How Security Impacts Tourism to Low-Income Countries
- A Gravity Model Approach

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Acknowledgments

Abstract

The steadily increasing international tourism has grown to become one of the largest export categories in the world. In this paper I study the effect of security on international tourism flow from the G-7 countries to low-income countries. I use a gravity type approach for cross-sectional data, the year 2014, with 10 variables among them two security variables. My results suggest that no relationship exists between security and tourism flows. However, I am reluctant to draw any type of definite conclusion due to possible weaknesses in method. By highlighting the economic contribution of international tourism, I feel it is necessary to continue with similar studies at both global and regional levels.

Sammanfattning

Den ständigt ökade internationella turismen har vuxit till att bli en av de största export-kategorierna i världen. Genom att studera turistflödet från G-7 länder till låginkomstländer har denna uppsats syftat till att påvisa effekten av säkerhet, specifikt på turism till låginkomstländer. Med hjälp av gravitationsmodellen för året 2014, estimeras effekten via tio förklaringsvariabler, varav två av dessa är säkerhetsvariabler. Resultatet påvisar att det inte existerar en korrelation mellan säkerhet och turistflöden, dock bör resultatet inte generaliseras på grund av potentiella svagheter i metod. Genom att belysa det ekonomiska bidraget av internationell turism hävdar jag att det är viktigt med fortsatta studier inom området, både på global och regional nivå.

Table of Contets

1 Introduction

In this chapter the background to the subject will be presented followed by a description of the problem along with the aim of the study. After that, the limitations for this study will be brought up and in the last section, a brief explanation about the structure of the paper.

1.1 Background

Tourism has gone from including those who only travel for leisure to a wider group, at least according to the World Tourism Organization (UNWTO). They define tourism as follows:

> *"Tourism comprises 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 not related to the exercise of an activity remunerated from within the place visited"* (www, World Tourism Organization, 1).

International tourism has over the last 100 years become more regular with the evolution of transport and only over the last decades it has become one of the fastest growing economic sectors in the world. The year 2014, international tourism reached a new highest with more than 1.1 billion international tourists and generated 1.5 trillion US dollars in export earnings (www, World Tourism Organization, 2). It also ranks 4th worldwide (the year 2013) as an export category after fuels, chemicals and food (www, World Tourism Organization, 3).

The graph below demonstrates that international tourism has more than doubled between the years 1995 and 2014. Between the same years it also shows a steady increase of tourism exept on two occasions. The latest of the two occasions, between 2008-2009, has to do with the financial crises that started in 2008 (Kosnan, Ismail & Kaliappan, 2013).

World: Inbound Tourism
International Tourist Arrivals   (million)
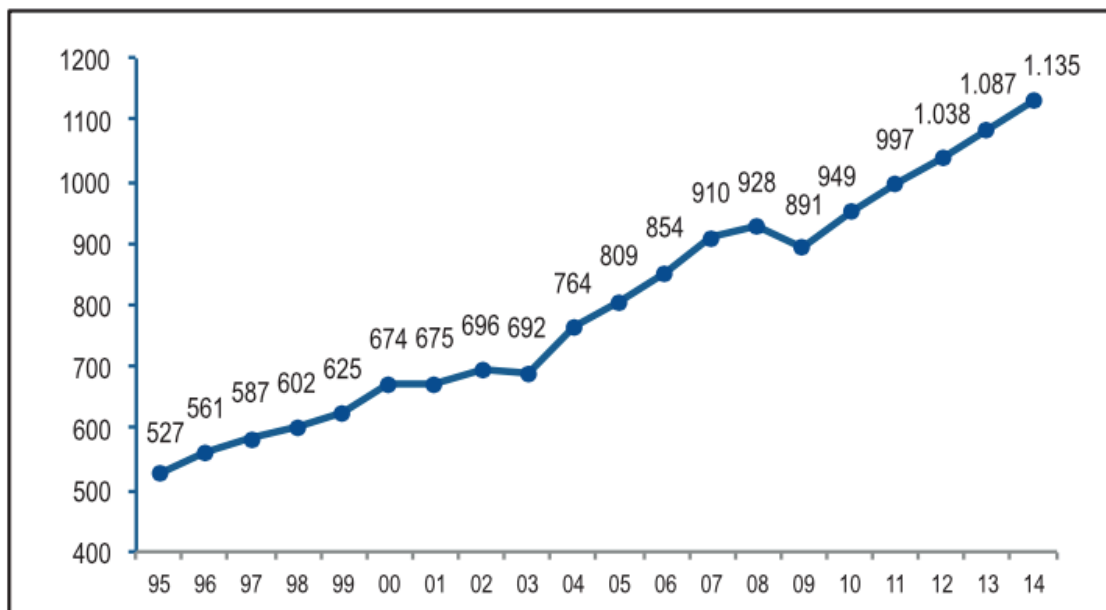
Source: World Tourism Organization (UNWTO) ©

Figure 1. The number of tourism arrivals over the world (in millions) in the period of 1995 to 2014.

Preferences on where to travel can depend on various different factors. It can be to visit an old church, to enjoy sunny weather, to have easy accessibility to a beach or simply to visit family or friends. But an underlying factor that often don't concisely cross the mind, unless when to decide whether or not to travel to less stable countries, is security. Among four other factors, Prideaux (2005) did a literature study to examine the way external political and health factors such as war, epidemics, terrorism, and political violence can affect overall international tourism. Most of the papers he cited, not so surprisingly, showed that it do have a negative effect on tourism. For instance, in the aftermath of the terrorist attacks on 9/11 in the United States, tourism not only declined for direct involved countries, it also declined for countries with no connections to the event at all (Prideaux, 2005).

By looking at the figure above, even though external political and health factors affect tourism, it doesn't seem to induce a decline in the overall international tourism, which is an indicator that the tourism flows most likely redirects from countries viewed as "unsafe" among other factors to different destinations.

The on-going expansion in the tourism market could function as a big opportunity for many countries, especially for countries with large shares of their gross domestic product (GDP) related to tourism, both directly and indirectly. Kosnan et al (2013) claim that the majority of the countries with a large share of their GDP related to tourism are developing countries. This makes them more sensitive to sudden changes in tourism arrivals, which can not only

constitute a big problem for people working in tourism related industries, but also in general for the country's economy.

1.2 Research Question and Hypothesis

Prideaux (2005) ends his article by pointing out that due to the expanding tourism market, it needs to be studied more in detail. Despite the fact that Prideaux (2005) mentions a few articles related to security among others in the area, none of them focuses on security specifically in the developing countries. This drove me to study the effect of security on travelling to developing countries.

To define whether a country is considered a developing one is not so simple. Hence, I chose to use low-income countries, since they are a good proxy for developing countries.

Taking into account everything I have mentioned above, the aim for this study will be to investigate the research question:

How large of an effect does security have on tourism flows to low-income countries?

The hypothesis for the research question is if there exists any relation between the security of low-income countries and the tendency for people to travel to that destination. My prediction is that the effect will show a negative relation, the more insecure the destination country is, the less likely will people be interested in traveling to that destination

1.3 Limitations

My initial idea for this study was to include "low-income countries" and "lower-middle-income countries", but due to the lack of data on the "low-income countries" I had to exclude them from the model. Furthermore, because of this project being limited in time, a set of seven countries were chosen to represent the flow of tourism to the "lower-middle-income countries", those are the G-7 countries: *Canada, France, Germany, Italy, Japan, United Kingdom and the United States.*

The data I obtained on tourism arrivals were from the years 2010-2014. When looking at specific countries like Pakistan and Egypt, you could clearly see an overall decline in tourism over the years from the G-7 countries, which could probably be linked to the increased instability in both regions. A weakness for my model is that it won't be able to capture the time perspective, instead, it will look only at one point in time, namely the year 2014, using cross-sectional data analysis.

To classify a country as semi-insecure/insecure I followed the advisory from the Swedish Ministry of Foreign Affairs and compared it with the US Bureau of Consular Affairs, to make sure that there wasn't different advisory or discouragements for travel between the two different agencies. Due to the fact that information for insecurity will be collected from the agencies, it will be difficult to represent the level of insecurity with a continuous variable and therefore, the insecurity for a country will be represented by a binary dummy variable.

Factors that have effect on travel but will not be raised in this paper are the difference in risk-taking between individuals, i.e. the fact that some people are willing to accept more risk than others.

1.4 Structure of the Study

This study is divided into six main chapters. The first chapter gives an introduction and background description of the subject, followed by the aim of this study along with the limitations for it. The second chapter highlights the theoretical framework, introducing the gravity model followed by a literature review. In the third chapter the model specification will be presented, followed by an explanation of why the explanatory variables were selected. The last part of the chapter describes the data and clarifies from where it was collected. The fourth chapter presents the result and interprets them. The fifth chapter discusses the outcome of the results along with potential issues of the study. The last part of chapter five gives suggestions for further research in the area. The sixth and final chapter summarizes what has been done in this study followed by the conclusions that can be drawn from it.

2 Theoretical Framework

In this chapter I start by describing the history behind the basic formulation of gravity model. In addition, I present the gravity equation with variable explanation. The second section of the chapter contains a literature review on the application areas of the model with previous research results.

2.1 The Gravity Model

Isaac Newton's law on gravity explains the force between any two objects. The force is proportional to both objects masses and inversely the square distance between them. In the 1960's, Tinbergen (1962) and Pöyhönen (1963) were the first ones to apply the model to trade. Since the introduction of the model to social science it has been used not only to explain trade flows with goods, but also for migration (Gil-Pareja, Llorca & Martínez, 2006; Karemera, Oguledo & Davis 2000) and on foreign direct investment (Bergstrand & Egger, 2007; Head & Ries, 2008).

The model, similar to Newton's law on gravity, predicts that bilateral trade flows between two countries, depended on the two country's GDP and inversely the distance between them. The early formulation of the gravity model can be expresses as:

$$F_{ij} = G \frac{M_i^{\beta_1} M_j^{\beta_2}}{D_{ij}^{\beta_3}} \eta_{ij}$$

(1)

Where F_{ij} denotes the traded flow between country i and j; M_i and M_j represents both country's GDP; D_{ij} represents the distance between country i and j; η_{ij} is a log-normal distributed error term; β_1, β_2 and β_3 are the parameters to be estimated. By taking the natural logarithm of expression (1) it can be converted to a log-log form for estimation purposes and be expressed as:

$$\ln(F_{ij}) = \beta_0 + \beta_1 \ln(M_i) + \beta_2 \ln(M_j) - \beta_3 \ln(D_{ij}) + \varepsilon_{ij}.$$

(2)

Where $\beta_0 = \ln(G)$ and ε_{ij} is a normal error term with $E(\varepsilon_{ij})=0$.

2.1 Literature Review

After Tinbergen and Pöyhönen's introduction of the gravity model for international trade, it was widely used to explain bilateral trade flows for goods and services even though it lacked theoretical foundation. Nowadays, the gravity model applied to trade does not have the same flaw as before since the Heckscher-Ohlin models support the gravity model specification for international trade (Deardoff, 1998).

Turning back to tourism, in the early stage like with trade for goods, authors tried to explain tourism flows using the same model as Tinbergen and Pöhynnen introduced (see, for example, Wilson, 1967; Quandt & Baumol 1969; Gordon, 1973; Kliman, 1981). One problem concerning the formulation of the model, as stated by Sheldon and Var (1985), predicted that tourism flow from country i to country j are equal to those from country j to country i, which

is not the common case for tourism. Not only that, but it also lacked a general theoretical support, since the Heckscher-Ohlin model wasn't applicable to tourism like it is with trade for goods. Not surprisingly, with the absence of a solid theoretical background for tourism, some authors chose a different approach. This can be witnessed in Lim (1997) or Li, Song and Witt (2005) were they chose to neglect the gravity approach in their research.

However, in more recent years, the use of gravity model has re-emerged in tourism literature after Kimura and Lee (2006) proved that trade with services showed more significant result than trading with goods. Also, Kuem (2010) who tested the validity of the gravity equation on trade and tourism flows, to see whether trade theories can function as theoretical basis to explain tourism flows. His result supported that the gravity model was applicable to trade and tourism using a panel data analysis.

The original formulation of the gravity equation includes the two countries masses (their GDP) and the geographic distance between them. Nowadays, the formulation of the equation is more extended, with adding of more explanatory variables to explain tourism flows. Prideaux (2005) combined literature from previous researchers in the area and examined categories of factors that affect the overall size of tourism flows. His paper focuses on five main categories. Firstly, *government responsibility,* where he discusses the way governments manages its external relations. Furthermore, he subdivides government responsibility into diplomatic, policy, marketing, regulatory regimes and the supply for goods and services. Secondly, *private sector factors,* which include inbound and outbound travel operations, retail services, travel services, travel insurance and transport services. Thirdly, *intangible factors,* is as the name indicates, factors such as natural environments, destination image, lifestyle and culture. In the fourth main category he discusses *economic factors* that cover national economy, exchange rates, national income levels and elasticity of demand. The fifth and final category is *external political and health factors,* where he argues that war, terrorism and epidemics are factors that can cause decline in overall tourism flows. Even though he describes the main categories of factors affecting tourism, he highlights that it is not constantly achievable to define the importance for all the factors, which makes him land in the conclusion that tourism needs to be studied more in detail given the expanding tourism market.

Furthermore, Eliat and Einav (2004) used the gravity model on tourism to analyse tourism movement using a three-dimensional panel data set. Their result proved that the explanatory variables: price elasticities, exchange rates, destination risk, common border and common language all matter for tourism flow. Gil-Pareja et al (2007) also conducted a model with a set of explanatory variables but solely wanted to test the role of embassies and consulates on tourism. Successfully, embassies and consulates proved to have a positive effect on tourism (between 15-30%) depending on what type of estimation they used. Moreover, Fourie and Santana (2013) looked at if culture and ethnicity had an effect on tourism. They found convincing evidence that both culture and ethnicity had an effect on tourism. Also, they proved that past migration has a larger effect on tourism than on trade, even when using trade as a variable in the model. Neumayer (2010) chose to look at if visa restrictions had impact on tourism. His results indicate that visa restrictions reduce tourism flows by between 52 to 63 percent depending on what model was used. The effect also proved to be larger when travelling to developing countries than to developed countries.

Although not using the gravity approach, but related to security issues Sönmez and Graefe (1998) looked at the influence of terrorism risk on foreign tourism decisions. They conducted a survey for people and looked at eight different factors that could have an effect on tourism

destinations and those were: international travel experience, risk perception level, international travel attitude, age, gender, education, income and presence of children in household. Their result supported that international attitude, risk perception level and income all affected the decision of destination internationally. Touristic experience and education also proved to have an affect, though it was more of an indirect effect. Furthermore, Cothran and Cothran (1998) examined the increasing instability in Mexico, with the increase of street crime, drug problems, rebels and corruption. They remarked that Mexico had a great tourism potential but that it was in jeopardy due to the increasing political instability in the country.

3 Methodology

This chapter is divided into three sections. In the first section the model specification applied for this study will be presented, followed by an explanation for all the variables. In the second section I discuss the choice of variables and the predicted sign on them. The last section presents a description of the data used for with information from where it was collected.

3.1 General Model Specification Applied for this Study

Presented below is the augmented version of the gravity model for this paper on tourism flows from the departing country to lower-middle-income countries.

$$Arrivals = G * GDP_i^{\beta 1} GDP_j^{\beta 2} Dist_{ij}^{\beta 3} FTA_{ij}^{\beta 4} Lang_{ij}^{\beta 5} ColLink_{ij}^{\beta 6} LandL^{\beta 7} UNESCO^{\beta 8} SemInSec^{\beta 9} InSec^{\beta 10} \eta_{ij} \qquad (3)$$

Where Arrivals is the number of arrivals from the departing country to the country of destination; G is a constant; GDP_i is the gross domestic product of the departing country; GDP_j is the gross domestic product of the lower-middle-income country; $Dist_{ij}$ is the distance between the two countries i and j; FTA_{ij} is a binary dummy variable indicating if the two countries i an j are engaged in a free trade agreement; $Lang_{ij}$ is a binary dummy variable indicating if country i and j share an official language; $ColLink_{ij}$ is a binary dummy variable indicating if country i and j either has or had a colonial link; LandL is a binary dummy variable indicating if the destination country is landlocked; UNESCO is a variable indicating how many world heritage properties the country of destination has; SemInSec is a binary dummy variable indicating if the country of destination is semi-insecure; Insec is a binary dummy variable indicating if the country of destination is Insecure; η_{ij} is a log-normal distributed error term; and $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8, \beta_9, \beta_{10}$ are the parameters to be estimated.

For estimation purposes, equation (3) can be transformed using natural logarithms to:

$$\begin{aligned}
Ln(Arrivals) = {} & \beta_0 + \beta_1 LnGDP_i + \beta_2 LnGPDj + \beta_3 LnDist_{ij} + \beta_4 FTA_{ij} \\
& + \beta_5 Lang_{ij} + \beta_6 ColLink_{ij} + \beta_7 LandL + \beta_8 UNESCO \\
& + \beta_9 SemInSec + \beta_{10} InSec + \mathcal{E}_{ij} \qquad (4)
\end{aligned}$$

Where $B_0 = Ln(G)$ and $\mathcal{E}_{ij} =$ is a normal error term with $E(\mathcal{E}_{ij}) = 0$.

3.2 Variable Selection and Predicted Signs

To help explain the tourism flows from the departing country to the country of destination, a set of 10 variables were chosen. The following part will present the explanatory variables one by one with supporting arguments for why they were chosen for this study. In the last part of the chapter a table will be presented with all of the explanatory variables and their predicted sign.

LnGDP$_i$ and **LnGDP$_j$** – Economic size along with distance were already included in the original formulation of the gravity model by Tinbergen (1962) and Pöyhönen (1963). The economic size of a country should have a positive impact on tourism flows (Kosnan et al, 2013). However, instead of using GDP, some authors use similar indicators such as Gil-Pareja et al (2007) they used population and GDP per capita instead of GDP.

LnDist$_{ij}$ - The distance between the two countries should have a negative effect on tourism flows. It can be viewed as a proxy for transportation costs (Eliat & Einav, 2004).

FTA$_{ij}$ - The free trade agreement should have a positive effect on the dependent variable, since it can increase the relations between the two countries (see, for example, Gil-pareja et al, 2007). As an example, it can decrease transaction costs if they remove a previous visa restriction.

Lang$_{ij}$ - If the two countries share an official language, it should have a positive effect on the tourism flow (see, for example, Eliat & Einav, 2004). This could also be viewed as a transaction cost, by not knowing the language in the destination country.

ColLink$_{ij}$ - A previous or current colonial link should have a positive effect on the dependent variable much alike the previous variable Lang$_{ij}$, because of the increased relations between the two countries. Furthermore, Fourie and Santana (2013) proved that cultural affinity and ethnic reunion have a positive effect on tourism flows, which could potentially be the case for a colonial linkage.

LandL - If the destination country is landlocked it should have a negative effect on the dependent variable (see, for example, Gil-pareja et al, 2007). The access to water is probably an important factor for many travellers.

UNESCO - The number of world heritage properties should have a positive effect on the dependent variable, since it should increase the touristic attraction to the destination country. For instance, the Pyramids in Egypt is a major touristic attraction. However, it is important to note that not all world heritage properties have the same level of touristic attraction as the Pyramids.

SemInSec - The insecurity of the country should have a negative effect on tourism flows to the country of destination, since unstable countries should decrease overall tourism flows.

InSec - An insecure country should have an even greater negative effect than the semi-insecure country, since it is even riskier to travel to that country.

Table 1. The explanatory variables for the model with the expected sign.

Variable	$LnGDP_i$	$LnGDP_j$	$LnDist_{ij}$	FTA_{ij}	$Lang_{ij}$	$ColLink_{ij}$	$LandL$	$UNESCO$	$SemInSec$	$InSec$
Expected Sign	+	+	-	+	+	+	-	+	-	-

3.3 Data and Data-Sources

In this paper, I study the tourism flows to lower-middle-income countries the year 2014 and focus on if there is any connection between security issues and the tourism flows to these countries. The G-7 countries were chosen to represent the departing country (due to the time frame on this paper) to the lower-middle-income countries. I used data on the number of tourist arrivals to the lower-middle-income countries that was provided by the UNWTO. To classify the countries as "lower-middle-income countries" I followed the definition of the World Bank. They define those with a gross national income (GNI) between 1045$ to 4125$ as a "lower-middle income country" (www, The World Bank). It resulted in a total of 51

countries being classified as "lower-middle-income countries". However, due to lack of data on tourism arrivals to some of these countries, only 35 could be used for the econometric estimation (see, appendix I). Furthermore, the countries GDP were collected from the World Bank. The distance in kilometres between countries was collected from Centre d'Etudes Prospectives et d'Informations Internationales (CEPII). Moreover, the binary dummy variables; official language, colonial link and landlocked was also obtained from CEPII. The variable on the amount of world heritage properties by country were collected from United Nations Educational Scientific and Cultural Organization (UNESCO).

Regarding the main purpose of this study, which is, to study the effect of semi-insecure and insecure countries, I decided to follow the advisory from the Swedish ministry of foreign affairs. To conclude that there were not specific advisory to the lower-middle-income countries from the Swedish ministry of foreign affairs compared to similar agencies in other countries, I compared their advisory with the ones from the United States Bureau of Consular Affairs. All countries of the chosen 35 lower-middle-income countries classified as "insecure", had in both agencies a strict discouragement for travel to the destination. Concerning the "semi-insecure" countries both agencies had similar "general" advisory. Typical advises from the agencies could be to be extra careful in specific areas of the country, that the country suffers from high criminality rate or that the country currently has a disease outbreak. For instance, regarding specific diseases, Central- and South America currently have a problem with the Zika virus. However, it will not be captured in this study because of the outbreak in that region started in 2015 (www, Folkhälsomyndigheten).

Regarding this study, out of the 35 lower-middle-income countries used in the model, five were considered as insecure and 14 as semi-insecure (see Appendix I).

4 Results

In this section I start off with an introduction to the estimation technique and software that were used to get the empirical results. In addition, a table with the empirical results from my estimation is presented followed by a result interpretation.

4.1 Empirical Results

The econometric results presented in table 2 was estimated with ordinary least square (OLS) regression using the software Gretl along with 204 observations. The model was estimated with robust standard errors. To support that the model did not suffer from multicollinearity, I ran a variance inflation factor (VFI) test, which showed good results and supported that with a correlation matrix for the explanatory variables (see Appendix II).

Table 2. Empirical Results.

Dependent Variable: Natural Log of Tourism Arrivals
(LnArrivals)

Variable	Coefficient	Standard Error	T-ratio	P-value	Significance
Const	-12.6501	4.34794	-2.909	0.0040	***
LnGDPi	0.565167	0.117318	4.817	2.94e-06	***
LnGDPj	0.479608	0.0956885	5.012	1.21e-06	***
LnDistij	-0.671740	0.180921	-3.713	0.0003	***
FTAij	1.27040	0.299571	4.241	3.45e-05	***
Langij	0.868551	0.259649	3.345	0.0010	***
ColLinkij	0.688198	0.339043	2.030	0.0437	**
LandL	0.0517998	0.228674	0.2265	0.8210	
UNESCO	0.0476357	0.0221991	2.146	0.0331	**
SemInSec	-0.079305	0.219067	-0.3620	0.7177	
InSec	-0.333323	0.334612	-0.9961	0.3204	
OLS	Observations = 204		$R^2 = 0.565162$		Adjusted $R^2 = 0.542632$

*Note: ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.*

The results presented in table 2 shows that the equation fits the data fairly well, explaining slightly more than half of the variation of the tourism flows.

Both of the coefficients for the source and destination country are positive as predicted and statistically significant to 1%, implying an increase in either of the two countries economic size would increase the touristic flows to the country of destination. Similar positive relations can be found in many studies (see, for example, Kosnan et al, 2013). Furthermore, increased distance that was a proxy for transportation cost between the destination country and source country, not so surprisingly, showed a negative relationship. The binary dummy variables suggest, all else equal, that tourism increase with 1,27% if the two countries are members of a free trade agreement with each other. Similarly, sharing an official language or having colonial ties increases tourism flows by 0,87% and 0,69%, respectively.

If the source country is landlocked, the coefficient shows a positive sign, contradicting my prediction. However, landlocked proves to be insignificant, meaning that the landlocked coefficient to a high probability could be wrong. In Gil-Pareja et al (2007) they have the same variable statistically significant with a negative sign.

Moreover, the UNESCO variable proves that the more world heritage properties the destination country has, the more of a positive effect it has on tourism flows to that country.

The coefficient on semi-insecure has a negative sign. It indicates that a semi-insecure country reduces tourism flows by 0,07%. An insecure country have even more of a negative effect as predicted, reducing touristic flows by 0,33%. However, similarly to landlocked both of the coefficients are insignificant, indicating not so much weight should be put into trusting the coefficients of the two variables, because of the fact that they have a high probability of being wrong.

5 Discussion

In this chapter I start off interpreting the results I got from the previous chapter. I follow up by discussing two potential reasons to why I got the outcome I did. The last part of the chapter discusses ideas for further research.

5.1 Result Discussion

Although many of the independent variables in the model proved to have the predicted effect on tourism and most of them with a significant result, these variables were not the main goal of study in this paper. The explanatory variables such as GDP, Distance, official language, etc. have in many cases shown significant results in previous studies using the gravity equation on tourism. The purpose however, was to study the effect of security using the two binary dummy variables semi-insecure and insecure.

The insignificant results on the two security variables reveals that no relationship exists between tourism flows and security. However, it is important to underline the limitations of my results, which is why the outcomes should not be generalized outside the scope of this study.

The issues that might obscure the significance level in my study, I believe, can be broken down into two main factors and they are *Geographical* and *Methodological*.

5.2 Geographical Issues

The first problem I would like to raise is related to the few number of countries included in the model, both for the source countries and the destination countries. The source countries are only a set of seven and are chosen to represent the flows of tourism to the lower-middle-income countries. These source countries do not give the full picture of tourism flows to the destination countries. Moreover, an interesting approach in finding correlation between security and tourism would be to include more destination countries, even if they are not considered to have low income. Although it wouldn't solely capture the effect especially to low-income countries, it could find the general effect of security in relation to travelling.

Secondly, in some cases, regarding the security variables, if a country is to be viewed as partly secure, the unsafe parts of that country do not always prevent people from travelling to the safer parts of the same country.

5.3 Methodological Issues

The methodological weakness for the insignificant results can broadly be categorised into three factors.

Firstly, the problem regarding research design, where omitted variable bias (OVB) or measurement errors can lead to biased estimates. The biased estimates can potentially lead to why the results show no correlation between security and tourism. OVB exists if an omitted variable is left out of the econometric model. If the variable is correlated with the dependent variable and is left out of the model, it could lead to biased estimates.

Secondly, by only looking at one point in time using cross sectional data analysis, the effect

of security might not give the accurate picture, it only captures the effect in the given year, namely, 2014 in this study. Furthermore, other estimation techniques might be more appropriate to use than OLS.

Lastly, the few number of observations might be too small to test the hypothesis. In that regard, the sample size could not be increased, due to the lack of data on tourism arrivals to some of the lower-middle-income countries.

5.4 Further Research

I believe that due to the expanding tourism industry and especially to those countries that have a large share of their GDP contributed by tourism, both directly and indirectly, this research field is worthy to be studied in more detail. More precise, this means a call for more research in factors affecting tourism and among them, the security related ones. Because of weaknesses, similar to the ones discussed in the previous section, improvements in method, mainly in research design is encouraged.

Another approach could be to conduct a model that is country or region specific, to see which determinants affect tourism in that specific region. This type of research could potentially be more helpful and is tailored for the studied region's needs. With that information, governments in the same region would get an idea of main factors that affect tourism to their country and by adjusting these factors (those that are not external), they could increase overall tourism arrivals. However, many determinants for tourism are not always country specific, so this doesn't remove the importance of studying this subject area on a global level as well.

Regarding security, looking at the Swedish ministry of foreign affairs advisory on travel might not give the full picture on how people perceive security. For a similar study but more time consuming, it might be more appropriate to investigate the effect of security on tourism by conducting a survey to see how people value security, to what extent they are willing to accept risk and to see which countries they view as insecure.

6 Conclusion

In this section I give a brief description on what has been studied in the paper and what the purpose of the study was. In addition, I summarize my findings and draw a conclusion from my results. In the last parts of this section I emphasize on the importance of further studies in this subject area.

6.1 Concluding Remarks

In this paper I have studied the effect of security on touristic flows to lower-middle-income countries from the G-7 countries. Besides the two basic variables (economic size and distance), a number of eight more variables were used in the augmented version of the gravity equation. Out of them, one of the variables represented if the country was to be considered as semi-insecure and the other if the country was to be considered as insecure.

Since the aim of the paper was to study the effect of security on tourism flows to lower-middle-income countries, I wanted to answer the research question:

How large of an effect does security have on tourism flows to low-income countries?

Based on my hypothesis on how security might affect tourism flows, my findings does not support that there exists any relation between security issues and touristic flows. Noting my geographical limitation, by only looking at the lower-middle-income countries, I am reluctant to make any type of generalization outside the scope of this study. Furthermore, I note potential weaknesses in my method along with the estimation technique and, most likely, the fairly small number of observations that can show negative results even if a relationship exists.

A few previous authors have succeeded to find a relationship between security related issues and tourism flows, even though, they use different approaches on how to estimate the "security variable" (see, for example, Eliat & Einav, 2004 and Sönmez & Graefe, 1998). Due to the previous success of the authors, I felt more confident about finding a relationship in my study. Though, the studies that do find a correlation between security and tourism flow are all conducted on a higher level of aggregation.

I call for further research regarding security related issues in relation to tourism, since tourism flows have more or less constantly increased over the last two decades. I am positive that there exists some form of correlation between security and tourism and maybe even more so when travelling to developing or low-income countries, since people might associate some of these countries with being more violent than what they actually are. Because of the fact that many of the developing countries have a large share of their GDP related to tourism, I feel it is necessary to continue with similar empirical studies to get a broader understanding on how and why people travel as they do, but also, to help evaluate some of these countries tourism potential.

7 Summary

1) Using cross sectional data analysis, the year 2014, this paper investigated the association between security and tourism flows from the G-7 countries to countries classified as "lower-middle-income".

2) The gravity model with a set of 10 explanatory variables were used for the econometric estimation.

3) The results showed that no relationship existed between security and tourism flows.

4) Potential weaknesses exist in the study, mainly in methodology.

5) Further research in the area is encouraged due to the expanding tourism industry.

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Appendix I: Countries

Table 3. All of the countries included in the model

Tourism Destination (lower-middle-income countries)		Departing countries (G-7 countries)
Armenia	Moldova	Canada
Bangladesh	Morocco	
Bhutan	Myanmar	France
Bolivia	Nicaragua	
Cape Verde	Nigeria	
Egypt	Pakistan	Germany
El Salvador	Papua New Guinea	
Georgia	Philippines	Italy
Guatemala	Samoa	
Guyana	Solomon Islands	
Honduras	Sri Lanka	Japan
India	Tajikistan	
Indonesia	Timor-Leste	United Kingdom
Kiribati	Ukraine	
Kyrgyzstan	Vietnam	
Lao PDR	Yemen	United States
Lesotho	Zambia	
Micronesia, Fed. state.		

Table 4. Countries considered in the model as semi-insecure or insecure

Semi-Insecure Countries	Insecure Countries
El-Salvador	Egypt
Georgia	Nigeria
Guatemala	Pakistan
Guyana	Ukraine
Honduras	Yemen
India	
Indonesia	
Kyrgyzstan	
Lao PDR	
Myanmar	
Papua New Guniea	
Philippines	
Solomon Islands	
Tajikistan	

Appendix II: Descriptive Statistics

Table 5. Summary statistics of variables used in regression.

Variable	Definition	Mean	Median	Minimum	Maximum
LnArrivals	Natural log of tourist arrivals to country of destination 2014	9.8566	9.8242	6.2246	14.402
$LnGDP_i$	Natural log of GDP (departuring country)	29.008	28.726	28.211	30.489
$LnGDP_j$	Natural log of GDP (country of destination)	24.176	24.022	18.932	28.348
$LnDist_{ij}$	Natural log of distance in (km)	8.8612	9.0334	7.2541	9.7138
FTA_{ij}	Engaged in free trade agreement=1, otherwise=0	0.12745	0	0	1
$Lang_{ij}$	Share an official language=1, otherwise=0	0.13235	0	0	1
$ColLink_{ij}$	Have/had a colonial link=1, otherwise=0	0.083333	0	0	1
LandL	Country of destination landlocked=1, otherwise=0	0.21078	0	0	1
UNESCO	Number of world heritage properties in country of destination	4.4559	3	0	32
SemInSec	Country of destination semi-insecure=1, otherwise=0	0.40196	0	0	1
InSec	Country of destination insecure=1, otherwise=0	0.16667	0	0	1

Table 6. Correlation table of explanatory variables.

Correlation Matrix	LnGDPi	LnGDPj	LnDistij	FTAij	Langij	ColLinkij	LandL	UNESCO	SemInSec	InSec
LnGDPi	1.000	-0.1396	0.1792	0.0435	0.1854	-0.0116	-0.0203	-0.0550	-0.0038	-0.0406
LnGDPj	-0.1396	1.000	0.0175	0.3049	-0.0804	-0.0490	-0.3954	0.6979	0.1743	0.2159
LnDistij	0.1792	0.0175	1.000	-0.4776	0.2556	0.0635	0.0756	-0.0095	0.1615	-0.2078
FTAij	0.0435	0.3049	-0.4776	1.000	-0.1059	-0.0620	-0.1975	0.1823	0.0165	0.1446
Langij	0.1854	-0.0804	0.2556	-0.1059	1.000	0.3009	0.0110	0.0704	0.0338	0.0582
ColLinkij	-0.0116	-0.0490	0.0635	-0.0620	0.3009	1.000	-0.0254	0.0038	-0.0301	0.0079
LandL	-0.0203	-0.3954	0.0756	-0.1975	0.0110	-0.0254	1.000	-0.2559	-0.0315	-0.2311
UNESCO	-0.0550	0.6979	-0.0095	0.1823	0.0704	0.0038	-0.2559	1.000	0.1129	0.0591
SemInSec	-0.0038	0.1743	0.1615	0.0165	0.0338	-0.0301	-0.0315	0.1129	1.000	-0.3666
InSec	-0.0406	0.2159	-0.2078	0.1446	0.0582	0.0079	-0.2311	0.0591	-0.3666	1.000