to have a positive impact on the inbound tourism flow of a destination. The RPEX coefficient is negative and statistically significant only for the GFLS(AR1) model as expected. This therefore confirms that price increases in South Africa reduce the demand for inbound tourism. The stock market returns coefficie

Table 5.26 Dynamic panel data regression with an alternative measure of financial risk on South Africa

Dependent Variables	FGLS		PCSE	
TA_{ijt}	(AR1)	(PSAR1)	(AR1)	(PSAR1)
TA_{ijt-1}	0.969***	0.954***	0.960***	0.958***
	(0.0270)	(0.0298)	(0.0289)	(0.0257)
$ICRG_{it}$	0.204	0.302	0.273	0.145
	(0.187)	(0.185)	(0.200)	(0.214)
$ICRG_{jt}$	1.136	1.268**	2.565	1.292
	(0.740)	(0.630)	(2.142)	(1.781)
GDP_{it}	0.0229	0.0293	0.0284	0.0436*
	(0.0286)	(0.0340)	(0.0343)	(0.0253)
GDP_{jt}	0.295	0.325*	-0.165	0.207
	(0.221)	(0.195)	(0.710)	(0.599)
$BDTGDP_{it}$	-0.0191	-0.0201	0.00734	0.0442
	(0.0447)	(0.0446)	(0.0401)	(0.0462)
$RPEX_{ijt}$	-0.00913	-0.00542	-0.00251	0.00185
	(0.00884)	(0.00760)	(0.00731)	(0.00684)
$STMKTRTN_{it}$	0.0226	0.0106	0.0403	0.0130
	(0.0237)	(0.0194)	(0.0343)	(0.0267)
Constant	-13.92***	-15.72***	-8.457	-12.68
	(5.393)	(4.708)	(16.10)	(12.83)
Observations	112	112	112	112
Number of countries	15	15	15	15
R-squared			0.9490	0.995
Wald Chi-square	5419.09	4284.41	19117.49	29135.54

Notes: Standard errors are reported in parentheses. Significant at *** 1%, ** 5% and* 10% level respectively. The dependent variable is tourism arrivals, and all the variables are natural log form except the financial risk premium of tourism countries of origin and destination. AR1 (First-order autocorrelation) and PSAR1 (Panel-specific first-order autocorrelation).

Table 5.26 presents the dynamic panel data regression with an alternative measure of financial risk on South Africa's inbound tourism flow. The results of the FGLS(AR1), FGLS(PSAR1), PCSE(AR1) and PCSE(PSAR1) estimation methods are relatively consistent. In Table 5.26 the lag dependent variable indicates tendency persistence for the impact of the number of tourist arrivals in the previous year on the number of tourist arrivals in the current year. The coefficient is positive and statistically highly significant. Therefore, the estimated results are in line with Garin-Munoz (2007) and Song et al.'s (2003) findings on tendency persistence. The primary variable of concern in our investigation is the financial risk premium of tourism countries of origin and destination. In Table 5.26, the financial risk coefficient for tourism country of origin is positive for all the models, but none of them are statistically significant, however the destination country's financial risk premium coefficient is statistically significant only for the FGLS(PSAR1) model. This confirms that as the financial risk in the tourism origin country decreases it encourages more tourism activities in South Africa. The GDP of the tourist countries of origin coefficient is positive in all models, but statistically significant only for the PCSE(PSAR1) model. The destination country's GDP coefficient is statistically significant only for the FGLS(PSAR1) model. The financial development indicator coefficient is not statistically significant in any of the models. RPEX coefficients are not statistically significant. The stock market returns coefficients are all positive but none of them is statistically significant.

Compare findings on South Africa

In addition to the classical factors, we identify financial factors as relevant influencers of tourism demand. Table 5.10, 5.24, 5.25 and 5.26 presents the results for South Africa's inbound tourism flow. The results of the FGLS(AR1), FGLS(PSAR1), PCSE(AR1) and PCSE(PSAR1) are relatively consistent. In both Table 5.24 and 5.26, the lag dependent variable indicates tendency persistence for the impact of the number of tourist arrivals in the previous year on the number of tourist arrivals in the current year. The coefficient is positive and statistically highly significant. In this regard Garin-Munoz (2007) argued that there could be two reasons: first, tourists are risk adverse, so travelling to previous destinations is preferred as it undoubtedly leads to lower risks and less inconvenience than travelling to a new destination; and second, having knowledge of a destination helps mitigate other possible risks. Knowledge about a specific destination is thereafter shared with family and friends and helps them to reduce possible risks of travelling to that destination. Hence, Song et al. (2003) demonstrated that word of mouth might have a more significant impact on inbound tourism flow of a destination.

Hypothesis 1A states: The financial risk of the tourism origin country has an influence on inbound tourism flow of the destination country.

The primary variable of concern in our investigation is the financial risk premium for the tourism countries of origin and destination. Results from the dynamic models in Table 5.24 and 5.26 indicate that the financial risk coefficient for the tourism country of origin is statistically significant, and the sign of the coefficients was negative when we employed our own constructed financial risk premium variable, and by construction the lower the financial risk, the better the country's financial situation, and for ICRG financial risk rating by construction, the higher the country risk rating, the better the country's financial situation. This confirms that as financial risk rating increases positively (less risk) it encourages more tourism activities. However, coefficients for 3 models in Table 5.10 and Table 5.25 show the opposite sign contradicting our expectation.

Hypothesis 1B states: The financial risk rating of the tourism destination country has an influence on its inbound tourism flow.

Results from Tables 5.10, 5.24, 5.25 and 5.26 indicate that the financial risk coefficient for tourism destination country is statistically significant in 12 out of 16 models. In table 5.10 and 5.24 the coefficient sign was negative when we employed our own constructed financial risk premium variable. By construction lower the financial risk, the better the country's financial situation. In table 5.25 and 5.26 for ICRG financial risk rating the construction indicates the higher the country risk rating, the better the country's financial situation. This confirms that as the financial risk in the destination county decreases it encourage more inbound tourism flows.

Hypothesis 1D states: Financial development is expected to have a positive impact on the inbound tourism flow of a destination.

In the static models in Tables 5.10 and 5.25, the financial development indicator coefficient is positive and statistically significant as expected, except for the PCSE models in Table 5.25. This is in line with our hypothesis that, all other things being equal, financial development is expected to have a positive impact on the inbound tourism flow of a destination. However, none of the models in Table 5.24 and 5.26 are statistically significant.

Hypothesis 1C states: Price gains of capital asset's will increase inbound tourism demand for the destination.

The stock market returns coefficient is positive and statistically significant for PCSE models in Table 5.24, These results are in line with Kim et al. (2011) and Song et al.'s (2010) findings. This suggests that as the financial wealth of a country increases more funds are allocated to tourism activities abroad.

Sub-hypothesis

The first sub-hypothesis is that income of the tourism origin country has an impact on inbound tourism flow of a destination country In Tables 5.10, 5.24, 5.25 and 5.26 the income coefficients are positive but 7 out of 16 models are statistically significant. Therefore, this is consistent with demand theory; however, none of the coefficients exceeded unity, nor is income elasticity of demand for tourism less than one in magnitude, therefore, tourism to South Africa represents a necessity product.

The second sub-hypothesis is the tourism destination country's income has an impact on the inbound tourism flow of that country. In Tables 5.10, 5.24, 5.25 and 5.26, most of the models coefficient of destination's income are positive, but they are statistically significant on all the models in Table 5.10 and the FGLS(PSAR1) model in Table 5.26, which is in line with our hypothesis that as host countries become wealthier, or their income increases, this attracts more inbound tourism.

The third sub-hypothesis is that price increases in the tourism destination discourages inbound tourism flow for that country. The FGLS(AR1) model in Table 5.10 and the RPEX coefficients in Table 5.25 are negative and statistically significant; thus, indicating that as price in South Africa increases it decreases inbound tourism demand. However, PCSE(PSAR1) model coefficient in Table 5.10 is positive and statistically significant, suggesting that it can be Giffen or Veblen goods, depending on the income effect on the demand.

Discussion and conclusion

This is the first study to shed light on how financial risk, financial assets and financial development influence inbound tourism flows in three African tourism destination countries, namely Egypt, Morocco and South Africa. We have employed both static and dynamic models for our estimation. In the dynamic models, the lag dependent variable for all tourism destinations, namely Egypt, Morocco and South Africa, shows a very strong and positive relationship with the dependent variable. Thus, the lag dependent variable points toward the tendency persistence, or the impact of the number of tourist arrivals in the previous year has on the number of tourist arrivals in the current year. The coefficient is positive and statistically highly significant. In this regard Garin-Munoz (2007) argued that there could be two reasons: first, tourists are risk adverse, and travelling to previous destinations is preferred as it undoubtedly leads to lower risks and less inconvenience than travelling to a new destination; and second, having knowledge of a destination helps mitigate other possible risks. Knowledge about a specific destination is thereafter shared with family and friends and helps them to reduce possible risks of travelling to that destination. Therefore, Song et al. (2003) demonstrated that word of mouth might have a more significant impact on inbound tourism flow of a destination.

The construction of financial risk year-by-year for all the tourism destinations and countries of origin in our sample employes the Black–Scholes (1973) option pricing formula, rather than simply adopting commercial risk rating agencies ratings, which are proven to be biased. Moreover, during the Asian financial crisis rating agencies have become excessively conservative and have downgraded countries' ratings more than the economic fundamentals would justify. The methodology we employ to construct financial risk takes into account the combined effect of changes in the market value, foreign debt levels and economic stability on the rate of return of all the tourism countries of origin and destination. The findings suggest that the financial risk premium is a robust and significant determinant of inbound tourism flows. We have also employed another measure of financial risk premium namely ICRG Rating in our estimations. In tourism destination, Egypt, the financial risk premium for tourism origin country results are relatively similar. However, the magnitude of coefficients for financial risk premium for the tourism destination country is much greater than the ICRG rating. Rating agencies have been criticised for exacerbating the Asian crisis by downgrading the countries in the middle of the financial turmoil. Throughout 1996 and first two-quarters of 1997 rating agencies fail to downgrade any country in Asia. The International Monetary Fund (1998)[59] highlighted how the rating agencies reacted late when they downgraded the Asian countries (Mora, 2006). The rating agencies were berated for supposedly being slow in downgrading companies such as Enron in 2001 and Worldcom in 2002. The rating agencies were also reproached because the debt issuers were also among their biggest customers, and paying them hefty fees (Langohr and Langohr, 2010). Thus our technique is robust to the rating agencies biases. In the case of tourism destination, Egypt, dynamic models concluded that the variable of the destination country's income coefficient is negative and statistically significant in one model, which contradicts our hypothesis that as host countries become wealthier or their income increases, this attracts more inbound tourism. However, this could also indicate that tourism in Egypt is an inferior good or the demand model is not specified correctly. Conversely, in the static model, the coefficient is positive and statistically significant and consistent with the law of demand theory. In regard to tourism destinations Morocco and South Africa, we have found enough evidence that tourism destination income has a positive impact on inbound tourism flow and these results are consistent with the law of demand theory.

[59] Capital Markets Report, September 1998. Box 2.13, p.52.

Relative price is consistent with our expectation in Egypt, Morocco and South Africa for most of the models, but in Morocco, the static model is inconsistent with our hypothesis as we have found a negative coefficient for tourism origin's income and a negative coefficient for the relative price, which could indicate that tourism to Morocco can be considered as Giffen goods.

The importance of financial assets affecting consumption is an empirical matter. However, we investigate whether financial assets influence tourism flows. The findings suggest that financial assets have a positive and significant influence on tourism flows for Egypt and Morocco, and more moderately in South Africa. Therefore, price gains of financial assets will increase inbound tourism demand for a destination.

In regard to the influence of financial development on inbound tourism flow, the sign for almost all the model are positive and statically highly significant. The findings suggest that there is indeed a significant relationship between these in Egypt, Morocco and South Africa.

The results for tourism income are generally consistent with the tourism literature findings which suggests that as income increases more funds become available for tourism activity. In line with the tourism literature, the results also suggest that price (relative price standardised by bilateral exchange rate) is indeed one of the most important and significant determinants of tourism flows. To this extent, it can be argued that even when the price variable is statistically insignificant it can convey useful information that is important for tourism demand models.

The results shed light on the impact of financial factors on tourism flows. The findings of this chapter suggest a number of implications for policymakers, not only in these three African countries but also in other African countries and emerging and developing economies with similar structures. These findings also emphasise that policymakers should be aware of the positive and negative impacts of financial factors as they have a significant influence on tourism.

Chapter 6: Impact of country risk on tourism

Introduction

Nowadays the tourism industry has become one of the main drivers for economic growth and development for many developing countries. Tourism is one of the fastest growing and one of the most important tradable sectors for the world economy. Egypt, Morocco and Tunisia have enormous tourism potential and yet receive only a fraction of tourists compared to other Mediterranean countries. These three African countries possess most of the assets and attractions required for tourism to flourish: pleasant climate, beautiful coastlines, desert landscapes and remarkable and historical archaeological sites (Gray, 2000). The tourism sector is crucial for economic growth, but sustainability and growth of this sector have become a major ongoing concern for many countries affected by the revaluation of the 'Arab Spring' or 'Arab Uprising', which began at the end of 2010 in Tunisia and then the contagious effect observed in virtually every Arab capital city. It is still an ongoing crisis and recovery from this compared to the Mcrisis remain fragile. It involves the Middle East and North African countries also known as MENA countries. Most of these countries have seen negative growth in tourism since the crisis. Volatility has increased in tourism demand as well as in country risk ratings, affecting most of these countries adversely. Nevertheless, even after facing the 'Arab Spring', countries such as Morocco have managed their reputations as regimes that are politically and economically stable and have seen an acceleration of positive tourism growth because they have managed to take advantage of regional instability by developing their tourism industry.

At an empirical level, few studies have examined the relationship between country risk and tourism flows to North African countries. An empirical study by Sequeira and Nunes (2008) examines this relationship between tourism-specialising countries and country risk. However, their study was restricted to aggregate international level analysis and ignored how individual

countries' dynamics differ from other countries. Therefore, an individual country-by-country investigation is needed to improve the resilience of these countries' tourism policies.
Most of the studies focus on the political or economic impacts on tourism demand, but, in this study, we look at overall country risk comprised of the economic, financial and political components.

"Perceptions of political instability and safety are a prerequisite for tourist visitation. Violent protests, social unrest, civil war, terrorist action, the perceived violation of human rights, or even the mere threat of these activities can all serve to cause tourists to alter their travel behaviour."

-Hall and O'Sullivan (1996)

The post-coup political environment of Egypt has had a significant negative impact on the tourism industry. The main purpose of this study is to analyse the impact of country risk ratings on international tourism demand in North African countries, as the economic growth of countries which have been affected by the Arab Spring depends on tourism earnings as one of the main sources of foreign currency earnings, employment and infrastructure development. A comprehensive analysis of the relationship between country risk ratings and inbound tourism demand is logical to draw up an appropriate macroeconomic policy that will stimulate the economies of these countries. Our study looks specifically at the tourism industries of Egypt, Morocco and Tunisia. Our findings can help individual investors with their international portfolio diversification decisions, as well as multinational corporations with their risk management decisions. They can also help policymakers to implement the right policies to help encourage tourism growth and economic development.

A country's tourism industry can be severely affected by political instability. The Arab Spring revolution toppled President Hosni Mubarak in 2011 and caused a drastic decline of nearly one-third in tourist arrivals compared to 2010. Although due to its unique history and cultural heritage, the tourism industry recovered to some degree in 2012, it was again affected in 2013 when the first democratically elected president of Egypt Mohamed Morsi was ousted by an Egyptian military coup on 3 July 2013 (Ketchley, 2017). The tourism sector in Egypt has suffered heavily since the coup. In 2014, General Abdel Fattah el-Sisi was elected as president and since then the government has taken initiatives and made policies to encourage the tourism sector, which has long been a vital pillar of the Egyptian economy.

Overall country risk has been neglected in the tourism literature. We have made adequate controls for income, prices and exchange rates. Fundamentally, tourism is a function of income, prices, exchange rates, an autoregressive term and transportation cost (Crouch, 1994; Lim, 1997; Song and Li, 2008). However, proxies for and measurement of these variables are still debated subjects in the tourism literature. Martins et al. (2017) employed world GDP per capita as a proxy for income. Otero-Giráldez et al. (2012), González and Moral (1995) and Dogru et al. (2017) employed IPI to measure income. We employ world IPI as a proxy for income. More recently, in an empirical study, Dogru et al. (2017) argued for the inclusion of prices and exchange rates as mutually exclusive components. However, Oh and Ditton (2005) argued that separate exchange rates along with price variables should be included in tourism demand. Moreover, Kim and Lee(2017), Eilat and Einav(2004) argued that price and exchange rate should be treated separately. Thus in this study, we employ the exchange rate as a proxy for price.

Figures 5.1 and 5.2 present tourism arrival numbers at the national borders and the country risk ratings of Egypt, Morocco and Tunisia.

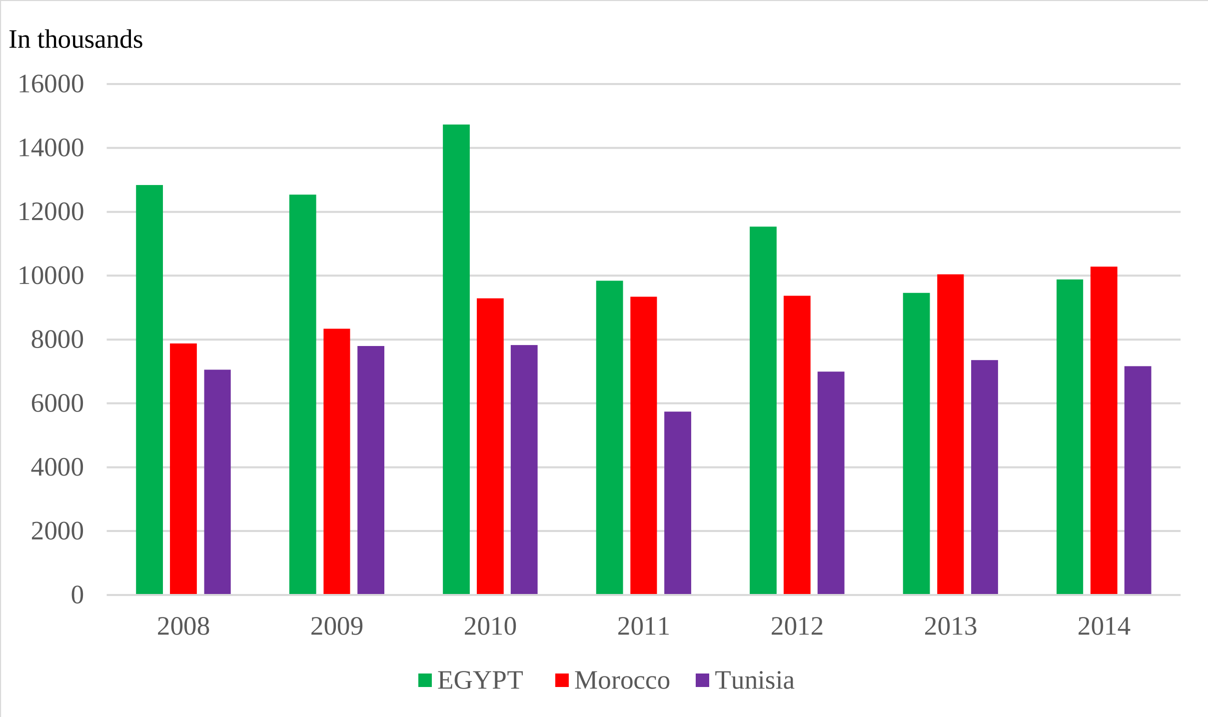

Figure 6.1 Tourism Inflow by Country (2008-2014)

Source: UNWTO

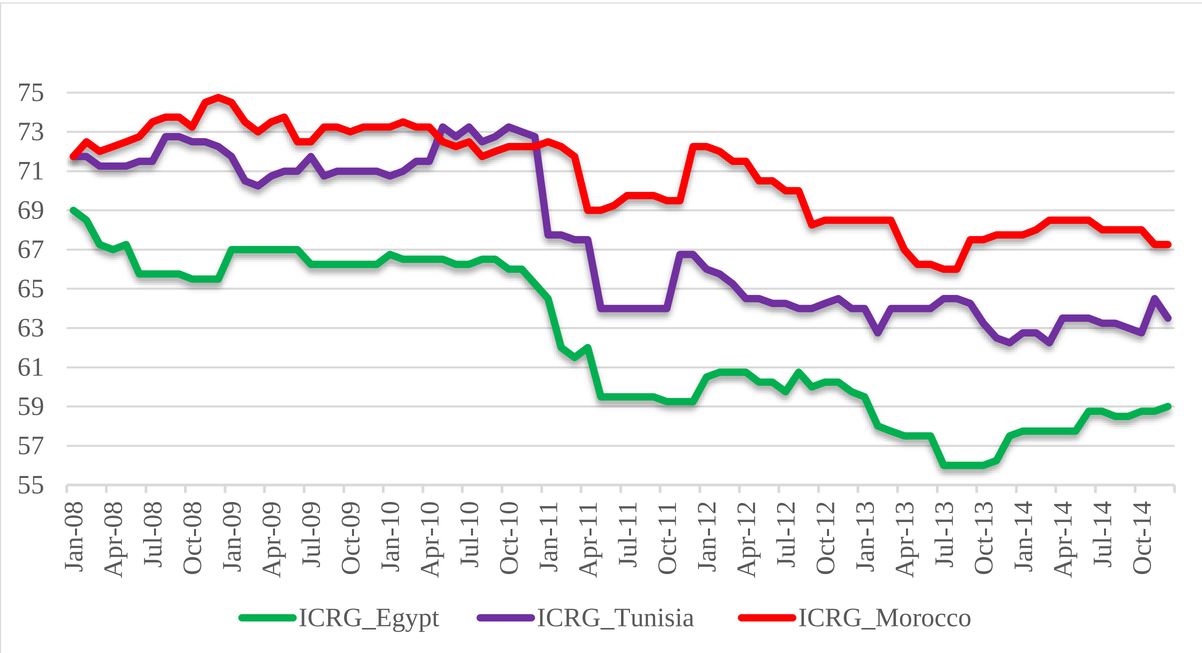

Figure 6.2 Monthly ICRG Rating by Country (2008-2014)

Source: PRS Group

The rest of the chapter is organised as follows. Section 5.2 reviews the literature with regards to country risk components and tourism. Section 5.3 describes the data presented. Section 5.4 presents the econometric methodology and section 5.5 reports and discusses the empirical findings and conclusion.

Literature review

The theoretical analysis of country risk distinguishes between the ability to pay and willingness to pay. Country risk refers to the possibility that sovereign borrowers of a particular country may be unable or unwilling to fulfil their foreign obligations because they may suffer genuine difficulties in meeting them. There are many factors that will encourage borrowers of a given country not to service their international commitment, and this makes it very difficult to provide an accurate definition of country risk (Porretta et al., 2013). Brewer and Rivoli (1990) argued that perceptions of the determinants of country risk are significant because they affect the supply and cost of international capital flows. Hoti and McAleer (2004) defined country risk as being driven by a number of country-specific factors and events. There are three key components of country risk, i.e. economic, financial and political risks. The country risk literature argues that all three components are interdependent and their interactions determine the risk associated with a particular country.

"Political risk often becomes a catchall term that refers to miscellaneous risk."

Brewer (1981)

Political risk is generally described as a non-business risk. Investors and multinational corporations categorise political risk as a factor which can seriously affect profitability and overseas earnings. Measuring country risk accurately is a complex endeavour because of the sociopolitical factors which influence other parameters. Fight (2004) defines political risk as being related to the sovereign risk that lies within the broader context of country risk and arises from events such as wars, internal and external conflicts, revolutions for regime change, territorial disputes, terrorist attacks around the world and civil unrest because of ideological differences, religious clashes, and growing economic inequality, etc.

In order to analyse country risk, it is important to evaluate the significance of empirical models using statistical and econometric criteria. The researcher has reviewed a number of studies in the country risk literature including Eaton and Taylor's (1986) review of the theoretical aspects of least developed countries' debt and financial crises, and their emphasis on the policy implications that need to be drawn. Rockerbie (1993) analysed the interest rate spread on Eurodollar loans on the basis of several indicators of default risk in DCs and LDCs and offer a useful summary of risk indicators in the empirical papers examined.

Hoti and McAleer (2004) reviewed 50 published empirical studies on country risk. They categorised data, sample size, a number of time-series observations, models, dependent variables, independent variables, omitted variables, numbers and types of proxy variables, methods of estimation, diagnostic tests and interpretations of data which have been used to evaluate country risk. Ramady (2014) argued that there is a link between a country's economic policies and economic variables such as inflation, exchange rates, interest rates and investment risk. It is important to analyse these risks and attempt to forecast as many as possible to understand their causes since all these variables can help with recognising how an economic parameter can be affected by positive or negative national policies. The interaction between politics and economics affects fiscal policy and monetary policy. Dhariwal (2005) found that political instability negatively affects countries' tourist earnings and therefore affects their economies.

According to country risk theory, there is a relationship between country risk ratings and the cost of borrowing. When a country has a good risk rating ceteris paribus that country can borrow money at a lower rate of interest, and a country with a low-risk rating ceteris paribus can borrow money only at a higher interest rate. The international financial market is very important for countries that want to raise money by selling government bonds or attract foreign investment. Country risk rating agencies provide both qualitative and quantitative information about arbitrary measures of economic, financial and political risk ratings to obtain a composite risk rating that helps large corporations and international financial institutions with investment and lending decisions (Hoti, McAleer, and Shareef, 2007). Risk rating agencies measure the ability and willingness of countries to service their foreign obligations, but the accuracy of risk rating agencies with regard to measuring country risk is open to question, especially after the financial crash of 2008. Cantor and Packer (1996) find that disagreement is a common factor among rating agencies when it comes to rank orderings of sovereign risks implied by market yields. They examined the ratings of Moody's and Standard & Poor's and concluded that the reason why sovereign ratings differ across agencies is that sovereign rating agency is a relatively new phenomenon and agencies still need to gain more experience in this area. Agliardi et al. (2012) constructed a country risk index for emerging markets by using a stochastic dominance method. They argued that the rating institutions rely on an arbitrary weight, and to overcome this drawback they have to propose an optimal weight scheme to construct economic, political and financial risk indices in emerging markets. They found that financial risk is the principal determinant of sovereign risk in emerging markets, followed by economic and political risks.

Academics and practitioners agree that country risk is multidimensional. The conventional measures and country ratings from specialised agencies are unable to capture the specific risks of different countries. This was especially true after the financial crisis of 2008 (Porretta, Santoboni, and Vento, 2013). Rating agencies have been heavily criticised because of their inaccurate forecasts. One of the credit rating giants, Standard & Poor’s, will be paying a US$1.38 billion penalty for its role in fuelling the sub-prime mortgage meltdown that contributed to the financial crisis in 2008. Credit rating agencies are making billions of dollars from their ratings. Investors have little alternative but to rely on these agencies. Countries’ borrowing costs can be influenced by rating agencies. When a country gets a higher rating, it can borrow money at a lower rate of interest, and it costs countries with lower ratings more money to borrow because investors behave rationally and want appropriate compensation for the risks they are taking.

There are many country risk rating agencies such as Moody’s, Standard and Poor's, Institutional Investor, Economist Intelligence Unit, Euromoney and International Country Risk Guide (ICRG) who provide ratings as a measure of risk associated with sovereign countries. In order to analyse country risk ratings, we employ the ICRG rating, as it provides detailed and consistent monthly data over an extended period for most of the countries. The ICRG rating composite index is based on three sub-indices – political, financial and economic. The political risk index is based on 100 points, financial risk on 50 points, economic risk on 50 points, and the composite index comprise the three main components divided by two. The composite index ranges from zero to 100, where zero is the lowest rating and refers to the highest risk and 100 is the highest rating with the least risk. From 80 points to 100 is a very low risk. **The political risk** components are government stability, socioeconomic conditions, investment profile, internal conflict, external conflict, corruption, the military in politics, religious tensions, law and order, ethnic tensions, democratic accountability and bureaucracy quality. The **financial components** are total foreign debt as a percentage of GDP, debt service as a percentage of exports of goods and services, current account as a percentage of exports of goods and services, international liquidity as months of import cover and exchange rate stability as a percentage change. The **economic components** are GDP per capita, real annual GDP growth, annual inflation rate, budget balance as a percentage of GDP, current account as a percentage of GDP and economic risk rating.

Even though tourism earnings and growth is not a specific variable for ICRG rating, it can still be traced through the ICRG financial and economic risk components. As we know, tourism is an element of service industry exports and tourism earnings are a major element of the current account balance in a country's balance of payments and one of the variables in the ICRG rating system. Hence, higher earnings from the tourism industry will lead to a higher current account balance and greater composite risk ratings, which will reflect countries' abilities and willingness to pay for and service their foreign obligations. Higher risk ratings will attract more FDI and will, therefore, contribute to the economy of a developing country.

The spillover effect is an external aspect of political risk. If a sovereign borrower country is located geographically next to a country which is at war, then the risk of that sovereign borrower will increase even though it is not directly involved in that war because the probability of spillover effects may exist. Chan et al. (1999) reviewed time series models to forecast inbound tourism demand in Singapore and placed an emphasis on examining the impact of the Gulf War. They found that the model adjusted its forecasts monthly and only used the most recent data perform better than other model used in their study. Most of the sovereign small island tourism economies depend on tourism as a source of income and for economic growth. Hoti et al. (2007) examined the relationship between tourism growth and country risk returns, and the existence of volatilities in Cyprus and Malta. They found that shocks to tourism growth rates and shocks to country risk are independent of each other for both countries in the short and long runs, but there is a direct relationship between the two countries in the tourism sector. Changes in tourism patterns in Cyprus lead to changes in tourism patterns in Malta.

The political instability of a country affects its neighbouring countries Perles-Ribes et al. (2016). In their study, Richter and Waugh (1986) argued that detrimental effects on tourism are likely to spill over into neighbouring countries. However, Drakos and Kutan (2003) and Fielding and Shortland (2011) suggested that neighbouring countries can benefit from a substitution effect if they did not directly affected by the events. More recently, Perles-Ribes et al. (2016) had a similar finding when analysing the effects of Arab uprisings on tourism destinations along the Mediterranean coastline by employing the autoregressive integrated moving average (ARIMA) estimation method for the period from 1980 to 2009 and the predicted period from 2010 to 2014. They also employed Bayesian structural time series models to establish the effects of the Arab Spring events in Mediterranean countries. Their findings suggest that the Arab uprising had a positive impact on Morocco and Turkey and, conversely, that this political event had a negative impact on Egypt and Tunisia.

Tourism is considered as the prime service export for many North African countries, and tourism earnings are accommodated in current account balances, which is one of the 22 variables in the ICRG country rating system. Therefore, even though there is no specific measure of tourism earnings for countries that are included in the ICRG rating system, tourism earnings and tourism growth can still be traced through the economic and financial components of the ICRG country rating system (Hoti et al., 2007). Hence, higher tourism earnings lead to a higher current account balance and higher economic and financial risk ratings and contribute to higher composite risk ratings. Furthermore, a country with a higher composite risk rating increases its creditworthiness in the international money markets, which results in higher inflows of foreign capital and investment, thereby providing a platform for economic development.

Data description

For this study, we employ time series data with a monthly frequency of various variables for the period from January 2008 to December 2014. It is worth noting that it is not common to investigate tourism demand modelling with monthly periodicity.[60] According to (Otero-Giráldez et al., 2012), tourism analysis using monthly data are much richer and more consistent. The lowest level availability of monthly tourist arrivals data may be the reason why researchers are discouraged from studying tourism using monthly data (Turner et al., 2012). The number of tourist arrivals to the individual national borders of Egypt, Morocco and Tunisia are employed as the dependent variable. The number of tourist arrivals is used as a proxy for inbound tourism demand. The tourism data for Egypt was obtained from the Central Agency for Public Mobilization and Statistics(CAPMAS). The tourism data for Morocco was obtained from The Kingdom of Morocco, Ministry of Tourism, Air Transport, Handicrafts and Social Economy. The tourism data for Tunisia was obtained from the Ministry of Tourism and Handicrafts, Tunisia. Monthly composite country risk ratings compiled in the ICRG were obtained separately from the PRS Group for Egypt, Morocco and Tunisia. Data for the world IPI as a proxy for income was collected from the CPB Netherlands Bureau for economic policy

[60] Researchers usually rely upon readily available annual data from UNWTO for tourism research but monthly tourism data from UNWTO is usually unavailable. We therefore collected tourism data from Egypt's, Morocco's and Tunisia's official sources that keep records of their tourism data, and we collected data manually month by month given it was available at the time.

analysis (CPB) fixed base year 2010=100. The CPI base year 2010=100 and exchange rates of Egypt, Morocco and Tunisia were collected from the Thomson Reuters Datastream database. In order to capture the effect of the Arab uprising, we created a dummy variable (Arab Spring) that takes the value of 1 from December 2010 onward and 0 before December 2010. Lastly, to capture the effect of post-coup unrest in Egypt (2013–2014), we created another dummy that takes the value of 1 from August 2013 to April 2014 or 0 otherwise.

As mentioned earlier in the chapter, most of the studies employ the number of tourist arrivals or receipts from tourism as a proxy to measure tourism demand. In this study, we focus on monthly tourism arrivals in Egypt, Morocco and Tunisia. Conceptually, we are interested in the impact of country ratings on tourism demand, which is better captured by the number of arrivals. According to Neumayer (2004), tourism arrival data have advantages over the tourism receipt data as they are easier to count the number of tourist arrivals compared to estimates of the expenditures of tourists in destination countries. Furthermore, White and Walker (1982) and Sinclair (1998) argue that tourism receipts data, typically taken from the balance of payment statistics, suffers from the problem of inaccuracy. Tourism arrivals and receipts data are highly correlated (Neumayer, 2004). Table 5.1 reports descriptive statistics of variables employed in this study.

6.1.1 Theoretical background for using monthly data:

Studies in tourism demand modelling mostly use three data frequencies: yearly, quarterly and monthly. Among those studies, monthly data is used less frequently compared to quarterly and yearly data. Tourism demand exhibits strong seasonality, and therefore compared to annual data, monthly and quarterly data possesses different properties (Rosselló and Sansó, 2017). In this regard, Song et al. (2008) point out that different models could perform differently as far as seasonality data are concerned.[61] Rising interest in the seasonality of international tourism demand encourages the researcher to employ quarterly and monthly data. If the number of observations increase by using monthly or quarterly data, it will allow for a greater degree of freedom in the model estimation, and allow greater flexibility to include other influencing variables and extend the lag structure to capture the dynamics of tourism demand more satisfactorily (Song et al., 2008).

In this study, we analyse the effect of country risk on tourism, and evaluated the impact of the Arab Spring in three north African countries. Since late-2010, many North African countries have been rocked by a series of events that have caused major tourism markets to collapse in this region.[62] Therefore, the period under consideration was particularly turbulent, chaotic and complex. To account for these conditions, and their impact on tourism, we use monthly data. In a somewhat similar vein, Balli et al. (2019) stated that:

> Short-term fluctuations of political risk and their impact on international tourism demand cannot be fully understood using the low frequency data (annual data), as is done in most of the previous empirical works.[63]

[61] Monthly and quarterly data are seasonal and annual data could be count as non-seasonal.
[62] Tourism markets like Egypt and Tunisia.
[63] See Balli et al. (2019: p.998)

A weakness of the yearly data used in many previous studies in tourism[64], is that it ignored the fact that variable should reflect the time of the events and capture risk associated with different periods.[65] Higher frequencies of data would provide a more robust analysis.[66] Since the Arab spring started in December 2010, if we use monthly data we can put weight only on December (to capture the Arab Spring effect), however if we use yearly data then the whole of 2010 will count as the Arab spring which would be misleading. Clearly, the consequences of the scenarios being 'wrong' could have serious implications for our findings. Furthermore, the exchange rate is one of the important factors for tourism flows and monthly sampling captures the effect of the exchange rate and also avoids some of the problems of white noise and heteroskedasticity associated with data samples of greater frequency. Therefore, although monthly data was not readily available, we have manually collected tourism arrival data. Monthly data is much richer and more consistent for tourism (Otero-Giráldez et al., 2012). The lowest level availability of monthly tourist arrivals data may be the reason why researchers are discouraged from studying tourism using monthly data (Turner et al., 2012). Accessing the monthly inbound tourism data is not an easy task, because larger institutions do not publish such detailed monthly information by country of origin (Saluveer et al., 2020). [67]

Depending on the aims of the study some researchers have adopted monthly data. Hoti et al. (2007) employed monthly ICRG rating to model international tourism and country risk spillover for Cyprus and Malta. They assessed the fluctuations and volatility in tourism growth and country risk-return. More recently, Gil-Alana et al. (2019) employed monthly data to investigate the structural pattern of Brazilian monthly tourism revenue. They found that a

[64] See for example Balli et al.(2019: p. 998).
[65] See Sequeira and Nunes (2008).
[66] Although weekly data would provide more robust estimation, weekly frequency of data in this context is not available.(For example, weekly tourism arrival numbers, risk rating, GDP or IPI, inflation are not available).
[67] World Tourism Organisation, World Bank do not publish detailed monthly information.

developing country's economic structural problems are reflected in currency fluctuations and all the benefits derived from hosting mega-events were jeopardised for that reason. Rather than focusing on tourism economics Santamaria and Filis (2019) employed monthly data to study the dynamic relationship between tourism growth and expected macroeconomic conditions.

Inbound tourism demand is seasonal in many countries and that causes disturbance for steady revenues, overuse of tourism resources, and traffic congestion in the peak season (Wu et al., 2013). They argued that a better understanding of individual monthly tourism participation behaviour can mitigate the effect of tourism seasonality. Furthermore, recently Rosselló and Sansó (2017) found that seasonality present in annual, monthly and weekly frequencies and monthly and weekly seasonality differs across geographical markets. However, Lundtorp et al. (1999) argue that accessibility restrictions on tourist destination can be an additional cause of seasonality.

A number of researchers have looked at the impact of weather on tourist activities by recognising that weather is a significant factor that affects tourism. Arbel and Ravid (1985) employed average monthly temperature and precipitation in a demand model to explain seasonal demand patterns. Goh et al. (2008), using monthly data, found that the comfort level of the destination climate had a positive effect on tourism demand in Hong Kong and explained the variability of monthly tourism arrivals better than economic factors. Goh (2012) also found a similar result for the long-haul and short-haul markets.[68] Building on this earlier study Becken (2013) employed monthly data and found that seasonality in the wetland was largely driven by temperature but visitation to the visitor centre was mainly driven by daily weather conditions.

[68] For Hong Kong's inbound tourism, long-haul markets: USA, UK; short-haul markets: Japan and China.

The panel data technique has been used to examine the relationship between climate and tourism demand. Using monthly data, Bigano et al. (2005) explored the impact of temperature and precipitation on domestic tourism demand. They found that temperature was the strongest factor that influenced domestic tourism, and demand for coastal resorts is higher in summer temperatures than demand for inland resorts. However, Taylor and Ortiz (2009) did not find a significant impact of precipitation in their study on tourism demand in the United Kingdom.

Since we are studying the impact of country risk on tourism by including the effect of the Arab Spring, it is justifiable to use monthly data as it will enable us to capture a clearer picture and provide a better understanding of the impact.

Table 6.1 Descriptive statistics of variables

Variables	Obs.	Mean	Std. Dev.	Minimum	Maximum	Skewness	Kurtosis
Egypt_TA	84	962.2024	226.5526	211	1486	-0.57575	4.001111
Morocco_TA	84	768.5476	285.5681	409	1649	1.715893	5.296563
Tunisia_TA	84	522.9107	205.8604	178	1094.4	0.753322	3.096025
ICRG_Egypt	84	62.2381	3.95835	56	69	0.043893	1.410098
ICRG_Morocco	84	70.68452	2.444911	66	74.75	-0.23138	1.68926
ICRG_Tunisia	84	67.48512	3.904614	62.25	73.25	0.169	1.287192
IPI	84	103.6452	6.760452	89.3	114.6	-0.44494	2.397921
Egypt_CPI	84	115.7179	21.39657	77.6	157.2	0.130908	1.996319
Morocco_CPI	84	109.806	2.699056	103.6	114.7	-0.06273	2.072643
Tunisia_CPI	84	105.2196	9.672689	91.03	124	0.318273	1.886091
Egypt_to_USD	84	6.091882	0.612541	5.299417	7.150007	0.621381	1.87646
Morocco_to_USD	84	8.25352	0.412792	7.19528	9.0269	-0.52515	2.896416
Tunisia_to_USD	84	1.472963	0.165712	1.146395	1.869019	0.082692	2.545652

Econometric methodology and model identification

6.1.2 Seasonality

Monthly international tourist arrivals in Egypt, Morocco and Tunisia show seasonal patterns. Hence the most frequently used technique is the multiplicative (ratio-to-moving average) method applied to deseasonalised international tourist arrivals data. The fundamental assumption in this approach is that a moving average adequately expresses the trends and cyclical components of the time series. The original monthly tourism arrivals series are divided by the corresponding moving average amount for every month and are expressed as a percentage to produce the ratio-to-moving average. This ratio is then averaged over months so that it isolates the seasonal and cyclical components (Shareef riaz et al., 2008).

6.1.3 Unit root tests

In time series analysis, it is important to adopt the appropriate technique to investigate variables, and a unit root test provides vital information to help choose the appropriate technique. A unit root test examines whether a time series is stationary or non- stationary and possesses a unit root. A series is stationary if it has three characteristics as follows:

- Mean is constant: $E(Y_t) = \mu$
- Variance is constant: $Var(Y_t) = E(Y_t - \mu)^2 = \sigma^2$
- Covariance is constant: $Cov(Y_k, Y_{t-k}) = E[Y_t - \mu)(Y_{t-k} - \mu] = \gamma_k$

  $K = 1,2,3 \ldots.$

If time series data are constant in mean, variance and covariance and do not vary over time then the time series is stationary. In contrast, a series is non-stationary when the time series data does not follow these conditions. The Augmented Dickey-Fuller (ADF) and Phillips–

Perron (PP) tests[69] are the most frequently used tests in the existing literature to conduct unit root test. We have also employed ADF and PP test to assess the order of integration of the variables. The tourism demand variable and country risk rating variable can be non-stationary at the level and contain a deterministic or stochastic trend, or both. Depending on whether the trend is deterministic or stochastic, the series will or will not revert to a long-run trend line and innovation shocks will have diminishing or permanent effects. The time series is a trend stationary if the trend is deterministic. If we remove the trend component of the series by de-trending the data, it would then become stationary. A series has a unit root if its trend is stochastic, but by taking the first differences the series could be transformed into a stationary series (Lim et al., 2008). The ADF test to check for unit root is used, under the null hypothesis of a stochastic trend or unit root against the alternative hypothesis of a deterministic trend or trend stationary. The regression for the ADF test is given as follows:

$$\Delta Y_t = \alpha + \omega_t + \delta\, Y_{t-1} + \sum_{i=1}^{k} \psi_i \Delta Y_{t-i} + u_t \qquad (5.1)$$

Where Δ represents the differential. Y_t is the tourist arrivals to Egypt, Morocco and Tunisia at time t, α is the intercept term, ω_t is time trend and ΔY_{t-i} is the lagged first difference. ADF corrects for higher order serial correlation by adding lagged differenced term $\sum_{i=1}^{k} \psi_i \Delta Y_{t-i}$ in the right-hand side of the equation and u_t is the independently and identically distributed (iid) error term and *K* is the number of lags which are added to the model to ensure the residuals are white noise.

[69] See (Dickey and Fuller, 1981; Phillips, Peter C. B. and Perron, 1988)

The null hypothesis of ADF tests of unit root corresponds to the one-sided test as follows:

$H_{0:}\ \delta = 0$ (There is unit root)

$H_{1:}\ \delta < 0$ (There is no unit root)

The critical value of t-statistics is used to decide whether to accept or reject the null hypothesis. We include the deterministic time trend in our regression model to allow for the possibility of a deterministic trend in the alternative hypothesis[70] (Perles-Ribes, José Francisco et al., 2017). Moreover, according to (Lim et al., 2008) ADF statistics with deterministic time trend and without time could be significantly different for both series. Furthermore, we employ the Phillips-Perron test, which is a non-parametric modification of the standard Dickey-Fuller test. The Phillips-Perron (PP) test yields valid results even when the error term u_t is serially correlated and heterogeneous, while the ADF tests require that the error term u_t be serially correlated and homogeneous.

6.1.4 Basic model

$$TA_t = f(\beta_0 + \beta_1 Income_t + \beta_2 ICRG_t + \beta_3 Price_t + \beta_4 FX_t) + \varepsilon_t \tag{5.2}$$

Where TA_t represents tourism demand measured as aggregate tourist flows in a country, $f(\bullet)$ is a linear functional form and ε_t is the regression error term. β_0 is the intercept term, ICRG is country risk rating and, as for the expected signs in equation (5.2), we expect that as $\beta_1 > 0$ as income of tourism country of origin increases, then it also increases the demand for tourism in the destination country, $\beta_2 > 0$ because as risk rating increase for a country in should result in

[70] A trend term is not a plausible alternative when we conduct the test for I (2). Thus, the tests are performed with and without a constant term.

an increase in aggregate tourism inflow for that country. $\beta_3 < 0$ as price and tourism demand have an inverse relationship. Consequently, as a tourism destination country's inflation rate increases, this discourages tourism and $\beta_4 > 0$ as the exchange rate in destination depreciates this attracts more tourist.

6.1.5 ARDL bounds testing approach to cointegration

First of all**,** the ARDL model allows both the dependent variable and the explanatory variable to be introduced in the model with lags. The autoregressive term, also known as the lag dependent variable or past values of tourism inflow, is allowed to determine the present value of tourism inflow. As mentioned in an earlier chapter, previous years' visiting experience is an important factor as it has a greater influence on tourists to revisit the same destination.[71] The distributed lag term is also known as lags in explanatory variables. Tourism inflows may or may not depend on country risk ratings instantaneously. A change in a country's risk ratings does not always lead to an immediate change in tourism inflow, as one tourist's reaction to change will differ from another's. Thus, the tourist may respond to country risk ratings with a lag and there is no reason to assume that all the regressors should have the same lags. In order to investigate cointegration and long-run association among variables conventional models such as Engle and Granger (1987), maximum likelihood-based Johansen and Juselius (1990) widely used models but these models does not allows different lags for different variables (Pesaran, M. Hashem et al., 2001). In this study, country risk ratings are likely to have an impact on tourism with different lags and therefore the ARDL bounds test approach is appropriate as it allows flexibility in terms of lags structure of the regressors. According to

[71] Previous years' tourism inflows is an important factor for present years' tourism inflows (Alegre and Juaneda, 2006; Garin-Munoz and Amaral, 2000; He and Song, 2009; Naudé and Saayman, 2005; Oppermann, 2000; Pearce, 2012; Sönmez and Graefe, 1998)

Laurenceson and Chai (2003), the ARDL approach has advantages compared to other approaches, as it can take a sufficient number of lags to capture the data generating process in a general to specific modelling framework. Additionally, even after diagnostic testing of residuals, if the outcome violates assumptions of the model, then using different lag selection criteria, such as the Akaike information criterion (AIC), Schwarz information criterion (SIC), Hannan-Quinn criterion (HQC) and Adjusted R-squared criterion, can eliminate or mitigate the badly behaved residuals.

Secondly, traditional cointegration models, such as Engle and Granger (1987), Phillips and Ouliaris (1990) and Johansen (1995), require all variables in the model to be integrated in the same order. In contrast, Pesaran et al. (2001) proposed a model for cointegration that can be applied to any series that has I(0), I(1) or a mixed order of integration.[72] Therefore, the ARDL approach allows making inferences in the absence of prior information about the order of integration of the series under examination. The ARDL model is appropriate for this study because there are some uncertainty and ambiguity over the stationarity characteristic of all the variables.

Thirdly, in the case of a small sample, the ARDL approach to cointegration provides robust results and consistent estimates of the long-run coefficients (Pesaran and Shin (1999). The traditional cointegration approach typically requires a large sample size for analysis. By construction, the ARDL approach is likely to have better statistical properties than the traditional cointegration approach, as the ARDL approach draws on the unrestricted error correction model. Pesaran and Shin (1999) demonstrate that the ARDL has better properties for sample sizes up to 150 observations. According to Haug (2002) and Narayan (2005), the ARDL bound test approach provides a better result for small samples and so this approach is

[72] See Pesaran et al. (2001).

far superior to multivariate cointegration approaches. Narayan (2005) generated critical value for small sample sizes of between 30 and 80 observations.

Fourthly, the ARDL technique is particularly appropriate for this study because it is not unusual for time series data to suffer from the presence of possible structural breaks. Whether or not an underlying structural break affects the long-run stability of estimated coefficients can be traced by a stability test. According to Pesaran and Pesaran (1997), the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ) proposed by Brown et al. (1975) can be applied to the residual of the estimated error correction models to test parameter reliability and stability.[73]

Fifthly, the ARDL bounds testing method generally provides unbiased estimates of the long-run model even when some of the explanatory variables are endogenous (Pesaran and Shin, 1999; Pesaran et al., 2001). As long as the ARDL model is free from residual correlation endogeneity could be less problematic in the estimated model. The appropriate lags in the ARDL model are corrected for both serial correlation and endogeneity problems (Pesaran and Shin, 1999).

The ARDL bound testing approach has been successfully applied in numerous fields including tourism demand modelling (Halicioglu, 2010; Narayan, 2004).

[73] The CUSUM and CUSUMSQ test of Brown et al. (1975) can be applied without the requirement of a priori knowledge of the structural break point.

Model specification and procedure

In order to investigate the relationship between tourism demand and country risk ratings, this study employs the ARDL bounds testing approach developed by Pesaran et al. (2001) to analyse cointegration among the estimated variables. The ARDL bounds testing approach involves two stages for estimating long-run relationships. In the first stage, we need to investigate the existence of a long-run relationship among all the variables in the equation under estimation. In the second stage, we need to estimate long-run coefficients and short-run coefficients.[74]

Establishing a long-run equilibrium relationship

In the first stage of the ARDL bound testing approach, we examine whether a long-run relationship between dependent and explanatory variables exists or not by estimating F-statistics (Wald test). Following Pesaran and Shin (1999) and Pesaran et al. (2001), the ARDL version of unrestricted error correction model can be specified as follows:

$$\Delta TA_t = \beta_0 + \beta_1 TA_{t-1} + \beta_2 IPI_{t-i} + \beta_3 ICRG_{t-i} + \beta_4 CPI_{t-i} + \beta_5 FX_{t-i} + \sum_{i=1}^{m} \lambda_{1i} \Delta TA_{t-i}$$
$$+ \sum_{i=0}^{n1} \lambda_{2i} \Delta\ IPI_{t-i} + \sum_{i=0}^{n2} \lambda_{3i} \Delta ICRG_{t-i} + \sum_{i=0}^{n3} \lambda_{4i} \Delta CPI_{t-i} + \sum_{i=0}^{n4} \lambda_{5i} \Delta FX_{t-i}$$
$$+ \delta_1 ArabSpring + \delta_2 PostCoup + \varepsilon_t \tag{5.3}$$

Where the symbol Δ represents a difference operator, *TA* is the dependent variable and *IPI, ICRG, CPI and FX* are explanatory variables.[75] Then, m is the optimal lag length of the lagged

[74] See Pesaran et al. (2001).
[75] We have taken the natural logarithmic form of the series.

dependent variable and n1-n4 denotes the optimal lag length for the respective explanatory variables. *ArabSpring* is a dummy variable for Arab Spring that takes the value of 1 from December 2010 onward and 0 before 2010, Post-coup is also a dummy variable that takes the value of 1 from August 2012 to May 2013. β_0 is constant, β_1, β_2, β_3, β_4 and β_5 are the long-run parameters, λ_1, λ_2, λ_3, λ_4 and λ_5 are the short-run parameters, δ_1 is the Arab Spring dummy variable parameter, δ_2 is the post-coup dummy variable parameter and, lastly, ε_t represents the disturbance term at time *t*. The appropriate lag length will be determined by using AIC, BIC and HIQ. Following equation (5.3), the null hypothesis will be tested by conduction an F-statistics test for joint significance of the coefficients of the lagged levels of the variables.

$$H0: B_1 = B_2 = B_3 = B_4 = B_5 = 0 \text{ (No cointegration among variables)}$$

$$H1: B_1 \neq 0,\ B_2 \neq 0,\ B_3 \neq 0,\ B_4 \neq 0,\ B_5 \neq 0 \text{ (There is cointegration among variables)}$$

The ARDL bound test approach permits us to determine the presence of a long-run relationship among variables. This procedure is based on F-statistics. There is lower bound critical value and upper bound critical value. The F-test does not have a standard distribution under the identified null hypothesis as the respective critical values depend upon the order of integration of the variables, presence of constant and/or trend, the size of the sample and the number of regressors.[76] If the calculated statistics value falls outside of the respective critical upper bound, then we can reject the null hypothesis of no cointegration and accept the alternative hypothesis that there is evidence of cointegration or a long-run relationship. If the calculated statistics value falls below the lower bound critical value, then we fail to reject the null hypotheses of no cointegration and conclude that we do not have enough evidence for the existence of a long-run relationship among variables. However, if the statistics value lies between the critical value of upper bounds and lower bounds, then the inference is inconclusive. In this circumstance, the

[76] See Pesaran et al. (2001: pp.295-296).

existence of long-run relationship will be determined based on Kremers et al. (1992) and Banerjee et al. (1998) error correction term. As long as the value of the test statistics falls outside the critical bounds, the ARDL approach will permit us to make inferences even without any prior knowledge about the order of integration of the series under investigation. The optimal lag length for ECM is selected based on the SIC, HQC and AIC. The optimal lag length of the model can be decided based on the minimum values of these criteria.

Estimation of long-run coefficient

The existence of cointegration would imply that the underlying variables have a long-run structural relationship that can be empirically evaluated. If evidence for long-run cointegration is found based on an F-test, then the second stage is to estimate long-run coefficients and short-run coefficients. The long-run coefficients are estimated as follows:

$$TA_t = \beta_0 + \sum_{i=1}^{m} \lambda_{1i}\, TA_{t-i} + \sum_{i=0}^{n1} \lambda_{2i}\, IPI_{t-i} + \sum_{i=0}^{n2} \lambda_{3i}\, ICRG_{t-i} + \sum\nolimits_{i=0}^{n3} \lambda_{4i}\, CPI_{t-i} + \sum_{i=0}^{n4} \lambda_{5i} FX_{t-i} + \delta_1 ArabSpring + \delta_2 PostCoup + \varepsilon_t \tag{5.4}$$

Where *TA, IPI, ICRG, CPI* and *FX* are defined as before.

Estimating the short-run coefficient

Once cointegration relationships among variables are established, we can estimate the short-run dynamic parameters and specify a restricted error correction model (ECM) as follows:

$$TA_t = \beta_0 + \sum_{i=1}^{m} \lambda_{1i}\, \Delta TA_{t-i} + \sum_{i=0}^{n1} \lambda_{2i}\, \Delta IPI_{t-i} + \sum_{i=0}^{n2} \lambda_{3i}\, \Delta ICRG_{t-i} + \sum\nolimits_{i=0}^{n3} \lambda_{4i}\, \Delta CPI_{t-i} + \sum_{i=0}^{n4} \lambda_{5i} \Delta FX_{t-i} + \delta_1 ArabSpring + \delta_2 PostCoup + \psi ECT_{t-1} + \varepsilon_t \quad (5.5)$$

Where Δ, *TA, IPI, ICRG, CPI, FX* are defined as before, parameter $\lambda_1, \lambda_2, \lambda_3, \lambda_4, \lambda_5$ represents the short-run dynamic coefficients of the model's convergence to equilibrium, Ψ is a parameter of the one-period lagged error correction term, and ECT_{t-1} captures the speed of adjustment obtained from the estimated cointegration model. A negative and statistically significant error correction term would indicate the existence of a long-run relationship (Tursoy and Faisal, 2017). A higher significant error correction term is further proof of a stable long-run relationship.[77] If the equilibrium is interrupted, then the magnitude of Ψ determines how quickly the equilibrium could be restored. In order to ensure the robustness of the proposed model, we need to conduct a number of different diagnostic tests. In particular, we need to test for serial correlation, heteroscedasticity, normality and stability in the selected model.

Optimal lag selection

In order to identify optimal lag length, the AIC, SIC, HQC and Adjusted R-squared criterion can be employed. In this study, we employed (SIC) developed by Schwarz (1978), (AIC) and (HQC) to find the optimal lag length.

Testing for parameter stability test

The existence of cointegration among variables is not enough justification to conclude that the estimated coefficients are stable. The results will not be reliable if the coefficients are not stable. In order to test for parameter constancy, many studies employ a Chow test, which

[77] See Narayan (2005).

assumes the point of structural change is known but for the CUSUM or CUSUMSQ test, prior knowledge of the exact date of the structural break is not a requirement. In their empirical study, Pesaran and Pesaran (1997) recommended applying the cumulative sum of recursive residuals (CUSUM) test and cumulative sum of recursive residuals of squares (CUSUMSQ) test to check for parameter stability. This test is proposed by Brown et al. (1975) as it is very useful for examining the stability of the coefficients in the regression (Lawal et al., 2016; Pesaran, Bahram and Pesaran, 2009).

The null hypothesis for the CUSUM and CUSUMSQ test is that all coefficients are stable. If the plot of CUSUM and CUSUMSQ lies within 5% critical bounds, then we will fail to reject the null hypothesis that all the parameters are stable. However, if either of the parallel lines is crossed, then the alternative hypothesis that the coefficients are not stable will be accepted.

Empirical results

Results of the unit root tests

The unit roots tests for all the series are presented in Tables 5.2 and 5.3. The first column presents a list of variables under investigation for the unit root test. Then test statistics at the level with intercept only followed by intercept and trend. Then at first difference with intercept only followed by intercept and trend. Following, Table 5.2 of ADF test and Table 5.3 of PP test, Tourism arrival series for Egypt found to be stationary at level I(0) with constant only and with constant and trend. The ADF test for the Morocco tourism arrival series is stationary at I(1), but the PP test suggests it is I(0). The Tunisia tourism arrival series is also I(0) according to the ADF test but I(0) for the PP test. We then move on to the country risk rating series of Egypt, Morocco and Tunisia. Both the ADF and PP tests suggest that series with only constant are non-stationary at level. On the other hand, the PP test suggests that if we include both constant and trend terms in the model, then the series becomes stationary at level I(0). The ADF test suggests that IPI is stationary at level with constant and trend then turning to the first difference both ADF and PP test suggest IPI is stationary with constant also with constant and trend. Turning to the ADF test for CPI of Egypt is stationary at level with intercept and trend, for Morocco and Tunisia stationary at first difference. The PP tests for CPI of all three countries are stationary at level with the trend and intercept. All the series of exchange rates are stationary at first difference with constant also with constant and trend. The ADF tests for all the series with a first difference is stationary regardless of whether trend included or not in the model. Overall, the PP test for tourism arrivals, price, exchange rates and income series with a first difference is stationary with or without the trend term but for the country risk rating series with a first difference are stationary I(1) only when the trend term is included alone with constant. The ADF and PP tests reached different conclusions regarding the order of integration of the variables. Overall, the results suggest that all the variables seem to be a mix of the I(0) and I(1) series.

Table 6.2 ADF test for unit root

Variables	***ADF test***			
	In level I(0)		***In First-Difference I(1)***	
	Intercept	***Intercept & trend***	***Intercept***	***Intercept & trend***
TA Egypt	-3.991***	-4.611***	-9.388 ***	-9.329***
TA Morocco	-1.954	-2.943	-6.940 ***	-6.988***
TA Tunisia	-2.344	-2.434	-7.003***	-6.958***
ICRG Egypt	-1.370	-1.391	-5.632***	-5.624***
ICRG Morocco	-1.006	-3.147 *	-6.432***	-6.433***
ICRG Tunisia	-1.053	-2.216	-6.145***	-6.106 ***
IPI	-1.011	-3.784**	-3.301**	-3.480**
Egypt CPI	-1.119	-4.090***	-5.398***	-5.432***
Morocco CPI	-0.571	-2.601	-5.450***	-5.388***
Tunisia to CPI	1.152	-1.668	-7.165***	-7.487***
Egypt to USD	-0.057	-2.662	-4.486***	-4.427***
Morocco to USD	-2.344	-2.829	-6.906***	-6.862***
Tunisia to USD	-0.596	-2.573	-6.109***	-6.065***

Notes: Significant at ***1%, **5% and *10% level respectively denote rejection of the null hypothesis. The seasonality adjusted tourism arrival variable is tested for the unit root. Primarily we used SIC criteria for selecting the optimal lag length, then we checked the result with AIC criteria. TA denoted as tourism arrival.

Table 6.3 Phillips-Perron (PP) test for unit root

Variables	*PP test*			
	In level I(0)		*In First-Difference I(1)*	
	Intercept	*Intercept & trend*	*Intercept*	*Intercept & trend*
TA Egypt	-4.355***	-5.013***	-10.608***	-10.540***
TA Morocco	-5.820***	-9.405***	-25.450***	-25.528***
TA Tunisia	-4.431***	-4.843***	-17.658***	-17.539***
ICRG Egypt	-1.456	-8.474***	-1.359	-8.508 ***
ICRG Morocco	-0.898	-8.557***	-3.249*	-8.521***
ICRG Tunisia	-1.068	-9.420***	-2.316	-9.360***
IPI	-0.057	-2.564	-3.627***	-3.804**
Egypt CPI	-1.670	-4.025***	-6.626***	-6.703***
Morocco CPI	-1.629	-4.251***	-7.008***	-6.935***
Tunisia CPI	1.573	-1.738***	-7.691 ***	-7.832***
Egypt to USD	0.249	-2.539	-6.605***	-6.625***
Morocco to USD	-2.459	-3.038	-10.103***	-10.040***
Tunisia to USD	-0.545	-2.659	-9.417***	-9.374***

Notes: Significant at ***1%, **5% and *10% level respectively denote rejection of the null hypothesis. TA denoted as tourism arrival. The seasonality adjusted tourism arrival variable is tested for the unit root. Primarily we used SIC criteria for selecting the optimal lag length, then we checked the result with AIC criteria. We found that the AIC and SIC criteria have harmony in terms of the lag order selection for tourist arrivals in Egypt (1) lag, Morocco (4) lag and Tunisia (2) lag that we applied for the ADF and PP tests.

Cointegration test:

The computed F-statistics using the ARDL bound test for the cointegration approach are displayed in Table 5.4. The F-statistics for Egypt, Morocco and Tunisia are 6.929850, 13.68685 and 4.924826 respectively, indicating that all the countries' F-statistics values are higher than the upper bound critical threshold value set up by Pesaran et al. (2001) and Narayan (2005) at the 1% significance level, using restricted intercept and no trend in the model. This implies that the null hypothesis of no cointegration can be rejected and therefore confirms the presence of a cointegration relationship among individual countries' tourist arrivals and their country risk ratings.

Table 6.4 Bound Test for Testing the Existence of Long-Run Relationship (2008-2014)

Country Name	F-Statistics value	Lower Bound Value I(0)		Upper Bound Value I(1)		Outcome
		Pesaran	Narayan	Pesaran	Narayan	
Egypt	6.929850	2.2	2.303	4.37	4.787	Cointegration
Morocco	13.68685	2.2	2.303	4.37	4.787	Cointegration
Tunisia	4.924826	2.2	2.303	4.37	4.787	Cointegration

Notes: Pesaran critical value obtained from Pesaran et al. (2001) and Narayan critical value obtained from Narayan (2005) for case 2 restricted intercept and no trend for k=4 model. We employed (SIC) and (HQC) to select the optimal lag length for the ARDL bound test approach.

Egypt's long-run and short-run coefficients of the estimated models

The existence of a cointegration relationship among variables allows us to estimate the long-run coefficients and short-run coefficients. The empirical results of the long-run coefficients are presented in table 5.5. The coefficient of income variable is 1.556508 positive and statically significant at 10% level. The coefficient for country risk rating is positive but statically insignificant and coefficient of the exchange rate is negative but insignificant.

Table 6.5 Long-run coefficients of ARDL (1, 2, 1, 0, 0) Model for Egypt:

Dependent Variable: TA Egypt	Coefficient	Standard Error	T-Ratio	Probability
IPI	1.556508*	0.852999	1.824748	0.0722
ICRG EGY	0.206592	2.338877	0.088329	0.9299
EGY CPI	0.272656	0.676505	0.403037	0.6881
EGY FX	-0.70697	1.045526	-0.67619	0.5011
Constant	-0.9942	10.83604	-0.09175	0.9272

Notes: Significant at ***1%, **5% and *10% level respectively.

The results of the short-run and lagged error correction term (ECM) are presented in Table 5.6. The short-run coefficient of first difference income is 10.13677, which is positive and statistically significant at the 5% level, but the one-period lag difference of income is (-0.1138), which is negative and significant at the 5% level. The country risk rating is 7.296697, which is positive and statistically highly significant at the 1% level. The Arab Spring dummy variable (-0.2095) and post-coup dummy variable (-0.28963) are also negative and statistically highly significant at the 1% level. Finally, the coefficient for error correction term $ECM_{t-1,}$ which measures the speed of adjustment to restore equilibrium in the short-run model (-0.63935) is negative and statistically highly significant at the 1% level and supports the cointegration results obtained by using F-statistics that the long-run equilibrium is plausible. The magnitude of the ECT_{t-1} generally implies that any disequilibrium caused by the previous month's shocks converges back to the long-run equilibrium in the current month.

Table 6.6 Error correction representation of the selected ARDL (1, 2, 1, 0, 0) Model for Egypt

Dependent Variable: Δ TA_Egypt	Coefficient	Standard Error	T-Ratio	Probability
Δ IPI	10.13677**	3.904035	2.596486	0.0114
Δ IPI_{t-1}	-10.1138**	3.906453	-2.58901	0.0117
Δ ICRG_Egypt	7.296697***	2.100232	3.474234	0.0009
Dummy Arab Spring	-0.2095***	0.047045	-4.4531	0.0000
Dummy post-coup	-0.28963***	0.079913	-3.62437	0.0005
ECM_{t-1}	-0.63935***	0.095835	-6.67137	0.0000
R-Squared	0.466875			
Adjusted R-Squared	0.431801			
DW-statistic	2.036731			

Notes: Significant at ***1%, **5% and *10% level respectively.

Diagnostic test:

Table 5.7 presents the diagnostic test results. The Breusch-Godfrey serial correlation langrage multiplier test, Chi-squared statistics is 5.386188 and the null hypothesis of no serial correlation could not be rejected, which implies no serial correlation in our estimation. In regard to heteroscedasticity, the Breusch-Pagan-Godfrey test suggests the existence of heteroscedasticity in residual, but after employing Harvey's (1976) test for heteroscedasticity we fail to reject the null hypothesis of homoscedasticity which implies that residuals are constant. Nevertheless, Fosu and Magnus (2006) and Shrestha and Chowdhury (2005) pointed out, that it is natural to detect heteroscedasticity in the ARDL approach because it allows for the mixed time-series data being integrated into the *I(0)* and *I(1)* order. The Durbin-Watson statistics value is 2.036731, which is very close to the optimal value of Durbin-Watson statistics of 2.00, thus, confirming the absence of autocorrelation.

Table 6.7 Model diagnostic test results for Egypt

Test	χ^2	Probability
Breusch-Godfrey Serial Correlation LM test	5.386188	0.1456
Breusch-Pagan-Godfrey Heteroscedasticity test	25.72092***	0.0041
Harvey Heteroscedasticity test	10.52700	0.3955
Jarque-Bera test	322.4151***	0.0000

To ensure the robustness of our results we employ a structural stability test on the parameters of the long-run results based on the CUSUM and CUSUMSQ tests of Brown et al. (1975). Figure 5.3 presents the CUSUM and CUSUMSQ tests respectively. The plots of CUSUM and CUSUMSQ statistics are within the critical bounds at the 5% level of significance, hence, providing evidence that the parameters of the model do not suffer from any structural instability over the sample period of our study.

(A) Plot of CUSUM tests

(B) Plot of CUSUMSQ tests

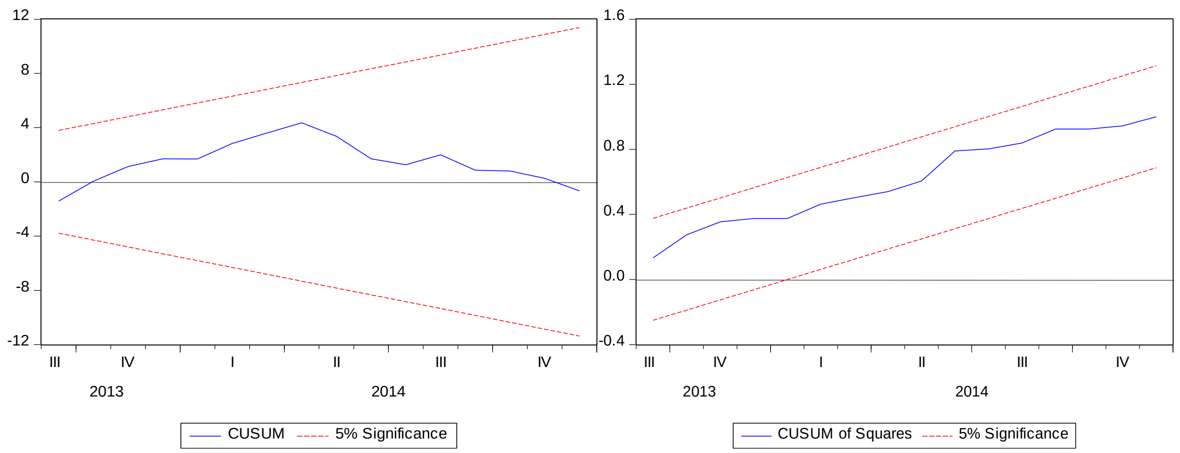

Figure 6.3 Plots of CUSUM and CUSUMQ Test for Egypt

Morocco's long-run and short-run coefficients of the estimated models

The existence of a cointegration relationship among variables allows us to estimate the long-run coefficients and short-run parameters. The empirical results of the long-run coefficients are presented in Table 5.8. The income coefficient is positive but statistically insignificant, the coefficient for country risk rating is negative but statistically insignificant. The price variable is also insignificant. The exchange rate is positive and statistically significant at the 1% level.

Table 6.8 Long-run coefficients of ARDL (1, 0, 0, 0, 1) Model for Morocco

Dependent Variable: TA Morocco	Coefficient	Standard Error	T-Ratio	Probability
IPI	0.436851	0.325960	1.340198	0.1843
ICRG Morocco	0.101761	0.666362	0.152711	0.8790
Morocco CPI	0.714302	1.340892	0.532707	0.5958
Morocco FX	0.592065**	0.283059	2.091667	0.0399
Constant	-0.506117	8.254192	-0.061316	0.9513

Notes: Significant at ***1%, **5% and *10% level respectively.

The results of the short-run and lagged error correction term (ECM) are presented in Table 5.9. The short-run coefficient for the exchange rate is negative and insignificant. The coefficient of the Arab Spring dummy (0.041553) is positive and statistically significant at the 5% level. The coefficient of the post-coup dummy variable (0.099310) is also positive and statistically highly significant at the 1% level. Finally, the coefficient for the error correction term $ECM_{t-1,}$ which measures the speed of adjustment to restore equilibrium in the short-run model (- 0.989125) is negative and statistically highly significant at the 1% level and supports the cointegration results obtained by using F-statistics that the long-run equilibrium is plausible. The magnitude of the ECT_{t-1} generally implies any disequilibrium caused by the previous month's shocks converges back to the long-run equilibrium in the current month. A deviation from the long-run equilibrium level in the previous month is corrected by over 98.9% in the current month.

Table 6.9 Error correction representation of the selected ARDL (1, 0, 0, 0, 1) Model for Morocco

Dependent Variables: Δ TA Morocco	Coefficient	Standard Error	T-Ratio	Probability
Δ Morocco FX	-0.292446	0.379278	-0.771058	0.4431
Dummy Arab Spring	0.041553**	0.016252	2.556690	0.0126
Dummy post-coup	0.099310***	0.036544	2.717544	0.0082
ECM_{t-1}	-0.989125***	0.105639	-9.363218	0.0000
R-Squared	0.535639			
Adjusted R-Squared	0.518005			
DW-statistic	1.992738			

Diagnostic test:

Model diagnostic test results are presented in Table 5.10. The Breusch-Godfrey serial correlation langrage multiplier test, Chi-squared statistics is 0.087558 and the null hypothesis of no serial correlation could not be rejected, which shows no serial correlation in our estimation. In regard to heteroscedasticity, the Breusch-Pagan-Godfrey test for heteroscedasticity statistic value is 8.604507 and therefore we fail to reject the null hypothesis of homoscedasticity. The Jarque-Bera test for normality suggests that data are normally distributed. The Durbin-Watson statistics value is 1.992738, which is very close to the optimal value of Durbin-Watson statistics of 2.00, thus, confirming the absence of autocorrelation.

Table 6.10 Model diagnostic test results for Morocco

Test	χ^2	Probability
Breusch-Godfrey Serial Correlation LM test	0.087558	0.9572
Breusch-Pagan-Godfrey Heteroscedasticity test	8.604507	0.3767
Jarque-Bera test	0.0683363	0.710574

To ensure the robustness of our results we employ a structural stability test on the parameters of the long-run results based on the CUSUM and CUSUMSQ tests of Brown et al. (1975). Figure 4.4 presents the CUSUM and CUSUMSQ tests respectively. The plots of CUSUM and CUSUMSQ statistics are within the critical bounds at the 5% level of significance. Hence, providing evidence that the parameters of the model do not suffer from any structural instability over the sample period of our study.

(A) Plot of CUSUM tests (B) Plot of CUSUMSQ tests

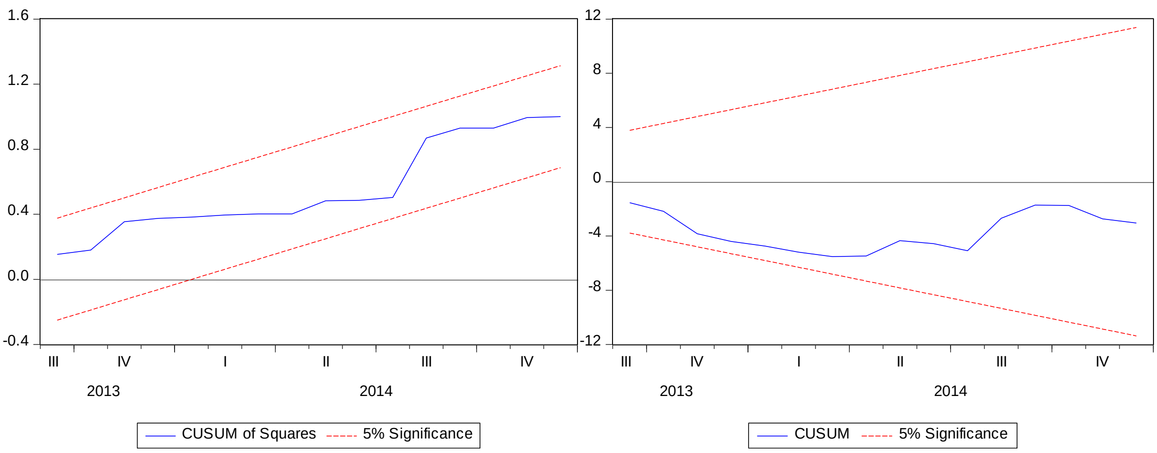

Figure 6.4 Plots of CUSUM and CUSUMQ Test for Morocco

Tunisia's long-run and short-run coefficients of the estimated models

The existence of a cointegration relation among variables allows us to estimate the long-run coefficients and short-run dynamic parameters. The empirical results of the long-run coefficients are presented in Table 5.11. The coefficient of income, country risk rating, is insignificant. The coefficient of price variable is, as expected, negative and statistically significant at the 10% level. The exchange rate variable is positive and statistically significant at the 5% level. The intercept is also positive and statistically significant at the 5% level.

Table 6.11 Long-run coefficients of ARDL (2, 0, 2, 2, 0) Model for Tunisia

Dependent Variables: TA_Tunisia	Coefficient	Standard Error	T-Ratio	Probability
IPI	0.624710	0.685769	0.910963	0.3655
ICRG Tunisia	-2.299354	1.526154	-1.506633	0.1365
Tunisia CPI	-1.986246*	1.109340	-1.790475	0.0778
Tunisia FX	1.052138**	0.486401	2.163109	0.0340
Constant	21.99450**	8.442052	2.605350	0.0112

Notes: Significant at ***1%, **5% and *10% level respectively.

The results of the short-run and lagged error correction term (ECM) are presented in Table 5.12. Turning to the short-run dynamics, Tunisia's lagged difference tourism demand coefficient (-0.171042) is negative and statistically significant at the 5% level, which is highly contradictory to the traditional theory of tourism that suggests repeat visits to a destination.[78] The first difference of country risk rating is positive and statistically significant at the 5% level.[79] The first difference CPI is negative but statistically insignificant, but the lagged first difference of IPI is positive and statistically significant at the 10% level. The Arab Spring dummy variable (-0.237798) is negative and statistically significant at the 1% level. The post-coup dummy variable (0.107056) is positive and statistically significant at the 5% level. Finally, the coefficient for error correction term $ECM_{t-1,}$ which measures the speed of

[78] Studies by He and Song (2009) ,Sönmez and Graefe (1998), Oppermann (2000), Alegre and Juaneda (2006), Naudé and Saayman (2005), Pearce (2012) and Garin-Munoz and Amaral (2000) found previous years' tourism experience positive and statistically significant.
[79] First lagged difference of country risk rating is positive but statistically insignificant.

adjustment to restore equilibrium in the dynamic model, (-0.608232) is negative and statistically highly significant at the 1% level and supports the cointegration results obtained by using F-statistics that the long-run equilibrium is plausible. The magnitude of the ECT_{t-1} generally implies any disequilibrium caused by the previous month's shocks converges back to the long-run equilibrium in the current month.

Table 6.12 Error correction representation of the selected ARDL (2, 0, 2, 2, 0) Model for Tunisia

Dependent Variable: ΔTA Tunisia	Coefficient	Standard Error	T-Ratio	Probability
ΔTA $Tunisia_{t-1}$	-0.215215**	0.096330	-2.234141	0.0287
ΔICRG Tunisia	1.953938**	0.922886	2.117203	0.0378
ΔICRG Tunisia $_{t-1}$	1.416724	0.975099	1.452902	0.1508
ΔCPI Tunisia	-3.882880	3.683147	-1.054229	0.2955
ΔCPI Tunisia $_{t-1}$	7.371429*	3.855816	1.911769	0.0601
Dummy Arab Spring	-0.237798***	0.048731	-4.879827	0.0000
Dummy post-coup	0.107056**	0.042623	2.511677	0.0144
ECM_{t-1}	-0.608232***	0.108046	-5.629404	0.0000
R-Squared	0.551859			
Adjusted R-Squared	0.509467			
DW-statistic	2.235866			

Notes: Significant at ***1%, **5% and *10% level respectively.

Diagnostic test:

The model diagnostic test results are presented in Table 5.13. The Breusch-Godfrey serial correlation langrage multiplier test, Chi-squared statistics is 17.05447 and the null hypothesis of no serial correlation could not be rejected, which shows no serial correlation in our estimation. In regard to heteroscedasticity, the Breusch-Pagan-Godfrey test for heteroscedasticity statistic value is 11.76807 and therefore we fail to reject the null hypothesis of homoscedasticity. The Jarque-Bera test for normality suggests that data are normally distributed. The Durbin-Watson statistics value (2.235866) is close to the optimal value of Durbin-Watson statistics of 2.00, thus confirming the absence of autocorrelation.

Table 6.13 Model diagnostic test results for Tunisia

Test	χ^2	Probability
Breusch-Godfrey Serial Correlation LM test	17.05447	0.1063
Breusch-Pagan-Godfrey Heteroscedasticity test	11.76807	0.4645
Jarque-Bera test	0.098510	0.9519

To ensure the robustness of our results we employed a structural stability test on the parameters of the long-run results based on the CUSUM and CUSUMSQ tests of Brown et al. (1975). Figure 4.5 presents the CUSUM and CUSUMSQ tests respectively. Both the CUSUM and CUSUMSQ plots remain within critical bounds at the 5% level of significance, although the February and June 2014 observations were very close to crossing the 5% significant line but lie within the borderline. This shows the model is structurally stable and provides evidence that the parameters of the model do not suffer from any structural instability over the sample period of our study.

(A) Plot of CUSUM tests (B) Plot of CUSUMSQ tests

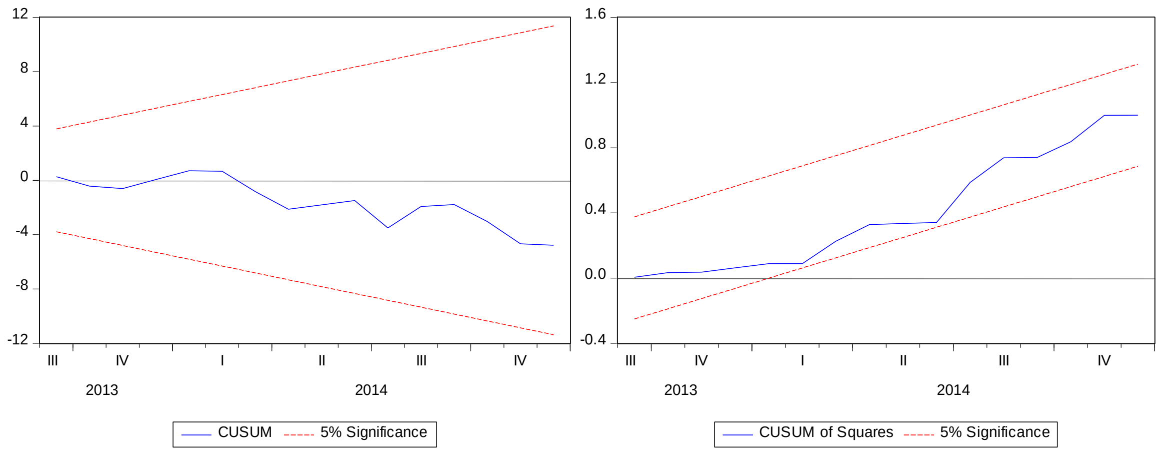

Figure 6.5 Plots of CUSUM and CUSUMQ test for Tunisia

6.1.6 Interpretation of the empirical results

The findings obtained in this chapter shed light on the issue of political events that some of the North African countries are going through right now. The most striking finding of this chapter is that while the coefficient for the dummy variables, Arab Spring and post-coup, are generally expected to be negative and statistically significant for all the countries, as these two events should have a negative impact on tourism, the results suggest something different is going on within these countries with respect to tourism. Morocco is benefiting from this adverse political event in the region in relation to inbound tourism demand. The coefficient of dummy variable that represents Arab Spring is not only negative for both Egypt and Tunisia but also statistically significant at the 1% level, whereas for Morocco it is positive and statistically significant at the 5% level. Therefore, Morocco appears to be the country that has benefited from the Arab Spring while Egypt and Tunisia have suffered.

In a similar vein, the post-coup events in Egypt have had a negative impact on its tourism industry but a positive impact on Morocco and Tunisia. In fact, both of these countries have benefited from this event. The coefficient of post-coup is negative and statistically significant at the 1% level for Egypt. However, for Morocco, the post-coup coefficient is positive and significant at the 1% level, and even for Tunisia, the coefficient is positive and significant at the 5% level.

These findings provide empirical evidence to support the analysis of the Arab Spring events by Perles-Ribes et al. (2016) who also concluded similar findings concerning the Arab Spring winners and losers. However, their study did not consider variables such as country risk rating, income or price but concentrated only on the impact of the Arab uprising on tourist arrivals. In another study, Neumayer (2004) and Dhariwal (2005) also found a negative impact on tourism from negative political events. These findings emphasise the importance of political stability for inbound tourism demand.

The estimated negative coefficients of lagged difference tourism arrivals that represent repeat visits in Tunisia seem to be contradictory to other studies conducted by (Alegre and Juaneda, 2006; Garin-Munoz and Amaral, 2000; He and Song, 2009; Naudé and Saayman, 2005; Oppermann, 2000; Pearce, 2012; Sönmez and Graefe, 1998) who found positive lagged effects. However, this significance is not surprising given that Tunisia was the first country to experience an Arab uprising. As a result, tourism demand for Tunisia has declined over time. Therefore a negative coefficient of lagged differenced tourism demand is justifiable given that political instability does exist in this region.

Turning to the significance of country risk ratings on tourism demand, we found positive and significant effects of country risk ratings on Egypt's and Tunisia's tourism inflows, which indicates that as the country risk ratings of these countries increase or become more stable, they attract more tourism inflows in the short run. Therefore, country risk ratings do have a significant influence on tourism demand. This finding provides empirical evidence to support the analysis of country risk and its effects on tourism by Sequeira and Nunes (2008) who found that as country risk rating increase (risk decrease) this attracts more tourism inflows.

The results also suggest that income is indeed a significant determinant of tourism in Egypt in the long and short runs. The positive long-run effect estimated for the income variable supports the economic theory: the demand for tourism increases as income increases. However, this result contradicts the findings of Dogru et al. (2017) who found that the income variable proxied by IPI is not statistically significant, although they argue that IPI reflects industrial economic development but omits service-related economic growth. Nevertheless, our finding provides empirical evidence to support the analysis of tourism demand by Otero-Giráldez et al. (2012) who suggest income has an influence on tourism demand when IPI is employed as a proxy for income.

Turning to the significance of the price variable, the coefficient is negative and significant in the long run for Tunisia, which is consistent with the economic theory: the demand for tourism increases as price decreases or the cost of tourism decreases.

Furthermore, the exchange rate is also a determinant of tourism for Morocco and Tunisia in the long run. So as the currency value of a tourism destination depreciates, this increases tourism demand. Our result is in line with Oh and Ditton (2005) who also concluded similar findings. The significance of exchange rates is inconclusive for Egypt.

Egypt, Morocco and Tunisia have begun to establish economic structures and policy frameworks that will enhance their ability to develop tourism as an economic sector (Gray, 2000). Given the relationship between country risk ratings and tourism demand, it is worthwhile asking what kinds of policies might make tourism demand stable and less vulnerable. The policy implication that emerges from this chapter is quite straightforward: countries that rely heavily on the tourism industry should maintain their political stability to gain the benefits of tourism demand. Political leaders and policymakers should know that political risk in their country is probably the greatest obstacle to the development of their tourism industry. It is worth noting that establishing a relationship between tourism demand and country risk ratings is essential concerning the importance that policymakers attribute to the growth of this important industry. Although it is not straightforward to understand how one country’s political events affect other countries in the region, Richter and Waugh (1986) pointed out that detrimental effects on tourism are likely to spillover into other countries. Drakos and Kutan (2003) and Fielding and Shortland (2011) pointed out that neighbouring countries can actually benefit from a negative event in one country as a substitution or alternative destination for tourism as long as they are not themselves seen as being directly affected by the events. In this light, Hall and O’Sullivan (1996) suggested that a military coup in Fiji influenced the Solomon Islands and North Queensland brands which depicted them as safe substitutes as tourism destinations for Fiji. Similarly, the findings that emerged from this study suggest that Morocco is benefiting at the cost of neighbouring countries such as Egypt and Tunisia.

Conclusion

This chapter has investigated determinants of inbound tourism with a focus on country risk while providing adequate controls for income, price, exchange rate and political events using monthly data that contains richer information. The results suggest that IPI is a significant proxy for income. Inbound tourism flow increases as the stability of a country or country risk rating increases. Political instability has an adverse effect on tourism.

This effect is robust after using several indicators in three North African countries. Furthermore, the existence of the cointegration relationships in the estimated ARDL models results suggests that price and exchange rate have a significant impact on tourism demand.

In light of these findings, we can conclude that country risk rating, income, price, exchange rate and political stability have a significant impact on tourism demand.

Empirical studies in tourism such as that by Dogru et al. (2017) argue that the IPI is not a good proxy for income. However, the findings that emerge from our study suggest that IPI is a significant and important proxy for income. Most of the tourism studies focus only on the political risk and/or economic risk of a country, but in this study, we focus on the composite risk that includes economic risk, financial risk and political risk. Thus, composite risk provides a better understanding of the risk involved in a country. Although Sequeira and Nunes (2008) examined the influence of composite country risk on tourism, they concentrated only on the aggregate international level but ignored how individual countries' dynamics differ from those of other countries, and we have therefore conducted individual country-by-country investigations to improve these countries' tourism. One of the most striking findings is the Arab Spring and post-coup dummy that captures the effect of political events and is generally expected to be negative and statistically significant for all the countries as these two political events should have a negative impact on tourism. However, the findings suggest something different is going on within these countries with respect to tourism. Morocco is benefiting from this adverse political event that is going on in the region with regards to inbound tourism demand. Morocco appears to be the country that has benefited the most from these two political events and Egypt is the country that has suffered the most from these two political events.

Chapter 7: Concluding remarks

Introduction

This thesis is concerned with identifying the important determinants of inbound tourism flows in African countries and evaluating the extent to which inbound tourism in African countries are affected by these factors. The purpose of this chapter is to provide insight into the research findings, related recommendations, policy implications, limitations of the thesis and direction of future research.

Research findings

In this study, we identified new factors that significantly affect inbound tourism flows in Egypt, Morocco, South Africa and Tunisia. We not only considered the findings of descriptive analysis of tourism demand and review of the empirical literature but also the economic rationale and statistical justification when we selected the appropriate proxy variable for determinants of inbound tourism flow.

The findings from Chapter 3 revealed that the market value of the economy from financial theory is a significant and better proxy for income to determine tourism flows. The majority of the empirical studies on tourism demand agree that income is the single most important determinant of tourism, but they employ GDP or GDP per capita as a proxy for income. Notwithstanding the fact that GDP is related to the market value of a country's productivity or income apparatus, it is an imperfect measure of economic performance. It is a flow variable gross of depreciation and provisions for loss that does not distinguish between production costs and the value of outputs. Therefore, the market value of the economy from financial theory, which is a stock variable and incorporates the analytical explanation and empirical evidence to underpin, output value, depreciation and expected losses, is employed as a proxy to measure income. Then, we found that the global stock market index, which is a proxy for wealth effect and is introduced for the first time in tourism literature, is also a significant determinant of tourism. We also found that tourism infrastructure increased the number of tourists in Egypt and Morocco. However, the opposite was true in the case of South Africa. Successful bids to host mega-events (the football World Cup in 2010) created high optimism in South Africa to prepare for a flood of visitors to attend this mega event. Moreover, positive economic trends in South Africa from 1999 to 2007 motivated developers to invest heavily in hotel infrastructure. This is why between 2007 and 2010 the number of rooms in five-star hotels increased by 50% and rooms in four-star hotels increased by 20%. On the other hand, overdependence on long-haul holiday tourists who were going through the worst economic recession since 1930, could be the reason that hotel developers were trapped in a 'fallacy of composition'. The results also suggest that as trade between tourism countries of origin and destination increases, this increases tourism inflows. Then, the results also suggest that when tourism countries of origin and destination share a common language, this influences tourism. They further suggest that as the distance between tourism countries of origin and destination increases, this discourages tourism.

The findings from Chapter 4 suggest that financial factors such as financial risk, financial assets and financial development have a significant influence on inbound tourism flows in Egypt, Morocco and South Africa. Following Clark (2002), we constructed financial risk premiums for both tourism countries of origin and destination, based on the Black–Scholes call option formula. The financial risk premium is introduced in the tourism literature for the first time. The bank deposit to GDP ratio of tourism countries of origin is a financial development indicator, which suggests that as the financial development of tourism countries of origin countries increases, this increases inbound tourism for tourism destination countries. A novel finding is that the explanatory variable RPEX (relative price standardised by bilateral exchange rate) was not statistically significant in Chapter 3 but was statistically significant in Chapter 4. One of the reasons for this could be the variable trade openness, which is the ratio of trade between tourism countries of origin and destination to GDP of destination countries. According to Romer (1993), there is an inverse relationship between openness and inflation. In this study, CPI was employed as a measure of inflation when we constructed a relative price. Thus, it can be argued that even when RPEX is statistically insignificant it can still convey information that is necessary for tourism demand models. This finding also suggests that as prices in tourism destination countries increase compare to those in tourism countries of origin, this discourages tourism.

Another novel finding of the thesis is that it is misleading to consider only economic and/or political risk while ignoring financial risk. The findings of this thesis suggest that composite country risk, which includes economic, financial and political risk, should be considered when analysing tourism demand. The results also suggest that the Global Industrial Production Index can be employed as a proxy for income. In Chapter 5, in order to investigate the long-run relationship between variables, we tested the order of integration of all the time series using ADF and PP tests and obtained indications that some of the variables were stationary at the level I(0) and some were stationary at the first difference I(1). Traditional cointegration models such as Engle and Granger (1987), Phillips and Ouliaris (1990) and Johansen (1995) require all the variables in the model to be integrated in the same order. However, Pesaran et al. (2001) proposed an ARDL estimation method for cointegration that can be applied to any series that has I(0), I(1) or a mixed order of integration. Thus, the ARDL model can take care of the uncertainty and ambiguity over the stationarity characteristics of all the variables. Furthermore, in the tourism literature, previous years' visiting experience is an important factor that has a significant influence on whether tourists revisit the same destination and, since ARDL is a dynamic estimation method that allows both dependent variables and explanatory variables to be introduced in the model with lags, the ARDL model seemed to be more appropriate for this study.

In light of these findings, it can be concluded that all the factors identified in this thesis are significant and important determinants for inbound tourism flows.

Policy implications and recommendations

The findings of this thesis suggest a number of implications for policymakers in Egypt, Morocco, South Africa and Tunisia as well as in other countries with similar structures. The recommendations could maximise the benefits of the tourism sector.

This thesis has provided empirical evidence and emphasised the importance of political stability as a precondition for inbound tourism flows. Indeed, political risk is probably the greatest obstacle for tourism development in African countries. This is evident from the Arab Spring crisis, which significantly affected tourism in many North African as well as Arab countries, and the 2013 post-coup events in Egypt, which have significantly affected its tourism industry.

The findings of this thesis have highlighted the importance of the development of tourism infrastructure for economic development and vice versa. Egypt and Morocco have attracted more tourists because of their tourism infrastructure development. Although the development of tourism infrastructure is important for economic development, nevertheless it is important to forecast and measure tourism demand accurately and plan accordingly for the long term and short term. This thesis has documented evidence that the oversupply of tourism infrastructure (number of hotel rooms) did not help South Africa to attract more tourists.

Seasonal variation in demand is a reality for Egypt, Morocco and Tunisia. Although Egypt has lowest seasonality problem compared with Tunisia and Morocco, policymakers in these countries should work together to promote cultural heritage and effective promotional programmes, introduce new festivals, and to organise conferences and sports events during the lower season.

The findings of this thesis have also highlighted the issue of dependence on just a few tourism countries of origin rather than more diverse origin. Exploring new markets would be beneficial for Egypt, Morocco, Tunisia and South Africa.

This study enables researchers and policymakers to have a better understanding of the fact that MVECON is a better measure for a tourism origin country's income and should be incorporated into the tourism demand model. Especially now in the context of COVID-19, it is important to include MVECON because it accounts for not only current income but expected income as well. The COVID-19 pandemic has triggered an unprecedented crisis in the tourism economy, globally as millions of people have lost their jobs and lost their loved ones and made redundant. If tourists' expected income is reduced significantly they are less likely to go abroad on holiday. However, for the policymaker, it would be a more realistic and accurate measure to estimate inbound tourism demand for their country.

This thesis has provided empirical evidence that financial factors have a significant influence on inbound tourism. Government and policymakers have a better understanding of how financial risk, financial development and financial assets can impact their inbound tourism flow. The tourism sector is one of the largest foreign exchange earners for many developing countries. Tourism expenditures generate income for the host country and helps to increase its ability to pay for its foreign debt and obligations. Thus, the financial risk rating of that country increases positively and this becomes a virtuous cycle.

This study enables policymaker to be more knowledgeable about the characteristics that attract tourists to the region beyond the sun, sand and sea, and the international brand of the region. Among other factors, tourists are motivated to travel to a region because of culture and similar tastes, which strongly suggests that the travel industries in this region should further explore demand, preferences and experiences in order to cater for this segment.

This thesis provides an explanation for the physical and cultural distance puzzle in tourism. Thus, the current study provides important input into Egyptian, Moroccan, Tunisian and South African tourism geography that can be of considerable value to tourism stakeholders in the region.

Political leaders and policymakers in this region should avoid political crisis as it is one of the greatest obstacles to the development of their tourism industry. It is not straightforward to understand how one country's political events affect other countries in the region but detrimental effects on tourism are likely to spill over into other countries. Therefore, all the countries in this region should work together to avoid political crisis.

In comparison with other destinations in the tourism demand literature, results for Egypt, Morocco and Tunisia demonstrated a reasonable speed of adjustment to the steady-state equilibrium. Policies that increases the number of tourism countries of origin and reduce dependence on a few tourism countries of origin, and opportunity to explore new markets such as East Asia and the Pacific region can be a good policies to improve economic growth in this region and increase the speed of adjustment from different regions even more.

Tourism infrastructure generates revenue in the long run; therefore the government should try to attract public, private or international investors to finance this infrastructure.

In this thesis, we found evidence that trade openness influences inbound tourism flow. Therefore, the government and policymaker should reduce trade restrictions and barriers. Visa requirements among African countries should be removed in order to promote strong intra-regional tourism in Egypt, Morocco, South Africa and Tunisia.

In summary, the results provide new insights into the ways in which inbound tourism flow can be determined and also deepens understanding of the impact of income, financial factors and country risk on tourism flow. More specifically, it is hoped that the light we shed on the determinants of tourism demand will enrich the existing understanding of this sector in developing and emerging economies.

Limitations of the thesis and the direction of future research

Despite its limitations, this study has the potential to make contributions to tourism knowledge primarily because it identified a number of new factors that significantly influence tourism inflows. This study considered tourist arrivals as a measure of tourism demand, as we wanted to measure the absolute size of the market in certain African countries. Nevertheless, tourism expenditure could be employed as a proxy for tourism demand when we want to measure the total goods and services consumed by tourists. Alternatively, tourism receipts and the length of stay could also be employed to measure tourism demand. Chapter 3 investigated tourism inflow in Egypt and Morocco from 68 tourism countries of origin for the period from 1995 to 2011 and 66 tourism countries of origin for the period from 2000 to 2011 for South Africa, i.e. up to 18 years of data for each country. Hence, increasing the numbers of tourism countries of origin and numbers of years would generate better estimations of tourism flows. Other econometrics estimation techniques could be applied to check robustness.

Chapter 4 investigated financial factors related to about 15 tourism countries of origin. Therefore, including more countries in the sample would produce better estimations.

Furthermore, other financial development indicators could be employed as a proxy to measure the effects of financial factors on tourism.

Although we have added significant numbers of tourism countries of origin, the use of a broader range of countries could generate better estimations of the impact of political events. Also, analysing a broader set of variables such as FDI flows could improve the perception of the impact of uprisings on the tourism industry.

A qualitative analysis of the consequences of political events in North Africa would be interesting. While we limit ourselves to the Arab Spring, the study could be extended to other countries.

Physical distance and cultural distance were critical aspects of the study and future research can explore differences and similarities between tourist flows from long-haul and short-haul markets.

Chapter 8: Appendices

Appendix A: Market value of the economy (MVECON)

Following Clark and Kassimatis (2015), the method for valuation at the country level to calculate the market value of the economy using discounted cash flow can be summarised as follows.

Notation for the cash flow of the whole economy in period t,

$V_T =$ The market value of an economy at the beginning of period T

$B_T =$ Represents the value of the total output and consumption of final goods and services

$A_T =$ Represents the value of the total input of final goods and services

E = Expectations operator

R = 1+r, where r is the internal rate of return of an economy

X = Total export value in local currency

M = Total import value in local currency

S_t = Spot exchange rate at time *t* (the price of 1 unit of local currency in USD)

$F_{T,t} =$ Forward exchange rate at time T for delivery at time t (the price of 1 unit of local currency in USD)

Clark and Kassimatis (2011) developed a theoretical framework and practical methodology to calculate the expected or forward-looking macroeconomic market value of a country's economy. They pointed out that the country's macroeconomic market values they calculated are analogous to the market values of private companies. In the corporate credit literature, market values, rate of return and volatility of a company are standard inputs. Clark and Kassimatis (2015), following this intuition, constructed market values and rates of returns for individual countries' economies. The concept of macroeconomic market value distinguishes between the market value of the economy in the local currency and in a foreign currency. The local currency value of an economy reflects internal levels of output, employment, consumption, etc. However, the local currency value may not correspond to values in different economies in international markets.

Assuming that the capital markets are in equilibrium and the real rate of interest and the expected inflation rate remain constant and all transactions take place on the first day of the period, then the value of the economy in local currency on the first day of the current period T is:

$$V_T = (B_T - A_T) + E(B_{T+1} - A_{T+1})R^{-1} + \dots\dots + E(B_n - A_n)R^{-(n-T)} \tag{A.1}$$

Likewise, the value of the economy in USD can be written as:

$$V_T^* = (B_T^* - A_T^*) + E(B_{T+1}^* - A_{T+1}^*)R^{*-1} + \dots\dots + E(B_n^* - A_n^*)R^{*-(n-T)} \tag{A.2}$$

Where the asterisk denotes USD. Theoretically, $B_t^* = S_t B_t$ and $A_t^* = S_t A_t$. Making these substitutions into equation (A.1), pass the expectations operator through the equation and applying forward-rate parity E(S_t) = $F_{T,t}$ and interest rate parity $F_{T,t} = S_T R^{*t} R^{t-T}$ followed by substituting V_T from equation(A.1) and simplifying, gives

$$V_T^* = S_T V_T \tag{A.3}$$

Where, V_T^* represents the expected net value of the economy measured in USD. It contains two forward-looking elements, the first of which is reflected in S_T through the interest rate parity and forward-rate parity relations. The second element is reflected in V_T, which is the expected net value of the economy measured in local currency. Clark and Kassimatis (2015) pointed out that only historical data are available for the national account. However, historical values contain forward-looking information that reflects expectations. In order to provide for changes in the economic environment that can affect business balance sheets, businesses use depreciation and provisions for losses and obsolescence, although these provisions are not real losses but estimate that can occur in the future. In essence, forecasts are incorporated in the *ex post* data and represent a link between historical outcomes and future expectations.

Clark and Kassimatis (2015) followed the procedure outlined in Clark and Kassimatis (2011) to generate annual estimates of the USD market value of the economy for each country and estimate the macroeconomic profits and annual rate of return of each country's economy. Macroeconomic profits are exports (X^*) minus import (M^*) plus net investment.[80] The annual rate of return on the economy is profits in the year T over the market value of the economy in the year T-1:

$$X_T^* - M_T^* + V_T^* - V_{T-1}^* \Big/ V_{T-1}^* \qquad \text{(A.4)}$$

For the individual countries, the capital stock in local currency is:

$$V_T = \sum_{t=0}^{T-1} (V_{t+1}^* - V_t^*) \qquad \text{(A.5)}$$

Which is constructed using the Perpetual Inventory Method? Clark and Kassimatis (2015) began with historical data on gross investment in a local currency, including gross fixed capital formation and change in stock minus depreciation, to get net investment over the period. This amount was then added to the value of the economy in local currency outstanding at the beginning of the period to obtain the value of the economy outstanding at the end of the period. The initial capital stock is calculated from time 0 until the period preceding the first available data point from the regression below:

$$\text{Profits}_t = X_t - M_t + (V_t - V_{t-1}) = \text{c} + \hat{r}V_t + u_t \qquad \text{(A.6)}$$

[80] Clark and Kassimatis (2015) showed that ($V_T^* - V_{T-1}^*$) represents net investment over the period.

Where c, $\hat{r}V_t$,u_t represents constant or profit generated with the capital outstanding at the end of the period preceding the first year of the sample period, estimated return for the sample timeline and disturbance term respectively. The capital value of the country outstanding at the endpoint before our sample timeline is obtained by capitalising the constant from the above equation,i.e. c/$\hat{r}$. A complete trade cycle of 10 years is used for the regression.

The capital value in local currency at the end of year 1 is equal to the capital value at the end of year 0 and net investment in local currency for year 1, where net investment is equal to gross fixed capital formation plus the change in inventories less depreciation and provision for loss and obsolescence. For year 2, V is equal to capital value outstanding at the end of year 1, plus the net investment for year 2 and so on. The value of the economy is constructed by implementing equation (A.3) and multiplying by the end of the period exchange rate. An economy's rate of return is calculated by applying equation (A.4).

Appendix B: List of tourism countries of origin used for Egypt

Number	Country	Number	Country
1	Argentina	35	Malaysia
2	Australia	36	Malta
3	Austria	37	Mexico
4	Bolivia	38	Morocco
5	Brazil	39	Netherlands
6	Canada	40	New Zealand
7	Chile	41	Niger
8	China	42	Nigeria
9	Colombia	43	Norway
10	Costa Rica	44	Oman
11	Cyprus	45	Panama
12	Denmark	46	Paraguay
13	Dominican Republic	47	Peru
14	Ecuador	48	Philippines
15	El Salvador	49	Poland
16	Ethiopia	50	Portugal
17	Finland	51	Russian Federation
18	France	52	Saudi Arabia
19	Germany	53	Senegal
20	Greece	54	Sierra Leone
21	Guatemala	55	Singapore
22	Haiti	56	South Africa
23	Honduras	57	Spain
24	Iceland	58	Sri Lanka
25	India	59	Sweden
26	Indonesia	60	Switzerland
27	Ireland	61	Tanzania
28	Italy	62	Thailand
29	Jamaica	63	Togo
30	Japan	64	Tunisia
31	Jordan	65	United Kingdom
32	Kenya	66	United States
33	Kuwait	67	Uruguay
34	Malawi	68	Venezuela, RB

Appendix B: List of tourism countries of origin used for Morocco

Number	Country	Number	Country
1	Argentina	35	Malawi
2	Australia	36	Malaysia
3	Austria	37	Malta
4	Bolivia	38	Mexico
5	Brazil	39	Netherlands
6	Canada	40	New Zealand
7	Chile	41	Niger
8	China	42	Nigeria
9	Colombia	43	Norway
10	Costa Rica	44	Oman
11	Cyprus	45	Panama
12	Denmark	46	Paraguay
13	Dominican Republic	47	Peru
14	Ecuador	48	Philippines
15	Egypt	49	Poland
16	El Salvador	50	Portugal
17	Ethiopia	51	Russian Federation
18	Finland	52	Saudi Arabia
19	France	53	Senegal
20	Germany	54	Sierra Leone
21	Greece	55	Singapore
22	Guatemala	56	South Africa
23	Haiti	57	Spain
24	Honduras	58	Sri Lanka
25	Iceland	59	Sweden
26	India	60	Switzerland
27	Indonesia	61	Tanzania
28	Ireland	62	Thailand
29	Italy	63	Togo
30	Jamaica	64	Tunisia
31	Japan	65	United Kingdom
32	Jordan	66	United States
33	Kenya	67	Uruguay
34	Kuwait	68	Venezuela

Appendix B: List of tourism countries of origin used for South Africa

Number	Country	Number	Country
1	Argentina	35	Malaysia
2	Australia	36	Malta
3	Austria	37	Mexico
4	Bolivia	38	Morocco
5	Brazil	39	Netherlands
6	Canada	40	New Zealand
7	Chile	41	Niger
8	China	42	Nigeria
9	Colombia	43	Norway
10	Costa Rica	44	Oman
11	Cyprus	45	Panama
12	Denmark	46	Paraguay
13	Ecuador	47	Peru
14	Egypt	48	Philippines
15	El Salvador	49	Poland
16	Ethiopia	50	Portugal
17	Finland	51	Russian Federation
18	France	52	Saudi Arabia
19	Germany	53	Senegal
20	Greece	54	Sierra Leone
21	Guatemala	55	Singapore
22	Haiti	56	Spain
23	Honduras	57	Sri Lanka
24	Iceland	58	Sweden
25	India	59	Switzerland
26	Indonesia	60	Tanzania
27	Ireland	61	Thailand
28	Italy	62	Togo
29	Jamaica	63	Tunisia
30	Japan	64	United Kingdom
31	Jordan	65	United States
32	Kenya	66	Venezuela, RB
33	Kuwait		
34	Malawi		

Appendix C: List of tourism destination and countries of origin used in Chapter- 4

Number	**Egypt**	**Morocco**	**South Africa**
1	Argentina	Argentina	Argentina
2	Brazil	Brazil	Brazil
3	Chile	Chile	Chile
4	China	China	China
5	Colombia	Colombia	Colombia
6	Indonesia	Egypt	Egypt
7	Mexico	Indonesia	Indonesia
8	Morocco	Mexico	Mexico
9	Nigeria	Nigeria	Morocco
10	Philippines	Philippines	Nigeria
11	Poland	Poland	Philippines
12	Russian Federation	Russian Federation	Poland
13	South Africa	South Africa	Russian Federation
14	Tunisia	Tunisia	Tunisia
15	Venezuela, RB	Venezuela, RB	Venezuela, RB

Notes: Tourism destination country is in **bold.**

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