

Does travelling foster international trade?

A panel data analysis covering the EU15 countries and their trading partners

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Abstract

The world's total expenditures regarding leisure travelling and related expenditures corresponded to approximately 3000 billions USD in 2010. This substantial value makes the travelling industry and related markets important in an economic aspect. Data posted by the WTO states that between the years of 1995-2005 the world's amount of tourism arrivals increased by approximately 50 %, and additionally UNWTO predicts that this progression is likely to continue.

This implies that there are good reasons to analyse the economic impacts of travelling in a global context.

This thesis aims to uncover if international travelling fosters international trade by analysing if the amount of tourism arrivals in a country has a positive effect on the country's value of exports going to the EU15 countries. The time period covered is the years between 1995-2011.

Previous research shows that the causality running from travelling to trade could be one or two-way, which means that our regression models are likely subjected to complications related to endogeneity. We attempt to solve this by using two different variables in order to capture travelling frequency. First we regress with respect to the amount of tourism arrivals, and additionally with respect to an instrumental variable consisting of the amount of World Heritage Sites. Our results show that the amount of tourism arrivals has a positive effect of the value of bilateral trade, while the instrumental variable does not have a significant effect.

Key words: International travelling, bilateral trade, gravity model, international economics.

Thank You

This is particularly devoted to my supervisor Maria Persson who has contributed with countless of valuable comments. But also to friends and staff at the Department of Economics at Lund University, for creating a stimulating environment, and offering good inputs and suggestions.

Andreas Rosén Björkhage

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1. Introduction

The travelling industry is an important sector in the world economy. When people travel, their presence often result in various kinds of purchases and transactions, which in turn becomes a resource that has the potential to affect the income levels of the respective host countries.

Travels can be made due to several reasons, they could for instance be business or leisure related. If a businessman travels in order to establish a partnership with a foreign firm, or a tourist is getting introduced to previously unfamiliar products. Both these travels have a trade enhancing potential, either by establishing partnerships between foreign and domestic firms, or by creating new preferences towards foreign products and markets.

The travelling industry will likely continue being an important sector in the future, as the amount of travels made during the last two decades has been increasing (see figure 2), and is predicted to increase further (UNWTO, 2013). This means that if the previously mentioned effects exist, we can expect the value of trade related commerce to rise along with the amounts of travels made.

There have been several studies focusing on the topic of a potential positive relationship running from *bilateral trade* to *bilateral travelling*, some of which have achieved results supporting that bilateral trade has a positive impact on tourism demand. This thesis will reverse the relationship and attempt to empirically test if travelling has a positive effect on the value of one country's bilateral trade flows. The question this thesis aspires to answer is:

"Does international travelling have a positive impact on international trade?"

The method used consists primarily of the "gravity model of trade", which is to be considered a well-established empirical model within the field of international economics. Previous studies that has used the gravity model with tourism data, lifts the fact that the regression model is likely to be subjected to endogeneity issues. This is relevant as this directly concerns the model also used in this thesis.

If tourism demand is dependent upon variables such as: cost of transport, (to the host country) price index, and income levels in tourism generating countries (Leitão, 2010, p.3), then we can expect trade to effect tourism demand, and vice versa.

In an attempt to counteract the expected bias resulting from the endogeneity issues, we will run our specified regression model twice with two different variables used in order to explain travelling frequency, once with tourism arrivals, and once with the amounts of World Heritages sites (WHS), which are announced by the United Nations Educational, Scientific and Cultural Organization (UNESCO). The latter being an instrumental variable, that can be

explained as a variable we find it reasonable to assume to be positively correlated with the amount of travellers visiting a country, however uncorrelated with the one country's bilateral trade flows.

Our sample of importing countries consists of the initial fifteen European countries that laid the foundation for what is today the world's largest trading block, namely the EU15. The exporters consists of over one hundred additional countries, including the main trading partners of the EU15. By fixating our attention on countries that is largely committed in an extensive flora of trade agreements, and trade related commerce, we increase the likelihood of finding evidence supporting the relationship we wish to uncover. The study covers the years between of 1995-2011.

Our obtained results indicate that the amount of tourism arrivals has a significant positive effect on the value of bilateral trade existing between the included countries. The instrumental variable regression output shows that the effect of the amount of WHS on the value of bilateral trade is not significant at any level.

However the effects of traveling on trade is rather scan, which suggests that its economic significance is doubtful in the short run, although relevant in the long run.

The remainder of the thesis is organized as follows: The next section named background discusses the theoretical reasons to expect tourism to enhance trade. The third section presents previous research, while the following section outlines the methodological processes, its shortcomings, and the model specification. The fifth section presents the empirical results. The sixth, and last section consists of a summary and conclusion.

2. Background

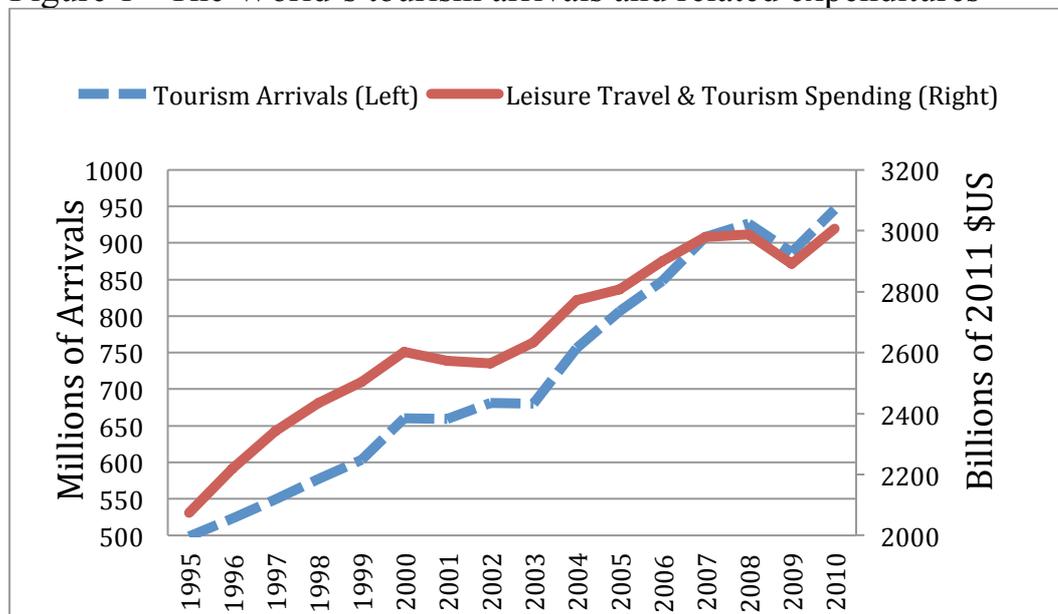
2.1 Empirical evidence

The value of international travelling and related expenditures are increasing. The World Trade Organization has collected data regarding international tourism arrivals that reflects this progress. The definition of tourism used by the WTO is relatively comprehensive and includes travels made due to reasons such as; visits, leisure, medical-related, studying, religion, business, sports, and other types of work related assignments. The data shows that the amount of international tourism arrivals increased from 536 million in 1995 to approximately 803 million in 2005, demonstrating an increase of approximately 50% in ten years. The calculated value from receipts due to worldwide tourism in 2005 amounted to US \$676 billion, while the same value ten years earlier was approximately US \$404,8 billion, demonstrating an increase of 67% (Kiyong 2008, p. 542). There are thus reasons to believe that the contribution of international tourism has the possibility of making an impact on the

global economy. This might not come as a surprise since the service industry along with the international tourism industry constitute an essential part of all the on-going international transactions (Kiyong, 2008, p.555).

The figure below illustrates the world's total tourism arrivals (the blue dotted data series), which corresponds with the left vertical axis, and the world's total expenditures of leisure travel and tourism related activities (the red data series) corresponding to the right vertical axis. The figure shows the increasing trend of both the data series over the recent decade, aside from the occasional declines during the time period near September 11th 2001, and the financial crisis culminating in 2008, which is expected to have a negative effect on both the data series. This confirms that the data from the WTO, the World Travel and Tourism Council the World Bank are not contradictory, but rather unequivocal.

Figure 1 - The World's tourism arrivals and related expenditures



Data Source: The World Bank - tourism arrivals, The World Travel and Tourism Council - total expenditures of leisure travel and tourism related activities¹

This progress is projected to continue. The United Nations World Tourism Organization (UNWTO) has published a report presenting long-term forecasts of tourism trends, named "Tourism towards 2030". This report suggests that tourism arrivals over the period of 2010-2030 is predicted to increase with an average of 3,3% each year within the presented time span (UNWTO, 2013).

Even though the increasing trend considering tourism arrivals is similar in a global perspective, the global distribution of tourism arrivals varies. As the following table shows,

¹ N.B. data on spending related to leisure travel and tourism related activities pre 1995 was dropped,

the tourism arrivals of the world are primarily concentrated within high and upper-middle income countries.

Table 2.1 - Distribution of tourism arrivals on income 2011.

Income groups	Millions of tourists received in 2011	Proportion of total
High income	630,5	0,62
Upper middle income	261	0,26
Lower middle income	97	0,10
Low income	23	0,02
All income groups	1011,5	1

Data source: The World Bank - tourism arrivals in 2011.

2.1.2 Empirical descriptions of traveling

Our version of travelling flows will be partly measured in terms of "tourism arrivals". By choosing this as our variable for travelling, we neglect the opportunity to disaggregate the data in order to control for the different kinds of travelling purposes. Though, it will not be a problem considering the question this thesis seeks to answer. Since the ambition is to empirically uncover a possible causality between (all) travelling (purposes) and bilateral trade.

It can be discussed whether tourism arrivals is a variable that captures travelling in an appropriate fashion, as it can be influenced by activities we do not wish to account for. The World Bank recommends anyone using this data to be cautious when comparing countries, as the method used when collecting the data differs (e.g. some countries presents data collected at the borders, while other gathers data from tourism accommodation establishments). In order to explicate some problems that might appear when using tourism arrivals as an explanatory variable, we set up three different settings where unwanted effects influence this measurement, or when the measurement is unable to capture what we wish to observe.

Crossing borders - If the data covering tourism arrivals is measured by counting the amount of people crossing one country's national border, this data will be influenced by people crossing the border for reasons that are not related to travelling in the sense we wish to account for. Imagine e.g. motor trucks used in order to transport intermediate goods (which will be counted as a new tourist arrival each time that driver crosses the border) between two neighbouring countries. Even though this type of travelling is indeed trade related we do not expect this to contribute to trade through the same mechanisms presented in section 2.1. Furthermore, by calculating the amount of people crossing the border you are likely to

overestimate the real value of the amount of travellers visiting the country, if the country is located in a dynamic economic region.

Inbound tourism - The variable description available at the World Banks webpage is stating that the tourism arrivals variable is affected by domestic travelling. But since we are unaware of the method used in order to collect the data for each specific country, we will not be able to separate the effects between foreign, and domestic traveling.

Travelling without hotel stay - Not all types of travelling means that you'll stay at a hotel every night. This means that travellers who enjoy backpacking and hiking, might not get fully captured by the hotel accommodation statistics. . If we include travellers visiting friends and family, we can assume that there are more travellers that are unlikely to stay at a hotel. Therefore we have reasons to expect this measurement to underestimate the real value of amounts of travellers visiting a country.

Since the method used when collecting the tourism arrival data differs between the countries included in our sample, we cannot be completely sure of how these observations relate to each other, which complicates the interpretation.

Further, it is important to question how well tourism arrivals captures the components that theoretically have the potential of being trade enhancing (these components will be thoroughly discussed in the next section), and how these features manage to operate in an economic context?

In order to clarify, if a tourist gets introduced to a new foreign product while traveling, and there is no domestic market for that product, the preference mechanism is likely to get disrupted. One might argue that companies that have an economic incentive to meet this demand can solve this. But, there can be institutional frameworks that impede the function of the preference mechanism. Domestic laws might prohibit the purchase or trading of a certain product, or customs and/or taxes making the product uncompetitive causing the individual to substitute the foreign good in favour of a local or regional alternative. An example of the latter case is the effects of the CAP within the EU, which most likely impedes the preferences for consumers within the EU to result in the consumption of certain foreign food products (see e.g. Baldwin & Wyplosz, 2012, pp. 241-264).

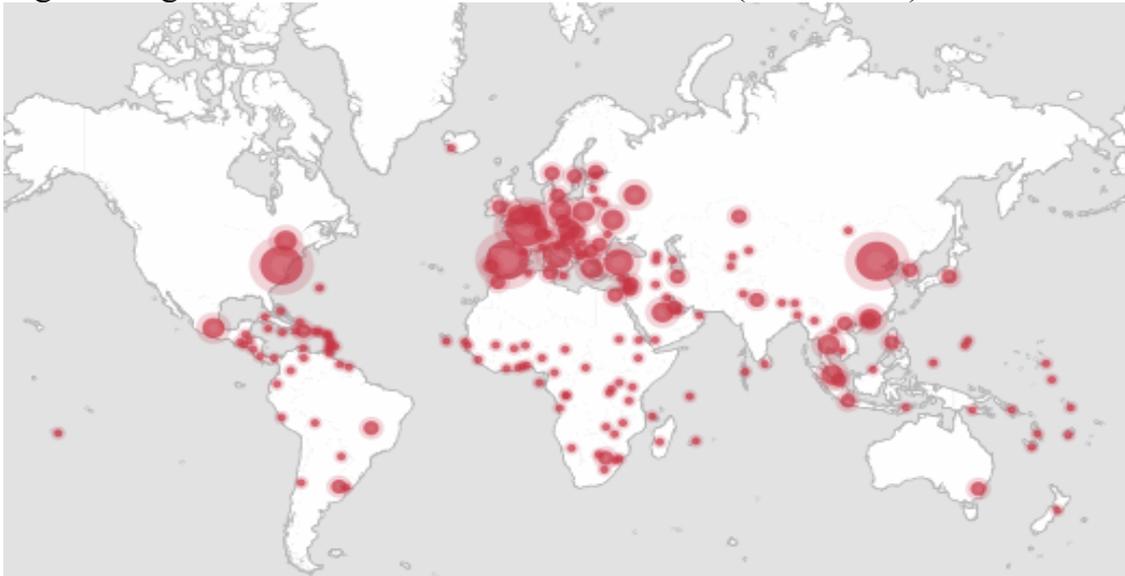
Therefore it is important to state that all the potentially trade inducing mechanism caused by travelling, is more likely to function in a context where political interventions minimizes the risk of subduing these effects.

A rather important shortcoming that needs to be presented is the fact that our data of imports and exports is bilateral, while the data covering tourism arrivals is country specific. This means that if e.g. all of Sweden's imports come from China, while China at the same time receives an extensive amount of travellers from e.g. Japan, Vietnam, and India. Our

model will tell us that high numbers of bilateral trade between Sweden and China can be explained by high numbers of tourism arrivals in China. The ideal scenario would be to explain bilateral trade flows with bilateral travelling data. Unfortunately this type of data is not available. However, in the absence of a better available option, we will proceed with this in mind.

The following map illustrates the locations in which where the worlds tourism arrivals are concentrated.

Figure 2 - global distribution of tourism arrivals (2009-2013)



Data Source: World Bank: World Development Indicators

As we can see there is a heavy concentration of tourism arrivals in the European area. When looking at the world map above it is important to keep in mind that EU travelling is highly integrated. In 2005 Eurostat published a statistical report called "Inbound and Outbound tourism in Europe", which showed that 87,5% of all nights spent in collective accommodation in the EU-25 region were either spent by residents of other EU member states (28,4%) or residents of the home country (59,1%). Non-resident tourists from countries located outside the EU spent the remaining 12,5% of the total nights spent (Eurostat, 2007).

This is important to be aware of when analysing our obtained results, since we are more concerned with (European) outbound tourism arrivals in countries outside of the EU. Further we can state that most of EUs top trading partners outside of Europe (Brazil, China, Korea, Russia, and USA)(European commission, 2012) receives a substantial amount of tourists, which makes it more possible to find a correlation between the travel and trade flows existing between them.

2.1.3 Theoretical reasons to expect travelling to affect trade

Some of the reasoning regarding why travelling has the potential to promote trade is not complicated. However, there are additional reasons that might not be as obvious that will be

presented. In the following table we have listed the theoretical reasons to expect travelling to enhance trade, and will refer to the respective arguments when discussing them in the following text.

Table 2.2 - Summary of trade promoting elements due to travelling

Reason	Descriptions
1. Foreign currency	When travellers spend money abroad, they provide the host country with foreign currency. A resource that can be added to the monetary reserve, or to import other goods.
2. Business travelling	The idea is straightforward. Business travels is made either to sell (leading to export sales), or to buy a product from a foreign country (leading to import purchases). Either way these travels have the potential to induce bilateral trade flows.
3. Preferences	When travellers visit other countries, they get introduced to and consume local goods, which have the potential to influence their preferences. Meaning that tourism and business travels have the potential to foster trade in goods and services, through preference mechanisms.
4. Decrease in transportation costs	Previous studies indicate that the transport costs of goods decreases between two countries that trades to a high degree. If people travel to a higher degree, the increased demand for transport services might bring new investments to the transport sector, which is likely to result in a lower unit cost (cost per person).
5. Increased knowledge of foreign markets	People that have experienced other cultures, and other markets, have better odds in finding profitable business opportunities and make use of them. Which is also expected to reduce different types of transaction costs.

If travellers spend money in the host country they are visiting, it receives foreign currency, which provides the country both with foreign monetary reserve as well as tax revenues. These incomes can in turn be used to buy imports that otherwise might not would have

happened, thereby contributing in a straightforward fashion to economic growth (see reason 1).

When considering why travelling may have the ability to promote trade, it is suitable to bare the travels made by early merchant travellers in mind. Those explorative voyages can be seen as early business traveling, which in turn is able to encourage trade in the following fashion.

If the travel is made in order to buy or to promote a certain product there will be a direct link between travelling and trade if this business travel turns out successful. If this transaction would generate profit for the business traveller, basic economic theory states that other actors will have an incentive to follow the same profit generating behaviour (with the postulation that the market is somewhat competitive)(see motivation 2), encouraging further travelling. Business travels have the possibility to encourage people to travel to the host country for other reasons than business only, if friends or family who seek adventure or leisure accompanies the business traveller (Kullendran and Wilson, 1998, p.1002).

Besides the previous mentioned effects is the development of the tourism industry in the host country. If the industry grows it will presumably increase its imported volume of foreign goods and services. It is also worth mentioning that more foreign travellers in a host country is more likely to lead a country to receive a good image for its goods and services throughout the world, and by that create a sound foundation for latter trade opportunities (Kullendran and Wilson, 1998, p.1002).

Travelling is in turn said to nurture cultural similarities, which in the long run can be expressed as common official languages or similar institutional arrangements etc. Eilat and Einav (2004, p. 1315) claims that cultural similarities have the potential to stimulate stability in a region, and evoke peace, which is a necessity for every market to function properly.

The simple trade theory and complementary research states that the positive link between trade and tourism is due to that bilateral trade brings a preference for home-market products (see motivation 3)(Leitão, 2010, p. 65). Further it is assumed that large flows of bilateral trade decreases transaction costs over time, which has been shown to be correct in the case of some selected Latin American countries trading with the EU (see motivation 4)(Inmaculada and Celestino, 2005, pp. 369-370).

When transporting assembled products or raw material for instance, the transport costs can be lowered by e.g. make the logistics more efficient. When transporting people these approaches may not be as useful, since comfort is a factor that the transport companies need to account of. Still, if we are to believe that the decrease in transaction costs is partly due to that companies compete and additionally make investments related to transport facilities, there is no reason to presume that this progress is solely restricted for transaction costs related to products and materials only. Since some of the infrastructure used in order to

efficiently transport goods, e.g. railways, airports, docks, and roads, is used extensively when people travel as well.

In order to make the first mentioned result regarding home-market preferences a relevant feature of this thesis we have to begin by explaining some conclusions drawn from studies conducted on trade and migration. These highlight two channels in which immigration from one home country to a host country positively effect exports and imports flowing between them (Gould, 1994, pp. 303-304).

The first is associated by the notion that immigrants bring with them a preference for home country products, thereby naming it the preference channel. While the second underlines the idea that immigration might reduce transaction costs between the two countries, mainly through social and ethnic information mechanisms. This could e.g. be knowledge spill overs of the foreign market that has the potential to reduce costs associated with collection of information of export market potential etc., (Rauch, 1999, p. 33), (Faustino and Peixoto, 2013, p. 166).

If we are to believe that some of these effects can be expected in the case of tourism as well, if not fully but to a limited extent, we have further reasons to expect that there is a positive relation between tourism traveling and trade. Since tourists' visiting a foreign country gets exposed to foreign products, lifestyles and culture, which all have the possibility to affect their preferences, although this is not identical to a home country preference bias as the exposure is not long lasting. However, the decrease in transaction costs linkage is well suited for business travellers, and entrepreneurs, especially if the traveling is long lasting. As it is rational to assume that the individuals occupied within these sectors are more likely to discover and exploit business opportunities.

Studies on regional economics have shown that information gaps on how to operate on foreign markets might be lacking in both rural and urban areas, characterized by economical struggles (Weiler, Scorsone, and Pullman, 2000, p. 371). Furthermore, Lall and Latsch (1998, p. 11) conclude that exchange students have the potential to fill in the gap regarding market information and thereby help to improve trade.

We intend to conclude this chapter by briefly presenting an alternative trade theory formulated by the former Swedish minister of trade Staffan Burenstam Linder. This theory emphasises the linkage between bilateral trade and per capita income. Linder argues that this relationship is what determines which countries that will be trading with each other. Suggesting that countries with similar income levels will demand and trade similar goods, while countries with diverging income levels will not demand the same type of goods and will therefore not have the same incentive to trade, a concept he refers to as "overlapping demand".

One of the statements that Linder argues for, and that is interesting for us to test, is

summarized in the following quote:

- "*A capital-abundant country will tend to have comparative advantages in products not demanded in the labour-abundant country, and vice versa.*"

(Linder, 1961, p. 129)

It is rather controversial to argue in favour of that countries with diverse income levels will not be able to trade at all (Linder 1961, p. 137) or to a limited extent due to different demand structures. Particularly when considering that each economy is inhabited by individuals with varying income levels. This raises questions on how to define overlapping demand, and how much domestic demand directed at a certain good is needed in order for trade to take place? Regardless of the interpretation, this trade theory provides this thesis with a testable theoretical prediction by focusing on demand based bilateral trade flows. Since most individuals base their tourism and traveling decisions mainly on their respective preferences.

Furthermore, we know that travelling takes place between countries of dissimilar income levels, and that previous studies have indicated that tourism is potentially positively correlated with GDP and thereby income growth (although mainly for high-income countries)(Caglayan, Sak and Karymshakov, 2012, p. 598).

If we are able to find empirical results showing that travelling has a positive effect of the value of bilateral trade flows even for low-income countries trading with the EU15, it would make us more reluctant toward the theory stipulated by Linder.

3. Previous studies

This section presenting previous studies has been separated into two parts. The first part covers studies aiming at uncovering the causality running from travel to trade, while the other presents studies focusing on the opposite relationship.

3.2 Studies focusing on the travel - trade link

Kullendran and Wilson (1998) attempted to empirically test three hypotheses regarding tourism and trade. That (i) business travel leads to international trade, (ii) international trade leads to international travel, and (iii) international travel, other than business leads to international trade. They used cointegration and Grangercausality time series analysis in order to study bilateral trade and travel flows between Australia and its four main trading

partners. They obtained results supporting the first and the third hypothesis, demonstrating that tourism was to be considered trade enhancing.

Fischer and Gil-Alana (2011) published a paper that aspired to answer if German tourists travelling to Spain had any impact on the German demand for Spanish wine. The time period they covered began in January 1998, and ended in November 2004. Their results indicates that tourism has an increasing effect on demand of Spanish wine, which speaks in favour of the hypothesis that tourism has a direct effect on the value of the host country's export flows.

Shan and Wilson (2001) attempts to straighten out the endogeneity issue present when performing a regression analysis on the value of bilateral trade and travel data, a problem which is present in most (if not all of the) studies using the gravity model of trade and time series analysis. In theory the causality between trade and tourism can run in either or both directions. The results they obtain conclude that there is a two-way causality present between travel and trade.

3.3 Studies focusing on the trade -travel link

There are numerous studies to be found that establishes the relationship amongst bilateral trade and tourism demand. Many of which base their results on time series analysis.

Leitão (2010) reveals that bilateral trade have had a positive impact on the tourism demand for other European members in the case of Portugal, and further states that high-income levels in the origin country is positively correlated with increasing tourism demand.

Phakdisoth and Kim (2007) use both static and dynamic data in order to estimate tourism demand equations for tourism in Laos. They conclude that tourism demand in Laos is most dependent upon variables, such as: destination risk, communication possibilities for transportation infrastructure, geographical distance, and bilateral trade.

4. Method

4.1 The Gravity Model of Trade

The gravity model of trade is well established within the international economic literature, as it has been used frequently for at least twenty-five years. Leamer and Levinsohn have explicitly recognized that the gravity model has produced some of the clearest and robust findings in empirical economics (UNCTAD, 2013, p. 3). Over the previous half century the gravity model has given rise to thousands of publications covering numerous sectors, time periods and regions. The model is constructed in an econometrical fashion, and is commonly

used in order to explain the effects or variations of the value of trade after the implementation of e.g. free trade agreements, customs unions, or trade facilitating arrangements.

Furthermore, the gravity model is no longer merely concerned with trade in goods, but has recently been successfully applied when analysing trade in services as well (e.g. Kimura and Lee, 2006).

What explains the popularity of the gravity model in empirical research? First, the gravity model has a substantial empirical explanatory power, or high R^2 values (Van Bergeijk, 2010, p. 3). Second, it is easy to apply. Third, it has sound empirical underpinnings (Van Bergeijk, 2010, p. 88).

The gravity model is originally built upon the concept of gravity first formulated by the famous physicist and mathematician Isaac Newton, but was first introduced in the economic science in 1962 by the Dutch economist Jan Tinbergen (Tinbergen, 1962, p. 264). The basic form of the gravity equation that were formulated can be presented as follows:

$$T_{ij} = \frac{GDP_i^\alpha * GDP_j^\beta}{D_{ij}^\theta}$$

Where T_{ij} is an expression for the existing bilateral trade flows, between country i , and country j . GDP_j stands for the gross domestic product of country j , thus representing its economic size. D_{ij}^θ indicates the geographical distance between the two respective countries.

A conclusion that can directly be drawn out of this expression is that the bilateral trade between country i , and country j is proportional to their respective economic size and at the same time inversely affected by the distance between them. Spatial interaction is the same as the gravitational force, which in turn is characterized by the masses of the economies and the distance; the mass here can actually be expressed as capacities, opportunities, or in such a vague term as economic "attractions". Isard explicates this line of reasoning in his work from 1998 (Isard, 1998, p.198).

The formula is rather intuitive, as it tells us that a larger economy, which is inhabited by more consumers, will demand a higher amount of goods and services, leading the economy to both attract more goods, and push away more goods from and towards other (large) economies. This is expressed as higher proportions of exports and imports between two relatively large economies. It further tells us that economies that are located further away from each other tends to trade less, as the cost of trading raise with distance. This makes

"distance between each respective capital" a useful proxy that compensates for the absence of data explicitly covering transportation costs.

4.2 Shortcomings

The gravity model has so far exclusively been described as a solid empirical method that works well with the current available trade statistics. There are nonetheless questions that the model is not able to answer, and circumstances where the model provides doubtful results.

Even though the use of econometrics helps us isolate the marginal effects of our included independent variables (x_i), upon our dependent variable (Y), it will not uncover the causality that exists between these variables. The direction of the causality is most certainly interesting in all regression analysis, as in our case where we wish to answer if international travelling fosters international trade. Econometric analysis does not provide any answer regarding the direction of causality. In some cases this might seem as a trivial matter, but in our case it is a problem of concern, since the causality cannot be rationally assumed.

Biasness is also a concern, which can be caused by a misspecification of the estimated regression model.

If a variable that is ought to be included is left out of the model our regression estimates will in general turn out to be biased. Further, this will result in invalid t-tests due to that the estimated standard errors will be incorrect. In the opposite situation, if you were to include a variable that should not be included in your estimated model, OLS analysis will generally result in inefficient regression coefficients, although not biased. Meaning that the t-tests can be used without any particular complications, besides the fact that due to the poorly preformed estimation, they will tend to be relatively large (Dougherty 2011, pp. 251-254).

4.3 Model specification

The gravity equation used in this thesis is based on the following formula, where index i represents the importing countries, and index j denotes the exporting countries, in year t :

$$\begin{aligned} \ln T_{ijt} = & \beta_1 + \beta_2 \ln TA_{jt} + \beta_3 \ln GDP_{it} + \beta_4 \ln GDP_{jt} + \beta_5 \ln Pop_{it} \\ & + \beta_6 \ln Pop_{jt} + \beta_7 \ln Dist_{ij} + \beta_8 Border_{ij} + \beta_9 Comlang_{ij} \\ & + \beta_{10} Landlocked_{ij} + \beta_{11} Colony_{45_{ij}} + \beta_{12} EU27_{jt} + \beta_{13} GSP_j \\ & + \tau_t + \varepsilon_{ijt} \end{aligned}$$

Each variable will be presented, and followed by each hypothesis being tested, and the expected effect:

Table 4.1 - Summary of variables included in the Gravity Model

Variable	Variable Description	Hypothesis	Expected effect
$\ln T_{ijt}$	Stands for the value of the bilateral trade existing between country _{<i>i</i>} and country _{<i>j</i>} over the year <i>t</i> (measured in millions of euros).		
$\ln Ta_{it}$	Stands for the amount of tourists that arrived in the exporting country _{<i>i</i>} in year <i>t</i> .	The amount of tourism arrivals in the exporting country has an impact on the value of the bilateral trade.	Positive
$\ln GDP_{it}$	Stands for the real gross domestic product of the exporter (GDP_{it}), in year <i>t</i> (measured in millions of 2011 US\$).	The size of the exporting country's economy has an impact on the value of the bilateral trade between the exporting and importing country.	Positive
$\ln GDP_{jt}$	Stands for the real gross domestic product of the importer (GDP_{jt}), in year <i>t</i> (measured in millions of 2011 US\$).	The size of the importing country's economy has an impact on the value of the bilateral trade between the exporting and importing country.	Positive
$\ln Pop_{it}$	Stands for the amount of people in the importing country _{<i>i</i>} 's population in year <i>t</i> .	The size of the importing country's population has an impact on the value of the bilateral trade.	Positive
$\ln Pop_{jt}$	Stands for the amount of people in the exporting country _{<i>j</i>} 's population in year <i>t</i> .	The size of the exporting country's population has an impact on the value of the bilateral trade.	Positive
$\ln Dist_{ij}$	Stands for the geographical distance between country _{<i>i</i>} and country _{<i>j</i>} . Measured as the amount of kilometres between the two respective capitals.	The geographical distance between the two respective capitals has an impact on the value of the bilateral trade.	Negative
$Border_{ij}$	Stands for the dummy variable reflecting if the countries are	The fact that the two countries share common	Positive

	neighbours, or not.	borders has an impact on the value of the bilateral trade.	
$Comlang_{ij}$	Stands for the dummy variable reflecting if the two countries share a common official language.	The fact that the two countries share a common official language has an impact on the value of the bilateral trade.	Positive
$Landlocked_{ij}$	Stands for the dummy variable reflecting if the exporting country is landlocked, meaning that the country lacks direct access to a seacoast.	The fact that the exporting country is landlocked has an impact on the value of the bilateral trade.	Negative
$Colony_{45_{ij}}$	Stands for the dummy variable reflecting if country j 's was under country i 's colonial influence in the year of 1945.	The fact that the exporting country was under colonial influence during 1945 has an influence the value of the bilateral trade.	Uncertain
$EU27_{jt}$	Stands for a dummy variable reflecting if the exporting country has become a member of the EU27 after time t .	The fact that the exporting country is currently a member of the EU27 has an impact on the value of the bilateral trade.	Positive
GSP_j	Is a dummy variable representing countries that fulfil the requirements of being offered generalized system of preferences-status. This offers substantial tariff reductions to developing countries. N.B. does not capture the <i>effects</i> of being offered GSP status, but is rather an indicator of being a least developed country (LDC)	The fact that the exporting country is fulfilling the requirements of obtaining GSP status has an impact on the value of the bilateral trade.	Negative
$\ln WHS_j$	Our Instrumental variable that stands for the logarithm of the amount of WHS located in the exporting country j .	The amount of world heritage sites in the exporting country has an impact on the value of the bilateral trade.	Positive
τ_t	Represents our time dummy variables, one for each year included.		
ε_{ijt}	Stands for the residuals over time t .		

The variables listed in the table are assumed to be able to explain a significant amount of the variability in the value of one country's bilateral trade flows, and their respective hypothesis will be empirically tested in the following section.

Note however, these are not said to explain the entire picture, meaning that there will be additional effects, which this model will be unable to capture. In order to account for some of this unknown variation, we add dummy variables for each of the observed years, which are represented by τ_t .

We expect the estimated coefficients to be positive for the GDP, population variables, and negative for the distance variable because reasons already mentioned in 4.1.

The effect of sharing a common border means per se that the negative effect of distance between the respective trading partners is reduced, and it therefore expected to have a positive effect. So is the expected effect of sharing a common official language, since this facilitates communication between the trading actors, which is likely to lead to a reduction of different kinds of transaction costs, related to translation and time consuming procedures resulting from language barriers.

Landlocked countries are more dependent upon the infrastructure and trade policies of neighbouring countries. This does not necessarily have to be an obstacle for trade, but if a landlocked country is located in a region where political stability is absent and armed conflicts are present, or where the neighbouring countries lacks functional infrastructure, the trade opportunities for the landlocked country is expected to drop.

Being under colonial influence means that institutions, economies, and languages are connected and influenced by the country imposing this structure. Previous studies have not shown unequivocal results regarding the trade related effects between former colonies and colonizers. Some results indicate that former colonies trade less with the former colonizing country after achieving independence (see e.g. Head, Mayer, and Ries, 2010). While other studies indicate that they still trade to a high degree (see e.g. de Sousa and Lochard, 2008). Since this obviously is a variable affecting bilateral trade, we find it necessary to include it in our model as well.

Becoming a member of the EU 27 is expected to have a positive impact on the value of bilateral trade between the new member country and the previous members states. This is due to the fact that the previous import and export duties between them are eliminated.

If the exporting country fulfils the requirements of obtaining GSP status, it means that it is to be considered a LDC, and the GSP dummy variable is therefore expected to have a negative sign.

If the WHS is sufficiently correlated with the tourism arrivals variable, and turns out to be an appropriate IV variable, we expect its coefficient to have a positive sign.

The estimated model has been made linear through a logarithmic transformation, and is therefore called a log-linear model. All of the estimated $\hat{\beta}_i$ are calculated through OLS.

4.4 Instrumental Variable

What we frequently refer to as "endogeneity issues" originates from previous studies (see section 3.3) showing that increased bilateral trade induce tourism demand, and therefore also travelling.

These studies are in general based on the tourism demand model, some of its components will be briefly presented below:

The general tourism demand model is a function of the following variables:

$$DT_{ij} = f(Y_j, TC_{ij}, RP_{ij}, ER_{ij}, QF_i)$$

Where: $\frac{\partial f}{\partial Y_j} > 0$, $\frac{\partial f}{\partial TC_{ij}} < 0$, $\frac{\partial f}{\partial RP_{ij}} < 0$, and $\frac{\partial f}{\partial ER_{ij}} > 0$

And where each variable represents:

- DT_{ij} demand for international travel services by origin j for destination i.
- Y_j income of origin j.
- TC_{ij} transportation cost between destination i and origin j.
- RP_{ij} relative prices (i.e., the ratio of prices in destination i to prices in origin j and alternative destinations).
- ER_{ij} currency exchange rate, measured as units of destination i's currency per unit of origin j's currency.
- QF_i qualitative factors in destination i.

(Qu and Or, 2006)

All of our importing countries are high income countries that are extensively committed in trade related commerce, this means that the tourism demand for travelling towards the exporting countries, is induced by the income variable (Y_j) in the function above.

Furthermore Eilat and Einav (2004) as well as Phakdistoth and Kim (2007) found that bilateral trade has a positive effect on tourism demand, which could also be an example of a qualitative factor, (but is more likely to affect tourism demand through, the income, and relative price, and exchange rate variables). This is explained by better origin-destination economic relationship could encourage greater understanding between countries and therefore attract more tourists from trading partner countries (Phakdistoth and Kim, p. 231, 2007). This is an argument that in turn is similar to what we have referred to as "*better*

knowledge of foreign markets" (see reason 5 in table 2.2). We also note that the argument regarding the lowering of transportation costs occurs here as well, demonstrating that some effects that are assumed to positively influence trade, is also assumed to influence travelling.

Therefore, we expect our gravity equation to suffer from endogeneity issues that will result in a correlation between the error term ε_{ijt} and the independent variable TA_{ijt} . In an attempt to avoid (or at least reduce) this we make use of what is called an instrumental variable (IV) and use the method of two-stage least squares (2SLS). If this IV is appropriate this will make us able to achieve more consistent estimates of our independent parameters. Replacing the variable causing biased estimates with one that is positively correlated with the initial one, but uncorrelated with the dependent variable does this.

Finding a suitable IV variable is not a simple task, since it has to satisfy the following three criteria in order to function correctly:

- It should be correlated with the variable being instrumented, and the higher the correlation, the better.
- It should not be correlated with the disturbance term.
- It should not be an explanatory variable on its own.

(Dougherty, 2010, pp.318)

One IV that has the possibility to function as a suitable replacement for the tourism arrival variable is the amount of UNESCO's world heritage sites that is located within the exporting country.

This variable has been previously used in studies focusing on estimating tourism demand, however not in a gravity equation as an IV variable for tourism arrivals.

If we are to assume that the World Heritage Sites are attractive travelling destinations, then we can expect some, but not every traveller to consider them when choosing where to travel.

There are reasons to assume that this variable is not directly correlated with the value of bilateral trade, as long as there is no production associated with the heritage site, (which in turn are traded with). But since the WHS's are described as "properties forming part of the cultural and natural heritage which the World Heritage Committee considers as having outstanding universal value"(UNESCO, 2014), this mainly involves properties such as: mountains, lakes, forests, monuments, or cities etc. which makes the previous cause of doubt unlikely.

It is important to keep in mind that in relation to tourism arrivals, this variable is probably to a higher degree positively correlated with leisure travelling, than e.g. business traveling. Thereby making us expect results that are not as clear as those resulting from using tourism arrivals.

The model using the instrumental variable is similar to the baseline model presented in 4.3, but with $\ln WHS_{jt}$ replacing $\ln TA_{jt}$, making this gravity equation the complimentary IV version of our baseline model.

4.5 Data and sample

Our sample consists of 137 countries, whereof 15 are the importing EU15 countries, and the remaining countries are the exporters trading with the EU 15. The years covered is 1995-2011, the years included for each country depends on the availability of the data.

The databases mostly used in order to collect the data where Eurostat, World banks database over the world development indicators, and CEPII's database specifically constructed to use when working with gravity models.

The appendix lists all the included importing and exporting countries, and shows explicitly where to find the data sources. All of which can be electronically accessed on the web.

5. Descriptive statistics

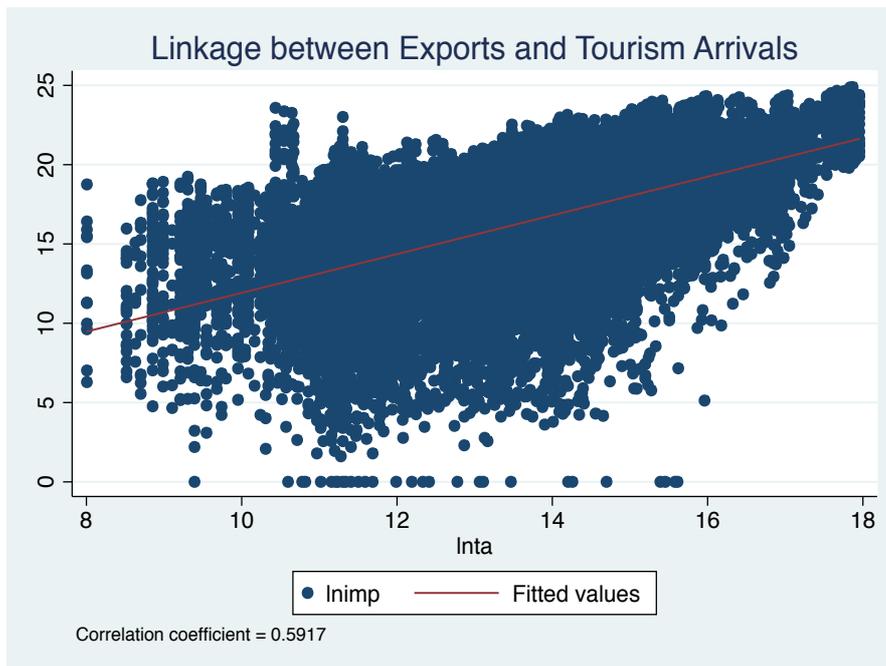
Before we present the regression results, we wish to ensure if our variables of interest shows any tendencies of having the expected positive effects on the value of bilateral trade. Therefore we wish to answer:

- If there is a positive correlation between the value of bilateral trade and the amount of tourism arrivals?
- If there is a positive correlation between the value of bilateral trade and the amount of WHS?

Plotting the value of the bilateral exports with respect to tourism arrivals, and the amount of WHS does this.

The results are presented below.

Figure 3 - Correlation between exports and tourism arrivals



The figure includes the value of the logarithm of bilateral imports listed on the Y-axis, and the value of the logarithm of each country's amount of tourism arrivals during the selected time period is listed on the X-axis.

The trend is clearly shown, higher values of bilateral trade are more frequent among countries receiving a larger amount of travellers. The fitted red line has a positive slope, indicating a positive correlation between the two variables, with a correlation coefficient approximately equal to 0.6.

Figure 6.4. illustrates how the value of bilateral trade appears to be positively correlated with the amount of WHS. In order to assure that the WHS variable is not an explanatory variable of its own, and thereby violating one criterion for good instrumental variables, we have to make sure that WHS is positively correlated with the amount of tourism arrivals. According to figure 6.5, it appears to be correct.

Figure 4 - Correlation between exports and WHS

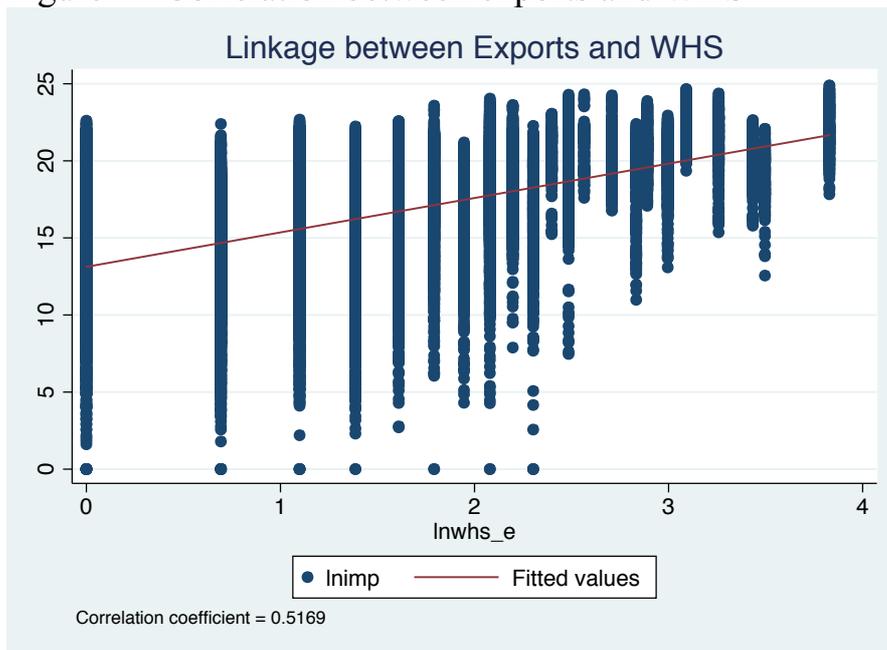
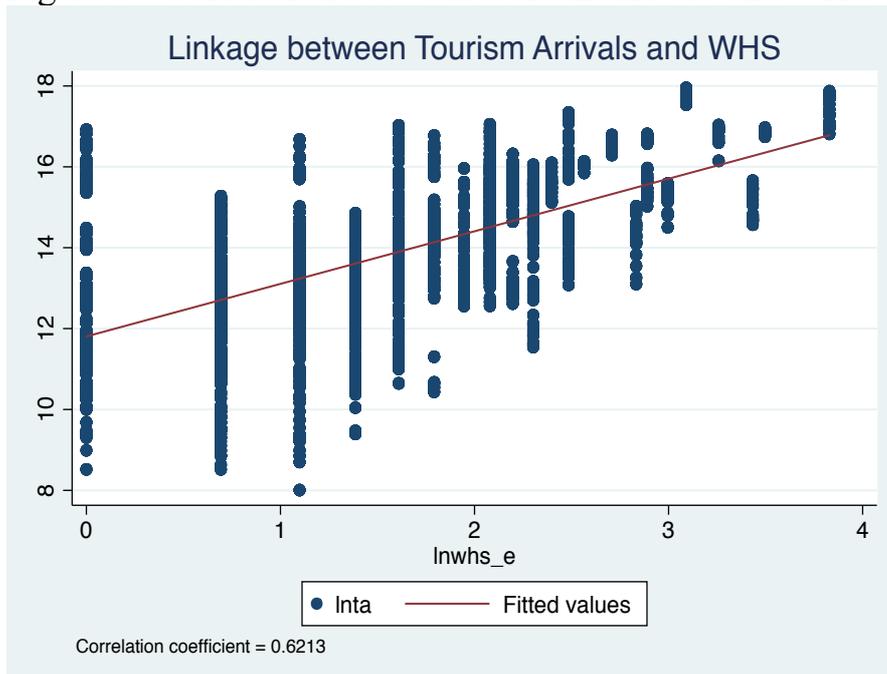


Figure 5 - Correlation between tourism arrivals and WHS



The regression outputs for the four different regressions are presented below. *Model 1* is our baseline model (see section 4.3). *Model 2* is the IV regression model, which is similar to the baseline model, but replaces the tourism arrival variable with the amount of WHS. In *Model 3* we regress over the same variables present in model 1, and adds four income dummy variables for low, lower-middle, upper-middle, and high-income countries (l_i , lm_i , um_i , and h_i). Where the high-income dummy is dropped and used as the reference category. *Model 4* and model 3 are similar, with the exception that model 4 includes interactive dummy

variables consisting of the amount tourism arrivals multiplied with the income variables (lnta_l, lnta_lm, and lnta_um). These are used in order to analyse if the economic effects of tourism arrivals differs among the income groups.

Table 5.1 - Regression results from Gravity Model - Tourism arrival version

Model 1	Coefficient	P-values	Model 2	Coefficient	P-values
lnta	0.181*** (0.013)	0,000	lnwhs_e	0.143 (0.118)	0,227
lngdp_e	0.982*** (0.016)	0,000	lngdp_e	1.008*** (0.081)	0,000
lngdp_i	0.830*** (0.099)	0,000	lngdp_i	0.829*** (0.089)	0,000
lnpop_e	0.129*** (0.013)	0,000	lnpop_e	0.129*** (0.013)	0,000
lnpop_i	0.632*** (0.083)	0,000	lnpop_i	0.633*** (0.083)	0,000
lndist	-0.510*** (0.017)	0,000	lndist	-0.507*** (0.019)	0,000
border	1.253*** (0.100)	0,000	border	1.273*** (0.115)	0,000
comlang	0.470*** (0.055)	0,000	comlang	0.468*** (0.056)	0,000
landlocked	-0.377*** (0,037)	0,000	landlocked	-0.391*** (0.056)	0,000
col45	0.809*** (0.062)	0,000	col45	0.811*** (0.062)	0,000
eu27	0.645*** (0.046)	0,000	eu27	0.685*** (0.131)	0,000
gsp	-0.481*** (0.044)	0,000	gsp	-0.484*** (0.045)	0,000

Note: R² Model 1= 0,7093, R² Model 2= 0,7092

Observations 26,721

***p<0.01, **p<0.05, *p<0.1

Robust standard errors in parenthesis

Table 5.2 - Regression results from Gravity Model - Income dummy variables.

Model 3	Coefficient	P-values	Model 4	Coefficient	P-values
lnta	0.163*** (0.013)	0,000	lnta_l	0,531*** (0,030)	0,000
lngdp_e	0.916*** (0.029)	0,000	lnta_lm	0,030 (0,017)	0,124
lngdp_i	0.831*** (0.089)	0,000	lnta_um	0,133*** (0,016)	0,000
lnpop_e	0.196*** (0.026)	0,000	lngdp_e	0,929*** (0,028)	0,000
lnpop_i	0.630*** (0.084)	0,000	lngdp_i	0,835*** (0,089)	0,000
lndist	-0.495*** (0.018)	0,000	lnpop_e	0,225*** (0,025)	0,000
border	1.261*** (0.099)	0,000	lnpop_i	0,627*** (0,084)	0,000

comlang	0.487*** (0.056)	0,000	lndist	-0,521*** (0,018)	0,000
landlocked	-0.318*** (0.038)	0,000	border	1,248*** 0,098	0,000
col45	0.839*** (0.061)	0,000	comlang	0,518*** (0,057)	0,000
eu27	0.568*** (0.051)	0,000	landlocked	-0,360*** (0,040)	0,000
gsp	-0.679*** (0.050)	0,000	col45	0,849*** (0,062)	0,000
l_i	-0.305*** (0.116)	0,009	eu27	0,546*** (0,050)	0,000
lm_i	0.048 (0.086)	0,574	gsp	-0,780*** (0,051)	0,000
um_i	0.169*** (0.058)	0,004	l_i	-7,087*** (0,404)	0,000
			lm_i	-0,447* (0,261)	0,086
			um_i	-1,757*** (0,258)	0,000

Note: R² Model 1= 0,7104, R² Model 4= 0,7101

Observations 26,721

***p<0.01, **p<0.05, *p<0.1

Robust standard errors in parenthesis

A number of regularities are visible in the results that broadly speaking, corresponds with the findings of previous gravity model analysis. Above all the explanatory variables contribute significantly in explaining the variations in bilateral trade flows between the selected countries, as indicated by the reasonably high R² values.

When looking at tables above it is worth remembering that the results shows that the included variables does explain a substantial amount of the variability in the value of bilateral trade. But this does not mean that the joint explanatory power of the variables in e.g. Model 1 in table 5.1 accounts for 71% of the variation in the value of bilateral trade. In the presence of omitted variable bias the included variables acts partly as a variable on their own, and partly as proxies for the omitted variables(s). This means that we have reasons to believe that the R²-values is partly overestimated.

We are using robust standard errors in order to account for the potential biasness caused by heteroscedasticity.

Furthermore, the regression results indicate as expected that wider distances reduce trade between two partners, while higher GDP-levels are contributing to an expanded bilateral commerce. Larger populations tend to positively contribute to the value of bilateral trade flows, as do the sharing of official languages and common borders.

Becoming a member of the EU27 does have a positive significant impact of the value of the bilateral trade. Which is expected when a new member country receives access to the common market.

Landlocked countries tend to be more dependent upon the neighbouring countries infrastructure and customs procedures, generally making it more difficult for the landlocked country to participate in trade related commerce. Countries that fulfil the requirements of being offered GSP-status trades overall less with the EU15 countries, which we expected.

Since the model is a log linear model, the OLS-coefficients represent the partial elasticity of the respective independent variables. The estimated b_2 is then to be interpreted as *the percental change in the value of the bilateral trade* when tourism arrivals change by one percent. This is further clarified in the expression below:

$$\% \Delta \text{Bilateral Trade} = \% \Delta \text{Tourism Arrivals} * b_2$$

According to the results in table 5.1 the tourism arrival has a positive effect on the value of the bilateral trade flows, which is significant at the one percent level. However the effect is rather scan. The estimated coefficient is 0,181, demonstrating that a 1 % increase in the tourism arrivals, leads in general to a 0,181 % increase in the value of bilateral exports. Meaning that if policymakers would like to benefit from the positive economic effects of travelling, it should be used in a long-term strategy.

Say that Swedish travelling to South Africa increases by 3,3 % yearly, and that this progress lasts for a decade. If the value of the bilateral trade exports going from South Africa to Sweden, initially corresponds to 200 million euros, our results suggests that after this decade this value would increase to around 212,3 million euros from the positive effect of travels alone, holding the other variables constant.

The regression output for model 2 indicates that the amount of world heritage sites could be positively correlated with the value of bilateral trade. This is shown by the positive coefficient 0,143, although this result is not significant even at the 10% level, meaning that we cannot reject the null hypothesis saying that the effect of the amount of WHS is significantly different from zero. This implies that our attempt to straighten out the expected endogeneity issue did not provide a solid result.

In order to explicitly validate if the IV variable is free from the same shortcomings of the tourism arrivals variable, we perform a Wooldridge's-test of endogeneity. The results are presented below:

Table 5.3 - Test of endogeneity

Hypothesis:	
Ho:	Variables are exogenous
H1:	Variables are enogenous

Test statistics:		P-values
Robust score chi2 (1)	$\chi^2 = 0.105885$	0.7449
Robust regression F(1,26691)	$F(1,26691) = 0.105805$	0.7450

As seen in table 5.3 the test statistic does not end up in the rejection region. Meaning that we cannot discard the hypothesis saying that all the independent variables in model 2 are exogenous.

Based on these results, we are more confident that there is no causality running from the value of bilateral trade to the WHS-variable.

Table 5.2 shows the result of the same regression and includes dummy variables for low, lower-middle, high-middle and high-income countries. The results speak in favour of the previous findings indicating that countries found in the lower end of this income scale, trades less with the EU15 compared to the exporters located in upper end of this scale. Note that the high-income group was used as a reference category.

If we are to reconnect these results with the theory regarding overlapping demand, they fit rather well with the stipulated idea that countries with diverging income groups trade less, while countries with converging income groups trades to a higher degree. Since all the importers in the EU15 are high income countries, the results basically tells us that in our sample, the value of the trade flows between high income countries are higher, than e.g. those between high-income and lower-middle income countries. It would perhaps be more interesting to analyse if similar results could be found regarding other income groups.

The results of the regression output of model 4 shows that the economic effect of tourism arrivals differs among the countries based on their income groups. Tourism arrivals have the largest significant effect on the value of bilateral trade in low-income countries, shown by the positive coefficient 0,531. The same effect for lower-middle-income countries is estimated to be 0,03, which is not significant even at the 10 % level. The same effect regarding upper-middle income countries is estimated to be 0,133, which is significant at the 1 % level. Since the dummy variable for high-income countries was dropped, so was the interactive dummy variable.

The results also show that the positive effect of travelling on bilateral trade is more elastic for low-income countries. Meaning that travelling has better possibilities in boosting the value of the bilateral trade flows of countries fund at the bottom of the income scale in relation to the other income groups.

It is worth remembering that the coefficient is measured in percent, meaning that if the value of the bilateral trade flows from low-income countries are initially low, even a rather slight absolute increase will result in a high percental increase.

These results might well be reflecting the progress that follows from European trade policy where efforts has been made to promote EU trade with developing and low income countries. One of these initiatives is named *Everything But Arms*, that grants least developed countries the benefit to export nearly all goods to EU, free of duty and quantitative restrictions. The restrictions concerns (as the name indicate) exports of arms and ammunition, but there are additionally transition periods for bananas, rice, and sugar (Persson and Wilhelmsson, 2013, p. 7). These preferences are specifically directed towards LDC's, which might partly explain why their coefficient is higher than the coefficient for lower-middle, and upper-middle income countries.

The economic effects of travelling tend to follow the same general conclusion in the case for upper-middle income countries (although slightly lower). One clear difference from the results in the regression output of model 3 is that all dummy variables over the respective income groups have substantial negative effect.

One cause of concern is the fact that in each regression output nearly all variables are significant at the 1 % level. This can be partly explained by the already known fact that the model is likely subjected to endogeneity issues, which results in an error term that is not identically independently distributed, that in turn causes the OLS-coefficient for tourism arrivals to be biased, and inconsistent. Further is can be partly explained by the omitted variable bias causing excessively high t-values, which most likely is enhanced by the fact that we are working with a sample containing over 25'000 observations.

The conclusions that can be drawn from these results should therefore be done with caution, and it is important to keep in mind that these estimates does not fulfil all the the Gaus Markow assumptions(Gujarati and Porter, 2009, pp. 62-68). Nonetheless, we have obtained results that speaks in favour of a positive relationship between bilateral trade and tourism arrivals.

It is wize to recapture the discussion in section 4.4 where we argued for the appropriateness of WHS IV abilities. It was mentioned that because a considerable amount of the WHS are nature related properties, we can expect these sites to attract tourists without beeing subjected to any commercial activity directly influencing the value of trade.

This could probably also be one reason why the IV doesn't manage to explain enough variation among the dependent variable in order to be considered significant at any level. Even though they might well attratct tourists, it might be unlikely for our data covering bilateral trade to uncover a clear significant effect of these travels, if they lack integration in a clear commercial context.

While the tourist arrivals variable is more likely to reflect a larger amount of travellers, including business travelers, (which is liklely an essential group when it comes to finding the relationship this thesis strives to find). The WHS are promoted to attract travellers

seeking cultural and nature-inspired experiences, which makes them an unlikely travel destination for business travelers and entrepreneurs.

Since we expect that all the regression outputs of the log-linear gravity models gave us biased results regarding the effect of tourism arrivals on the value of bilateral trade, it would be appropriate to briefly mention a different approach that could have the ability to provide less biased coefficients. One such model would be "the two-way fixed effect least-squares dummy variable model"(LSDVM). This would enable us to separate between observations that differs with respect to the so called "fixed effects". This could be useful if we consider that some countries in our sample are more similar than others, meaning that we could account for fixed effects with respect to income, EU-membership, rule of governance, etc, instead of neglecting these and regress over the entire sample.

6. Summary and Conclusion

International travelling is a growing phenomenon and has been for the last two decades. According to the predictions made by UNWTO this progress will continue. It is therefore motivated to further analyse the economic impact that tourism has on the economy as a whole, including the local, the national and international perspective.

This thesis sought to answer if international travelling promotes international trade. This was done by collecting a sample consisting of over one hundred countries, and performing a gravity model regression analysis. The variables used in order to capture traveling frequency was tourism arrivals, and an instrumental variable including the amount of world heritage sites located in each country.

Our results suggest that there is a positive relationship existing between the amount of tourism arrivals and the value of bilateral exports, significant at the 1 % level. The effect of the instrumental variable has no significant effect on the value of one country's bilateral export flows, meaning that our attempt to isolate the effect running from travelling to international trade did not provide a solid result.

Since the results indicate that 1 % increase in the amount of tourism arrivals will in general result in 0,181 % increase in the value of bilateral trade, this result is economically significant in the long run. As shown earlier: if the initial value of bilateral exports going from South Africa to Sweden corresponds to 200 million euros, and the amount of travellers visiting South Africa increases by 3,3 % in a decade. Our results suggest that we can expect the value of bilateral exports to correspond to around 212,3 million euros after a decade, from the effect of travelling alone.

The results indicate that the EU15 countries trade to a higher degree with high-income

countries. These results fit well with the theory of overlapping demand. However it would be more interesting to test if the same results would hold for other countries within other income groups.

Governments that wish to benefit from the trade enhancing effects of travelling should consider prioritizing policies directed at expanding and improving transportation facilities and possibilities. Besides the obvious feature of ensuring regional and national stability, it would be appropriate to promote the specific country as an attractive travelling destination.

It would also be wise to initiate efforts for simplified procedures related to visa applications, in order to shorten and facilitate travelling, and the travelling arrangements.

Furthermore it would be most interesting to analyse if these results would hold if we were to use bilateral travelling data, and for countries that are not as committed in trade related commerce as the EU15 countries. If we were to find similar results for countries located in other regions in and in other income groups, we could be more confident that these conclusions would be more universal.

Appendix:

The following table lists all the countries included in the gravity equation between the years of 1995-2011, as well as their respective amount of WHS².

Europe	Africa	Asia	Central & South America	Australia & the Pacific	North America
Albania - 2	Algeria - 7	Armenia - 3	Argentina - 8	Australia -19	Canada - 17
Andorra - 1	Benin - 1	Cambodia - 2	Brazil - 19	Fiji - 1	The United states - 21
Armenia - 3	Botswana - 1	China - 45	Belize - 1	Guinea - 1	
Austria* - 9	Cameroon - 2	Georgia - 3	Bolivia - 6	Indonesia - 8	
Belarus - 4	Chad - 1	Hong Kong - 0	Chile - 5	Malaysia - 4	
Belgium* - 11	Central African rep. - 2	India - 30	Colombia - 7	New Zealand - 3	
Bulgaria - 9	Egypt - 7	Iran - 16	Cuba - 9	Papua New Guinea - 1	
Cyprus - 3	Eritrea - 0	Israel - 7	Costa Rica - 3	Solomon Islands - 0	
Czech rep. - 12	Ethiopia - 9	Japan - 17	Dominica - 1		
Croatia - 7	Gabon - 1	Jordan - 4	Dominican rep. - 1		
Denmark* - 4	The Gambia - 2	Korea - 10	Ecuador - 4		
Finland* - 7	Guinea Bissau - 0	Kuwait - 0	El Salvador - 1		
France* - 38	Kenya - 6	Laos - 2	Grenada - 0		
Great Britain* - 28	Liberia - 0	Lebanon - 5	Guatemala - 3		
Germany* - 38	Libya - 5	Mongolia - 3	Guyana - 0		
Greece* - 17	Morocco - 9	Myanmar - 0	Honduras - 2		
Hungary - 8	Madagascar - 3	Nepal - 4	Jamaica - 0		
Iceland - 2	Mali - 4	Oman - 4	Mexico - 32		
Ireland* - 2	Mozambique - 1	Philippines - 5	Nicaragua - 2		
Italy* - 49	Namibia - 2	Pakistan - 6	Panama - 5		
Lithuania - 4	Niger - 3	Qatar - 1	Paraguay - 1		
Luxembourg* - 1	Nigeria - 2	Russian federation - 25	Peru - 11		
Macedonia - 1	Rwanda - 0	Saudi Arabia - 2	Saint Vincent and the Grenadines - 0		
Malta - 3	Senegal - 7	Singapore - 0	Suriname - 2		
Moldova - 1	Sierra Leone - 0	Sri Lanka - 8	Trinidad & Tobago - 0		
Netherlands* - 9	South Africa - 8	Syria - 6	Uruguay - 1		
Norway - 7	(Former) Sudan - 2	Thailand - 5	Venezuela - 3		
Poland - 14	Tanzania - 7	Turkey - 11			
Portugal* - 15	Togo - 1	Uzbekistan - 1			
Romania - 7	Tunisia - 8	Vietnam - 7			
San Marino - 1	Uganda - 3				
Slovakia - 7	Zambia - 1				
Slovenia - 3	Zimbabwe - 5				
Spain* - 44					
Sweden* - 15					
Switzerland - 11					
Ukraine - 7					

² The importing countries are marked with a *

The table below lists all the data sources used in order to collect the variables used in the gravity equations.

Data source	Variable	Electronic source
World Bank: World development indicators	*GDP *Tourism arrivals *Population *Income group	< http://data.worldbank.org >
CEPII	*Bilateral distance *Common languages *Colony 45	< http://www.cepii.fr/anglaisgraph/bdd/distances.htm >
Eurostat	*Bilateral Import *EU27	< http://epp.eurostat.ec.europa.eu >
UNCTAD	*GSP beneficiaries	< http://www.unctad.org/en/docs/itcdtsbmisc62rev5_en.pdf >
UNESCO	*WHS	< http://whc.unesco.org >

Note: All the data was available in December 2013

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