

Charles University in Prague

Faculty of Social Sciences
Institute of Economic Studies



BACHELOR THESIS

**The Determinants of International
Tourism Demand**

Author: **Jana Vencovská**

Supervisor: **PhDr. Wadim Strielkowski, Ph.D.**

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Declaration of Authorship

The author hereby declares that he compiled this thesis independently, using only the listed resources and literature.

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Prague, May 15, 2014

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Abstract

This bachelor thesis focuses on identifying the key factors affecting international tourism demand. Additionally, it provides an assessment of the economic impact of tourism, which is followed by an overview of possible interpretations of the terms “tourism” and “tourist” and their evolution in time. Based on a review of existing literature, the next part discusses the meaning of the term “tourism demand”, the ways how this demand can be measured and on its main determinants. The last chapter of the thesis is dedicated to an econometric analysis of the determinants of the demand for tourism to the Czech Republic from thirty-eight different countries. The data on the number of guests registered in collective accommodation establishments collected by the Czech Statistical Office was used as a measure of tourism demand. The period between years 2000 – 2012 was investigated. The model was specified in a dynamic form, which allowed us to account for the Word-of-Mouth (WoM) effect and to reflect the importance of tourists’ loyalty. The Arellano-Bond generalized method of moments (GMM) estimation method was used to estimate the model. One of the main conclusions of the analysis is that 31% of the tourist arrivals are attributable to habit formation and the WoM effect. The results further show that tourism demand is both income and price inelastic which means that it is not heavily dependent on the economic situation in the tourist generating countries.

JEL Classification A12, C23, L83

Keywords tourism economics, tourism demand, Czech Republic

Author’s e-mail janavencovska@yahoo.com

Supervisor’s e-mail strielkowski@fsv.cuni.cz

Abstrakt

Tato bakalářská práce se zabývá určením hlavních faktorů, které ovlivňují poptávku po cestovním ruchu. Dále také hodnotí ekonomické dopady cestovního ruchu a poskytuje přehled možných výkladů termínů “turistika” a “turista” a jejich vývoj. Na základě dostupné literatury objasňuje, co je to poptávka po cestovním ruchu, jak je možné ji měřit a jakými faktory je ovlivňována.

Poslední kapitola je věnována ekonometrické analýze faktorů, které mají vliv na mezinárodní poptávku po cestovním ruchu z 38 států světa do České republiky. Měřítkem poptávky byl počet hostů v hromadných ubytovacích zařízeních podle údajů Českého statistického úřadu. Sledováno bylo období let 2000-2012. K analýze byl použit dynamický model, který nám umožnil zhodnotit efekt ústních doporučení mezi turisty a jejich věrnost České republiky jako turistickému cíli. K odhadu je použita zobecněná momentová metoda (GMM) podle Arellano-Bonda. Z analýzy vyplynulo, že 31% turistů přijíždí díky předchozí pozitivní zkušenosti, ať už vlastní či doporučující osoby. Výsledky dále ukázaly, že poptávka po cestování do České republiky není příliš závislá na ekonomické situaci země, ze které turisté přijíždějí.

Klasifikace JEL

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Klíčová slova

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E-mail autora

janavencovska@yahoo.com

E-mail vedoucího práce

strielkowski@fsv.cuni.cz

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Acronyms

AAGR	Annual Average Growth Rate
AHR CR	The Czech Association of Hotels and Restaurants
CAE	Collective Accommodation Establishments
CPI	Consumer Price Index
CSO	Czech Statistical Office
CZK	Czech Koruna
DPI	Destination Preference Index
EU	European Union
EWoM	Electronic Word of Mouth
GDP	Gross Domestic Product
GMM	Generalized Method of Moments
GNI	Gross National Income
IMF	International Monetary Fund
OLS	Ordinary Least Squares
RER	Real Exchange Rate
SARS	Severe Acute Respiratory Syndrome
TT	Travel and Tourism
UK	United Kingdom
UNWTO	United Nations World Tourism Organization
US	United States of America
USD	United States Dollar
WoM	Word of Mouth
WTO	World Tourism Organization
WTTC	World Travel and Tourism Council

Bachelor Thesis Proposal

Author	Jana Vencovská
Supervisor	PhDr. Wadim Strielkowski, Ph.D.
Proposed topic	The Determinants of International Tourism Demand

Topic characteristics Tourism is one of the largest world industries globally and plays an important role in any country's economy. It has been recognized by many researchers as a significant driving force of economic development. The topic of my Bachelor Thesis will concern the main determinants of international tourism flows. The thesis will be organized into three main sections. Section 1 will assess the economic impacts that inbound tourism has on the destination country. The second chapter will lay the theoretical foundations as regards the key factors affecting international tourism demand. Chapter 3 will provide an econometric analysis of the main determinants that influence annual tourist flows to the Czech Republic. A set of balanced panel data will be used in order to estimate the effect of factors, such as total population, national income, geographical distance between the country of origin and the Czech Republic and other determinants chosen based on the conclusion of Section 2. The dependent variable (tourism demand) will be measured by the number of foreign guests in collective accommodation establishments, collected annually by the Czech Statistical Office. The sample will include 38 different countries which represent most of the foreign guests in the Czech Republic over a period of 13 years (2000-2012).

Outline

1. Introduction
2. Economic importance of international tourism
3. Determinants of tourism demand

4. An econometric analysis of the determinants of Czech tourism flows
5. Conclusion

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Chapter 1

Introduction

Travel and tourism are often called a “Cinderella” industry - even though, it plays an important role as a key driver of economic progress, for a long time it has not received the attention it deserved and has been overlooked by many researchers as an academic field of study (Ioannides and Debagge, 1998). Only recently, researchers began to recognize its potential and explore ways how its benefits could be maximized. This includes the investigation of the features of tourism demand and supply and how they are driven, i.e. the investigation of the determinants that affect them.

With increasing globalization of today’s world, the tourism industry continually gets more and more competitive. The decision makers of various tourist destinations often compete in outsmarting each another in attracting more tourists into their respective countries. For this reason, identifying the main determinants that influence the number of tourists visiting a particular country correctly can be a major concern of both tourism demand researchers and tourism practitioners. The importance of tourism and substitute prices (tourism prices in competing destinations) serves as a great example. Suppose say tourism and substitute prices are proven significant among determinants of tourism demand of a certain country. That should trigger a concern over the current pricing strategies of its tourism competitors. By paying attention to those strategies, a country can promptly react to any prospective change by, for example, launching a self-promotion campaign and thus sustaining its position among competitors (Song and Li, 2008).

This Bachelor thesis focuses on the demand side of tourism. Its main pur-

pose is to identify the main determinants of tourism demand and measure the impact of some of them on the volume of inbound tourism to the Czech Republic. The structure of the thesis is as follows. The second chapter explores the economic benefits of tourism. These benefits are potentially large and underscore the relevance of the topic of this thesis. Indeed, tourism benefits are the main reason why this sector has recently started attracting the attention of a growing number of researchers. Chapter 3 aims to provide an overview of the evolution of the understanding of the terms “tourist”, “tourism”, “tourism demand” and how it can be measured. Chapter 4 reviews existing literature on the determinants of tourism demand.

Chapter 5 contains the econometric model for estimating the main determinants of the demand for tourism to the Czech Republic from thirty-eight different countries. This chapter first describes the measure of the dependent variable (tourism demand measured as the number of guests registered in collective accommodation establishments), followed by a description of the explanatory variables that are expected to influence demand for tourism to the Czech Republic. The next section reviews econometric models used in existing tourism demand literature. This is followed by the presentation of the results of the estimation undertaken for this thesis, based on a dynamic model estimating the importance of the Word-of-Mouth (WoM) effect by means of the Arellano-Bond generalized method of moments (GMM).

The conclusion summarizes the main findings of this study and sets out their main policy implications. These are relevant for public and private actors in the Czech Republic working to attract an increased number of international tourists. This thesis addresses an important gap in academic research on the main determinants of tourism demand to the Czech Republic and as such presents an important addition to existing literature on tourism demand. More specifically, this thesis aims to clarify to what extent current tourism demand to the Czech Republic is determined by previous consumption.

Chapter 2

Economic Importance of International Tourism

Nowadays, tourism and leisure undeniably belong to the most popular activities and can be driven by multiple purposes. United Nations World Tourism Organization (UNWTO, 2012) distinguishes up to nine purposes of tourist trips. They are divided into two main groups:

- *Personal*
 - *Holidays, leisure and recreation*
 - *Visiting friends and relatives*
 - *Education and training*
 - *Health and medical care*
 - *Religion and pilgrimages*
 - *Shopping*
 - *Transit*
 - *Other*

- *Business and professions*

Tourism (also referred to as Travel and Tourism or T&T by the UNWTO), both domestic and international, is seen as a major driving force of economic recovery and growth (WTTC, 2012).

However, with great potentials come several consequences. As every activity, it does not go unnoticed and has several types of impacts, the main

being economic, political and environmental. These impacts can of course be both negative and positive. The economic effects of tourism are seen as mostly beneficial, whereas tourism's negative impacts on environment and political stability tend to outweigh the positive ones. With advanced planning it is possible to manage the tourism activity in order to prevent or even scale down the negative consequences and enhance the positive ones (Stynes, 1997). That is why governments worldwide recognize its importance and why there is a growing academic community specialising in the tourism sector. All of this recognition happened quite recently and the area of study is considered still relatively young (Cooper *et al.*, 2005).

Tourism activity influences a country's economy in a wide variety of ways. From an economic standpoint the main effects arise from the fact that tourists spend money on destination's goods and services, i.e. tourism spending/tourism expenditure. The money spent is then further redistributed and may take on a path to other sectors. The economic effects of tourism spending flows are distinguished into three main groups – *direct*, *indirect* and *induced effects*.

The *direct* economic effects are sometimes referred to as *primary* effects and *indirect* plus *induced* economic effects can be collectively called *secondary* effects. Finally, the *total* economic effect that tourism has on a destination can be calculated as the sum of *primary* and *secondary* effects, i.e. *direct*, *indirect* and *induced* effects (Stynes, 1997).

2.1 Direct Effects of Tourism

As already mentioned above, the economic effects of tourism as an activity are influenced by the amount of money spent by tourists at destination and the path it takes on after. Direct effects can be described as initial, immediate effects of tourists spending (Stynes, 1997). In other words they are associated with the first flow of money paid by tourists for a tourism product, meaning goods and services within the tourism sector. The complete list of tourism products recognized by UNWTO can be found in Table 2.1.

Table 2.1: Tourism products

<u>Tourism Products</u>
Accomodation services for visitors
Food and beverage serving services
Railway passenger transport services
Road passenger transport services
Water passenger transport services
Air passenger transport services
Transport equipment rental services
Travel agencies services
Cultural services
Sports and recreational services
Country specific tourism goods
Country specific tourism services

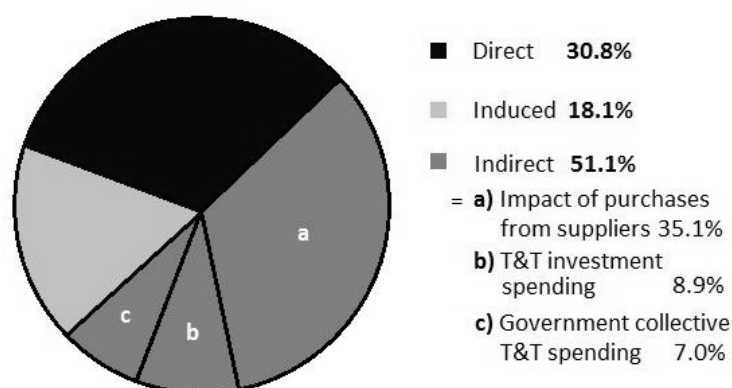
Source: UNWTO, 2012

Direct effects are changes in the scale of production caused by the fluctuation in the amount of tourism expenditures. Therefore, when more money is spent by tourists at, for instance, accommodation facilities like hotels, it will directly affect the hotel's income, employment, amount of supplies needed and payments for wages and taxes (Stynes, 1997).

According to World Travel and Tourism Council (WTTC) the direct contribution of T&T to worlds GDP was 2.9% and represented 30.8% of total contribution, as shown in Figure 2.1. It is further expected to rise in 2014 by 4.3%.

Moreover, there have been 100,894,000 jobs generated directly by T&T in 2013, which is 3.4% of total employment worldwide and is expected to grow by 2.2% to 103,069,000 during the following year. It accounts for generation of employment in the tourism sector, i.e. in hotels, travel agencies, restaurants and various passenger transportation services (WTTC, 2014a).

Figure 2.1: Breakdown of total contribution to GDP, 2013



Source: WTTC, 2014a

2.2 Indirect Effects of Tourism

Indirect effects emerge after the money that was spent by tourists directly flows through other industries in the economy. These effects can be described as the changes in government expenditure, investment in tourism and the changes in production of suppliers of products to the tourism establishments in order to satisfy their demand. That can lead to an alteration in the quantity, quality and prices of the supplied products. As Jucan (2013) points out, in order to make the most of tourism revenue in a particular country/destination, it is important to encourage the tourism establishments to get their supplies mainly from local manufactures so that they form the majority of tourism sector's supply. This enables a large portion of the revenue to stay within the country's economy.

In continuation to the "hotel" example mentioned above, changes in the amount of sales, employment and income of a linen supply industry can be seen as an example of an indirect effect of tourism. Additionally, changes in production of other industries that form a supply to the linen industry represent another round of indirect effects and so on (Stynes, 1997).

According to WTTC 51.1% of the total contribution to worlds GDP was represented by the indirect contribution in 2013 (Figure 2.1) and is expected to rise slightly during the next year. 35.1% of indirect contribution constitutes of the impact of purchases of the suppliers. As for the effect on employment, more jobs are generated indirectly than directly in tourism sector each year (WTTC, 2014a).

2.3 Induced Effects of Tourism

Induced effects result from the additional expenditure of household or company income, which has been possible to earn due to the fact that more jobs were created either as a result of direct or indirect effect of tourism spending. For instance, the purchases of an array of consumer goods by people employed in hotel and linen industry are considered to be induced effects (Vellas, 2011).

Stynes (1997) contemplated that the induced effects, the negative induced effects to be exact, can easily be seen as a consequence of a shut-down of a regionally important plant. Many people lose their job and the regional household income will decline. Moreover, less consumer goods will be sold and that may lead to the regional retail shops being closed. Consequently the consumers will have to turn to other suppliers outside of the region, which will lead to revenue leakages and suffering of the local economy. With 18.1%, the induced effects made up the smallest share of total contribution to the worlds GDP in 2013 (Figure 2.1). Similarly, almost three times less jobs were generated by induced effects than direct or indirect effects (WTTC, 2014a).

2.4 Total Economic Contribution of Travel and Tourism: Czech Republic

As the final chapter is devoted to an econometric analysis of determinants of international tourism demand in the Czech Republic, let's summarize the Travel & Tourism's total contribution to the Czech economy (see Table 2.2).

Table 2.2: Total economic contribution to GDP and employment - Czech Republic, European Union, World

Year	Total contribution to GDP (%)		Total contribution to employment (%)	
	2013	2024	2013	2024
Czech Republic	8.4	8.7	10.4	11.1
European Union	8.7	9.2	8.5	9.3
World	9.5	10.3	8.9	10.2
Ranking	105	-	74	-

Source: WTTC, 2014b

In 2013, Travel & Tourism generated 326.3 billion CZK in total, corresponding to 8.4% of Czech GDP and is further forecasted to rise to 8.7% in ten years. That ranks the Czech Republic 105 when compared to other 184 countries around the world. It achieved a better position in regards to employment, placing itself on the 74th spot. Over 511 500 jobs, i.e. 10.4% of total employment, were supported by Travel & Tourism which significantly exceeded both EU's and world's average. The share of total employment is expected to rise annually by 0.3% till 2024.

Chapter 3

International Tourism Demand

Before assessing and discussing what is a tourism demand and how can it be measured, it is important to define what exactly do the terms “tourism” and “tourist” stand for.

3.1 Definition of Tourism

Tourism is a broad concept and that is why it can be understood and defined in many different ways. According to Beard and Ragheb (1983), one of the first definitions of tourism has its origin at the beginning of 19th century and was presented by an Austrian economist Hermann Van Schullard in 1910. He said that *“tourism is the sum total of operators, mainly of an economic nature, which directly relate to the entry, stay and movement of foreigners inside and outside a certain country, city or region”* (Van Schullard, 1910). This definition takes into account the existence of inbound and outbound travel, but does not specify the exact distinction of purposes of travel or for how long exactly can a person stay in a foreign country and still be considered a tourist.

The period between 1912 and 1940 was characterized by a significant slump in tourism caused by the First World War (1914-18) and the Second World War (1939-45). No significant development regarding the definition of travel has been made during this traumatic period (Pawaskar and Goel, 2012).

In 1942, Swiss researchers Hunziker and Krapf defined tourism as the *“sum of relations and phenomena resulting from travel and stay of non-residents, in so far a stay does not lead to permanent residence and is not connected*

with any permanent or temporary earning activity” (mentioned in Beerli and Martín, 2004). This definition as opposed to the one of Hermann Van Schullard imposes some kind of time restriction. At that time, this definition was widely recognized and adopted by the International Association of Scientific Experts in Tourism (AIEST). The association praised the inclusion of the term non-residents. Vanhove (2005) argues that the shortcomings of their definition are the exclusion of travelling for business and the fact that they consider, for example, staying at a hospital to be tourism.

Another definition that gained special attention was given by Gilbert (1990). He described tourism as a form of recreation : *“Tourism is one part of recreation which involves travel to a less familiar destination or community, for a short-term period, in order to satisfy a consumer need for one or a combination of activities“*. Nowadays, a definition of tourism proposed by the World Tourism Organization (WTO) is generally adopted. WTO defines tourism as *“the activities of persons traveling 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”*. Additionally it also offers a definition of tourists as *“the temporary visitors staying in a place outside their usual place of residence, for a continuous period of at least 24 hours but less than one year, for leisure, business or other purposes“*.

3.2 Types of Tourism and Tourists

Vanhove (2005) distinguishes six main types of tourism. For simplicity let's assume that we are describing these types of tourism for a particular country i . The inhabitants of country i are referred to as residents and others as non-residents.

- Domestic tourism: Tourism of residents, who travel and visit destinations located in within country i .
- Inbound tourism: Tourism of non-residents to the country i .
- Outbound tourism: Residents visiting destinations located outside of country i .
- Internal tourism: Accounts for both domestic and inbound tourism.

- National tourism: Domestic and outbound tourism combined.
- International tourism: Combination of inbound and outbound tourism.

Cohen (1974) described four types of tourists based on their behaviour and sociological patterns. These are:

- The organized mass tourist: This type of tourist doesn't like to take risks and is not very adventurous. He likes to go on all inclusive, fully packaged holidays, so he doesn't have to organize things on his own. All trips he takes are organized by tour operators.
- The individual mass tourist: Individual mass tourist is to a certain extent similar to the organized mass tourist. The only exception is that he does not fully depend on tour operators and likes to make some decisions on his own.
- The explorer: He is much more adventurous than the previous two types of tourists. Explorers like to plan their entire trip abroad alone.
- The drifter: Drifters are very adventurous and don't mind discomfort or danger, in fact they seek it. They usually aren't very social and do not like to interact with other tourists.

According to the WTO (1991) there are two main types of tourists. They are distinguished based on the length of stay at destination. They have to stay at the destination for a minimum of one night and a maximum one year. If their visit lasts less than twenty-four hours they are not considered tourists but excursionists.

- International tourist: Someone who spends more than one night but not more than one year at a foreign country. International tourists engage only in activities that are not remunerated by the country that they are currently visiting.
- Domestic tourist: Domestic tourists are the residents of a particular country who visit various destinations within that country. Their time spent at the holiday destination does not exceed twenty four hours.

3.3 Measures of Tourism Demand

Tourism plays an important role in any country's economy. Therefore it is important to pay close attention to tourism demand and all of the determinants that may affect it. Demand for travel, like tourism in general, can be distinguished into three types - inbound (or international), outbound and domestic tourism demand. In my thesis, I am focusing on the inbound form.

Tourism demand has a very broad meaning. It can be perceived as a classical definition of economic demand. That is the willingness to pay for a particular good or service in order to possess it (Song *et al.*, 2010). There are several different ways how inbound tourism demand can be measured.

International tourist arrivals represent the most frequently used measurement. The number of tourist arrivals is recorded by frontier counts of inbound visitors, through visitors' survey or by registration at accommodation establishment. Song *et al.*, (2009) argue that tourist arrivals recorded in such ways are presented with following deficiencies. At the frontier, transit traffic is included among tourist arrivals. Moreover, records at accommodation establishments do not account for one-day-visitors and those who stay at unregistered accommodation or at their relatives' and friends' houses. According to Sheldon (1993) the measurement of tourism demand by international tourist arrivals serves a great purpose to suppliers of products and services. They can adjust the supply capacity (for example invest in new hotels or buy another aircraft) according to the volume of recorded arrivals. Some studies use a tourist participation rate as a measurement of tourism demand. Tourist participation rate can be derived from the number of total tourism arrivals to a destination by dividing it by population of the country of tourism's origin (Song *et al.*, 2010).

International tourist expenditure is another form of measurement of tourism demand. The data on tourism expenditure can be collected through visitor surveys or by the bank reporting method (Witt and Witt, 1995). Song *et al.* (2009) expresses a concern over the possible problems associated with these kinds of data collection. According to their research, visitor surveys provide reliable data on tourist expenditures but it is hard to obtain a big enough sample size.

Number of nights spent at a destination is generally recorded by the accommodation facilities and can be used as an alternative measurement of tourism demand (Lim, 1997).

Chapter 4

Determinants of Tourism Demand

The aim of this section is to find out and summarize the factors that impact on tourism demand, i.e. by what means is tourism motivated. It is a crucial step in order to identify an appropriate empirical model.

Variation in tourism inflows is induced by many factors - ranging from economic and political to social, natural and technological. A number of studies have been conducted on this particular topic over the past twenty years, focusing predominantly on economic factors such as income, relative prices and exchange rates. However, I think the non-economic variables, e.g. country attractiveness, impact of wars and terrorism risk shouldn't be overlooked.

The influence of consumer theory is apparent when assessing the explanatory variables chosen as possible determinants of tourism demand in available empirical literature. This theory states that the consumption level is dependent on the consumer's income, the price of particular good, the price of its substitutes and complements and other variables which could cause a shift in demand. As a result, the major factors considered to be influencing tourism demand are income and relative prices (Mervar, 2007). These determinants will be described in more detail on the following pages.

4.1 Frequently Used Variables

4.1.1 Income

Income (meaning income in the country of tourists' origin) plays an essential role when it comes to travelling. It holds the title of the most frequently used

variable in a review of one hundred tourism studies conducted by Lim (1997), according to which it has been used in the total of 84 studies (Table 4.1). Even during the last decade, income has continued to be chosen by many researchers as a significant determinant of tourism demand. In contrast to this unity, they each expressed income in a slightly different way.

Table 4.1: Classification by Number of Explanatory Variables Used

INCOME	84
RELATIVE PRICES	74
TRANSPORTATION COSTS	55
EXCHANGE RATES	25
TREND	25
DYNAMICS	26
COMPETING DESTINATIONS	15
SEASONAL FACTORS	14
MARKETING EXPENDITURES	7
MIGRATION	5
BUSINESS TRAVEL/TRADE	5
ECONOMIC ACTIVITY	3
QUALITATIVE FACTORS	60
OTHER	27

Source: Lim, 1997

It is a known fact that engaging in international tourism requires money. One has to commit a significant expenditure on transport in order to get to the desired destination and of course pay for a place to stay. However not everybody finds interest in exploring foreign countries. When speaking of recreational travel it's not necessary to spend money on it. That's why it would make sense to use discretionary income (i.e. the amount of income that remains after we pay for all necessary expenditures) as a determinant of tourism demand. However, this is a very subjective matter and it would be immensely difficult to measure this amount correctly (Lim, 1997). That's why the use of real, disposable or personal income, if available, is advocated by many researchers. It's also possible to apply income *per capita*, such as GDP and GNI (Park *et al.*, 2011). The real GDP was the preferred measure of income used by Song *et al.*

(2010) who focused on identifying the key determinants of demand for Hong Kong tourism by Australian, UK and US residents. The reason why they preferred real GDP to determine income level of the three chosen origin countries is the large proportion of people that are sent on business trips to Hong Kong, which accounts for majority of its overall tourist arrivals.

As revealed by Crouch in 1994, who also regarded income as the most important explanatory variable, the engagement in international travel is considered a luxury good (income elasticity is between one and two). Smeral (2003) came to the same conclusion and forecasted that tourism will be gradually losing its luxurious status, because some of the consumers will reach their saturation level and travelling (in general or to a certain country) will become less attractive for them than before. Therefore with higher income tourism demand will increase, but at a decreasing rate as the consumer saturation trend will become more apparent.

4.1.2 Price

Price comes a close second to income when choosing possible significant determinants of tourism demand. Also known as tourism or relative prices, they are difficult to measure precisely because of the wide range of products that tourists are likely to pay for while travelling. Additionally, tourism prices consist of two main parts - transportation costs and the cost of living at the destination (Martin and Witt, 1987). I should clarify that the amount of money spent on local travel counts as a part of the cost of living at the destination. Some researchers even divided the tourism prices into more than the two parts by adding the substitute prices (Blake and Cortes-Jimenez, 2007) or other costs like travel insurance and opportunity cost of travel time (Ibrahim and Abbas, 2011).

As regards the cost of international transportation, not many researchers have included this explanatory variable in their studies. The paucity of data and the difficulty to determine the actual price paid by tourists are often discouraging and have prevented researchers from including transportation costs in their tourism demand models. The issue of measuring the actual price paid by tourists is nicely illustrated on the example of pricing practices of airlines by Lim (1997). The problem arises when there are two different types of fares charged by airlines of their scheduled flights – the unrestricted/normal fare and

special fare. The difference between them is the following: normal fare doesn't have any restrictions, it costs the same if bought in advance or last minute, there are no penalties for cancellation and it is available for both business and economy class. Whereas special fare has to be bought in advance and is often discounted; however the number of seats is limited and only available in economy class and if cancelled or changed there are additional penalties that add to the total price in the end. This concept is quite confusing and it's apparent that the actual prices paid for airfare would be difficult to follow precisely.

The difficulty to measure the actual amount spent persists with the second component of tourism prices – the cost of living at the destination. However, it's been proven by Morley (1994) that the consumer price indices (the abbreviation CPI is going to be used from now on) are a reasonable proxy for tourism prices at the destination, because they track tourism prices very closely. Moreover, in order to reflect the differences of the exchange rates between the currencies of origin and destination countries, the following exchange rate adjusted CPI ratio formula can be used:

$$RP_{it} = (CPI_{it}/CPI_{jt})ER_{it} \quad (4.1)$$

, where RP_{it} is relative price in destination i in period t ; CPI_{it} is the consumer price index in destination country i in period t , CPI_{jt} is the consumer price index in origin country j in period t , ER_{it} is an index of the price of origin country currency in terms of destination country i currency in period t (Lim, 1997).

It is also possible to express the last term ER_{it} as ER_{jt}/ER_{it} , where ER_{it} and ER_{jt} are the exchange rates between the currency of the country of destination and US dollar and between the currency of the origin country and US dollar, respectively (Aktürk and Küçüközmen, 2006; Song, *et al.*, 2010).

Now the question arises as to why the majority of tourism demand models used this formula and what exactly does it capture? Relative prices calculated according to the formula (4.1) reflect the costs associated with tourism activities in the destination country relative to those in the origin country (Blake and Cortes-Jimenez, 2007). In other words, relative prices embody the substitution between domestic tourism and international travel (Mervar, 2007). If they increase, it means that for tourists from country j every purchase in

destination i gets relatively more expensive. The rise in RP_{it} could occur due to a higher inflation rate in i in comparison to j or when the destination i currency gets more expensive in terms of the origin j currency (Lim 1997). So for some researchers it may come in handy that a single variable can measure the impacts of inflation and exchange rate movements (Mervar, 2007).

As mentioned above sometimes substitute prices (i.e. tourism prices in alternative/substitute destinations) are also considered an important explanatory variable. What qualifies as an alternative destination? Generally speaking, it is selected based on the cultural and geographical similarities to the destination under tourist's consideration. For example Song *et al.*(2010) marked Mainland China, South Korea, Singapore, Thailand and Taiwan the substitute destinations for Hong Kong. The substitute price can be calculated using the following formula, where the substitute prices are defined as weighted average index of the tourism prices of the n selected alternative destination:

$$P_{st} = \sum_{j=1, \dots, n} (CPI_{jt}/EX_{jt})w_{ijt} \quad (4.2)$$

, where $j=1, \dots, n$ represent the destinations selected as alternative; as mentioned above CPI_{jt}/EX_{jt} is a possible measure of tourism prices in destination j ; w_{ijt} is the share of international tourist arrivals to destination j , i.e. $TA_{ijt}/\sum_{j=1, \dots, n} TA_{ijt}$. TA_{ijt} is the number of tourist arrivals from country i to destination j at time t (Song *et al.*, 2003).

If included in the tourism demand model, the P_{st} variable is expected to have a positive influence on tourism demand, which makes sense, because the higher are the tourism prices in substitute destination j , the more tourists will visit and spend money at the destination i (Blake and Cortes-Jimenez, 2007).

Regardless of the choice of dependent variable, the same weights (tourist arrivals) are used in this formula. This holds even when tourism demand is measured by, for instance, tourist expenditure (Song *et al.*, 2010).

4.1.3 Exchange Rates

As defined above, exchange rate variable can be introduced into tourism demand models as a part of the exchange rate adjusted CPI ratio formula. Where

that is the case, it is known as "real exchange rates" (Rosensweig, 1986).

However, some researchers decided to employ exchange rates separately from the relative prices. Artus (1972) argues that while making decision on their travel destination, tourists are much more aware of the changes in exchange rates than of changes in relative prices. According to his theory, tourists are in habit of travelling abroad annually and mainly during summer. He further assumes that everything they spend abroad is financed from their annual budget. Both relative exchange rates and relative prices of travel services influence the amount of their spending and are therefore taken into account when deciding whether to take a trip abroad or choose the budget-friendly option and explore their homeland. Due to the fact that exchange rates are published daily (in newspapers, evening news etc.), the tourists have a much more precise knowledge of the values of exchange rates than they have of the prices in their planned destination while making the decision. The information on price changes is generally not known in advance, so the tourists' only indicator of the destination's price level is what they remember it to be at the last time they visited that particular destination.

Exchange rates vary a lot over time and are therefore constantly affecting the number of tourists visiting a certain country. The fluctuation in exchange rates can affect the tourists' decisions in several different ways. The change can be either favourable or unfavourable. Gerakis (1966) identified the impacts caused by a change in exchange rates in favour of the tourists and described that it makes them spend more on things that they would purchase anyway, buy additional goods and moreover such a change attracts new tourists and cross-border shoppers. Reverse effects resulting from an unfavourable change in exchange rates were depicted by The Economist Intelligence Unit (1975), which identified that people tend to travel less abroad, change their final destination, spend less on destination's goods and services and/or stay for a shorter period of time. Furthermore, they postpone their trip, use a different type of transport and those who travel for business begin to spend less.

Similarly, as in cases of income and prices, many empirical studies have employed various definitions of exchange rate variable. As recognized by Crouch (1993, p. 48), there are three types of exchange rate definitions used in tourism demand literature:

- *a) Units of the origin country's currency per unit of the destination currency.*
- *b) Units of the origin country's currency per weighted unit of currencies in foreign destinations.*
- *c) Weighted units of alternative destinations' currencies per unit of destination currency.*

The use of each definition depends on whether the researcher is interested in identifying the effect of exchange rates on tourism flows between pairs of countries or tourism departures to a larger number of either alternative or all countries. Mainly definitions *a)* and *b)* can be found across the tourism demand studies.

The interpretation of changes in relations given by these two definitions is as follows. If the ratio *a)* increases, it is due to the origin country's currency devaluation with respect to the destination's currency. It means that the destination's goods and services become more expensive for tourists resulting in a decline of tourism demand. Crouch (1993) adds that a change in this ratio can also occur if at time of devaluation of the origin's currency with respect to other currencies there is a smaller reduction in the value of the destination's currency. He further explains that the reason behind this kind of change in ratio *a)* could have a positive effect on tourism demand. The same reasoning can be applied to the case of multiple destinations in *b)*.

4.2 Other Economic and Non-economic Variables

4.2.1 Trade Openness

Including the trade openness variable, also known as the volume of trade, in tourism demand analysis could be particularly useful when a destination's economy is greatly driven by international business. In such destinations, tourist arrivals for business purposes make up a fair share of total arrivals. According to Abbas and Ibrahim (2011) Egypt can be viewed as a country that satisfies the previous assumption. They recognized that the volume of trade has had a significant and positive effect on the international tourism flows to Egypt during the period 1990-2008. Trade openness was measured as the sum of export

and import volume between Egypt and the country of tourism's origin divided by the sum of Egypt's GDP and GDP of countries of tourism's origin.

4.2.2 Population

It seems reasonable to include this variable among the determinants of tourism demand. One can assume that the larger the population of countries of tourism's origin, the more tourists will these countries generate. However, the inclusion of population variable in the tourism demand model represents a certain risk due to a possible correlation with income, as income is usually expressed in per capita form (Leitao, 2010). That's why modifying the dependent variable (tourism demand) to be tourism demand per capita is a common way to account for the effect of population on international tourism demand (Song *et al.*, 2000a).

The idea of investigating the influence of different population segments on tourism demand rather than focusing on the effects of total population arose quite recently. There is no doubt that different age groups' consumption patterns vary a lot. Over the past decade the proportion of older people in developed countries has been steadily rising at the expense of the proportion of younger people (Alvarado and Creedy, 1998). This trend is known as population aging. It can be measured by the share of citizens who are above the retirement age. Their share has been recently rising because life expectancy has been increasing. Since the baby boom after the Second World War fertility rates have dropped significantly and the fact that the babies born then are now near or have already entered retirement certainly adds to the recent population aging trend as well. Retirement represents an important milestone and marks a start of a new and exciting chapter of life. Generally, retirees have more time and money to spend on travelling, which can considerably boost the demand for tourism. Moscardo (2006) calls this type of senior travel a "third-age tourism" and adds that there is a rising number of companies that specialize in providing tourism services particularly for seniors. For this reason, it has been a hot topic in many tourism demand studies over the past few years, for example of those by Glover and Prideaux (2009) and Kapiki (2012).

4.2.3 Marketing

In order to increase awareness of a particular country as attractive tourism destination tourist organizations around the world spend a lot of money on various promotion activities. (Dwyer and Forsyth, 2006, p.71) state that "*different nationalities and cultures are likely to respond differently to marketing and different destinations vary in their ability to use marketing effectively*", thus it is rather difficult to model the impact of destination promotion correctly. Only a few researchers (for instance Crouch *et al.* , 1992; Rodriguez *et al.* , 2001 or Kulendran and Dwyer, 2009) have decided to face this obstacle and incorporate a marketing variable into their tourism demand models. Rodriguez *et al.* (2001) included the total expenditures for tourism promotion among their determinants of tourism flows, measured by the number of visitors lodged in hotels and apartments in Tenerife. They found out that promotion expenditure has only a small effect on the number of tourists. Overall, due to data constraints on tourism promotion expenditure, marketing is not a very popular variable used to determine tourism demand.

4.2.4 Tourism Tastes - Country Attractiveness

Tastes vary from person to person. Moreover, they change and develop over our life. I already touched upon the subject of changing tastes when mentioning the effect of population aging. Age is just one among other various socio-economic factors that influence travellers' tastes. Sex, marital status and level of education also result in different tastes across population. They can further change as a consequence of rising living standards, advertising or innovation (Song *et al.*, 2009). Due to the fact that there are so many influencing factors, it is very difficult to measure a variable to indicate tastes.

Song *et al.* (2000b) made an attempt to account for changing tastes and derived a destination preference index (DPI). It is expressed as V_i/V_s , where V_i is the total number of visits to destination i and V_s is the total number of visits to competing destinations. From this formula it is evident that if the value of DPI is greater than one, the tourists prefer visiting destination i over the other competing destinations.

Another way to capture destination preference or popularity of a particular destination over time is by inclusion of a time trend. However, the multi-

collinearity between the income variable and time caused that this trend has not been further analysed and was omitted from the models that included it (Shareef *et al.*, 2008).

4.2.5 Repeated Visits

People generally don't like taking risks, it could be said that they are risk-averse. Although this term is mostly used in relation to behaviour of investors, it aptly describes the reluctance to take risks by tourists, too. If they enjoyed the stay in a certain destination it is highly likely that they will return to the same place next time as well. Traveling to a different country they are not familiar with would represent a certain level of uncertainty (Song *et al.*, 2009).

Furthermore, they tell their friends and family about the lovely time they had and what they liked about the destination in particular. After that the information spreads more and more. This is known as so called Word-of-Mouth (WOM) effect. Recent evolution of technology, more specifically in digital social networking, has encouraged the development of a digital version of WOM (eWOM). Increasing number of travellers look on online tourism review sites for details on accommodation at a particular destination in order to plan their travel (Sigala *et al.*, 2001). Additionally, results of a survey conducted as a part of the Pew Internet and American Life Project (2006) confirm that the most searched topics on the internet are tourism related.

Some of the most popular travel websites include TripAdvisor and TravelPod. TripAdvisor calls itself the world's largest travel site. It is a place where travellers share insights about accommodation, attractions or restaurants at a destination. It currently contains more than 100 million reviews. TravelPod allows its users to create a blog containing photos and stories about their travel experiences.

Both WOM and eWOM can be viewed as a form of marketing. They have same effects as promotional activities of national tourist organizations and attract more tourists to a destination. In addition, they are almost always free of charge (Sigala *et al.*, 2001). Numerous studies have been conducted in order to decide which of these forms of marketing is more effective. Kardon (2007) concludes that tourists are more influenced by WOM than advertising or pro-

motion by marketing departments.

The chance of repeated visits, i.e. habit persistence of tourists, is often proxied by the value of dependent variable lagged by one time period. If this variable is included in a model of tourism demand it is expected to have a positive sign. The lagged value accounts not only for habit persistence but also for possible supply constraints in the destinations. Among these constraints are, for example, insufficient hotel and passenger transportation capacity or shortages of staff (Dwyer *et al.* 2006).

Song *et al.* (2009, p.7) state that "*if a partial adjustment mechanism is postulated to allow for rigidities in supply, this results in the presence of a lagged dependent variable in the tourism demand function*". This statement is then proven, starting with adjusting the demand function for tourism product (a) in order to account for the difference in the level of the supplied tourism product and the change in the level of tourism product demanded (b) :

- (a) $Q_{ij} = f(X_{ij} + e_{ij})$, where Q_{ij} is the volume of tourism product demanded in destination i by tourists from origin country j ; X_{ij} are variables that may have an influence Q_{ij} and e_{ij} is the disturbance term.
- (b) $Q_{ijt} - Q_{ij(t-1)} = \mu(Q_{ijt}^* - Q_{ij(t-1)}); 0 < \mu < 1$, where Q_{ijt} represents the quantity of tourism product supplied by destination country i for residents of origin country j in time period t or $t-1$ respectively; Q_{ijt}^* is the quantity of tourism product demanded in destination country i by residents of origin country j in time period t or $t-1$ respectively and μ represents the speed of adjustment of the level of tourism supplied to the level of tourism demanded.

As regards equation (b) we can see, that if $\mu = 0$, then $Q_{ijt} - Q_{ij(t-1)} = 0 \rightarrow Q_{ijt} = Q_{ij(t-1)}$ and the quantity of tourism provided towards the quantity demanded would not change. If $\mu = 1$, then $Q_{ijt} - Q_{ij(t-1)} + Q_{ij(t-1)} = Q_{ijt}^* \rightarrow Q_{ijt} = Q_{ijt}^*$ and the quantity of tourism provided would adjust completely to the quantity of tourism demanded. If μ lies between 0 and 1, as it is specified in equation (b), it means that the quantity of tourism provided adjusts only partially to the quantity demanded. In that case we can rewrite (b) as (c) $Q_{ijt} = (\mu Q_{ijt}^* - \mu Q_{ij(t-1)}) + Q_{ij(t-1)} \rightarrow Q_{ijt} = (1 - \mu)Q_{ij(t-1)} + \mu Q_{ijt}^*$. The demand function for tourism product (c) which was derived from (a) by accommodation

of supply constraints contains the dependent variable lagged by one period and thus justifies the above mentioned assumption made by Dwyer *et al.*(2006).

4.2.6 Dummy variables

Dummy variables (also known as binary variables) are ” *specially constructed variables which take the value “1” when the event occurs and “0” otherwise*“(Salleh *et al.*, 2007, p.356). There is a variety of reasons as to why incorporate dummy variables into tourism demand models. By including them in the analysis we are able to capture the impacts of seasonality (if using quarterly, monthly or daily data), various one-off events or specific demographical and geographical factors (Lim, 1997). Let’s address the seasonality and one-off events more in the following paragraphs.

Specific time of the year, like a season or a period of school holidays, can have a significant effect on tourism demand. Seasonality has been dealt with by many authors but has been avoided by some due to modelling tourism demand based on annual data. Typically, if using monthly data, twelve seasonal dummy variables are included in the model and similarly four seasonal dummy variables are incorporated regarding the quarterly data (Shareef *et al.*, 2008).

An outbreak of a disease, organization of Olympic Games, terrorist attacks, oil crises, wars, all of these are just some among many examples of one-off events, which can be captured by inclusion of a dummy variable (Song *et al.*, 2009). Salleh *et al.* (2007) described and assessed the impacts of SARS (which stands for Severe Acute Respiratory Syndrome) on international tourist arrivals to Malaysia. They investigated the effect of this infectious disease by including a dummy variable for the SARS outbreak in 2003 and estimated it had a negative effect on tourism flows from all of the seven Asian origin countries that were included in their analysis.

Another one-off event that has been often added in a form of dummy variable to the demand models is a year of terrorist attack. Tourism industry, unfortunately, attracts the attention of international terrorist groups, because it provides them with a wide variety of ways how to gain attention of global media. Military bases, government institutions, transportation networks and

crowded places can all become targets.

Terrorist events are responsible for an abrupt change in tourists' decision making and negatively impact upon global tourism demand. Tourists fear for their safety, and moreover, they are discouraged from travelling by heightened security checks resulting in delays in transport systems. However, the apprehension towards travelling doesn't last long. The impact of a terrorist event on tourism is apparent particularly in the short run and has only a limited effect in the long-run (Middleton *et al.*, 2001). During the last decade, the impact of September 11, 2001 attacks on the volume of tourism has been frequently analysed. It had an extraordinary profound effect on tourism demand across countries all over the world. The aftermath of 9/11 wasn't sensed only in the United States but also worldwide because of its unprecedented scale that shocked the whole world (Arana and León, 2008).

Chapter 5

Determinants of Tourism Demand for the Czech Republic

This chapter will provide an empirical analysis of the determinants of international tourism demand to the Czech Republic from thirty-eight different countries (Australia, Austria, Belgium, Bulgaria, Canada, Croatia, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom and United States) which represent most of all foreign arrivals. The period between years 2000 and 2012 is investigated. The analysis will be based on estimation of a dynamic panel data model in order to account for the effects of previous consumption – i.e. repeated visits.

Despite being one of the most important areas in tourism research in the contemporary world, there aren't many studies using an econometric model to estimate the effects of various determinants (see Chapter 4) on tourism demand in the Czech Republic. Very recently, Babecká(2013) analysed the impacts of several macroeconomic and geographical factors on the tourism demand to the Czech Republic from twenty one countries for the period 2000-2012. A gravity model was used for the analysis. Tourism demand was measured by the number of tourists registered at hotels or spa establishments. The determinants estimated were real gross domestic product (GDP) of tourism origin, real exchange rate (RER), the area of origin country, the distance of origin country from the Czech Republic and five dummy variables - landlocked, common boarder, Slavic

language and EU membership. Poisson regression with robust standard errors and random effects were used to estimate the determinants. Babecká(2013) concluded that GDP and the area of the country have a positive effect on the number of foreigners registered at accommodation facilities. On the contrary, RER and distance have a negative effect. Moreover, our neighbouring countries account for more tourists and fewer tourists are coming from countries that don't have access to the sea, i.e. are landlocked. Similar language and EU - membership both have a positive impact on tourism to the Czech Republic.

The structure of this chapter is as follows. In the first part, I will describe the selected measure of the dependent variable, i.e. tourism demand and contemplate on its main characteristics. The second part will be devoted to a brief description of the explanatory variables that were chosen to influence the tourism demand to the Czech Republic. The third section will provide an overview of possible forms of econometric models used in tourism demand literature and its appropriate estimation methods. And finally, the estimation results will be presented in the last section.

5.1 Dependent Variable

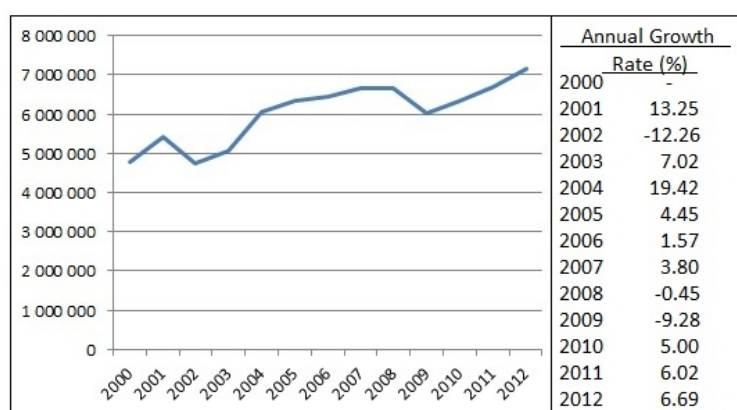
The number of guests registered in collective accommodation establishments (CAE) will be used as a measurement of the number of tourist arrivals, i.e. tourism demand. The data have been collected on a monthly basis by the Czech Statistical Office and are available for the period 2000-2012. In order to avoid seasonality problems and due to unavailability of some data concerning the explanatory variables, the annual numbers of guests will be used for the analysis. In this section I will also briefly describe the evolution of volume and composition of accommodated international guests. For the sake of the following sections let's assume that the terms tourists, tourist arrivals, foreign visitors and international guests are interchangeable.

As mentioned in Chapter 3, the number of international guests collected by the way of registration at accommodation establishment has some limitations as it doesn't account for the visitors that spend the night at their relatives' or friends' houses or for those who are just visiting during the day. The second limitation is that it isn't possible to distinguish between different types tourism that is leisure, business etc. (Song *et al.*, 2009). This doesn't matter though, as

the aim of this thesis is to analyse the determinants of tourism demand for the Czech Republic as a whole that can be driven by all purposes.

Over 45 million guests have registered in CAE during the analysed period of thirteen years. Their number rose by 7% on average each year. As it is

Figure 5.1: The evolution of the number of international guests registered in CAE for period 2000-2012



Source: CSO = Czech Statistical Office, elaborated by author

apparent from Figure 5.1, there were two significant plunges in the number of foreign arrivals. The first one after the year 2001 with a 12.26% drop in numbers, which might have occurred as a result of the 9/11 terrorist attacks. Another possible reasoning is that the early 2000's economic recession affected some of the countries that generate a large share of the international guests. The recent Great Recession of 2008 is probably responsible for the 9.28% decline in 2009. According to the Figure 5.1, its negative effects didn't last long and since 2010 the number of arrivals continued on with its previous steady growth. Another change in the number of guests that strikes the eye is the abrupt rise that occurred in 2004. The number rose by 19.42%, i.e. over 1 million more international guests arrived in 2004 in comparison to 2003.

When having a closer look at the evolution of tourist arrivals from the individual thirty-eight countries (see Figures B.1 and B.2 in the Appendix), the most positive evolution is detectable for Ireland, followed closely by Russia with the Annual Average Growth Rates (AAGR) of 20.39% and 18.54% respectively. On the other hand, Denmark and Israel show the most negative evolution in numbers with the AAGRs of -3.94% and -3.53% respectively. Overall, there are six most important origin countries in terms of share on total tourist arrivals

– Germany, Russia, Slovak Republic, Poland, United States of America and United Kingdom. In 2012 they were responsible for more than a half of all tourist arrivals (see Table 5.1). There are 11 categories of accommodation

Table 5.1: Tourist arrivals by country of origin and their market share, 2012

Country	Number of Arrivals *	Percentage Share of Total **
Germany	1 493 731	20.85%
Russia	694 138	9.69%
Slovak Republic	382 595	5.34%
Poland	370 910	5.18%
United States	366 910	5.12%
United Kingdom	346 527	4.84%
Σ	3 654 811	51.01%

Source: (*) CSO, Czech Statistical Office;(**) computed by author

establishments the data on international guests were collected from (see Table 5.2). The establishments were categorized according to the Official Standard Classification of The Accommodation Facilities in The Czech Republic by The Czech Association of Hotels and Restaurants (AHR CR).

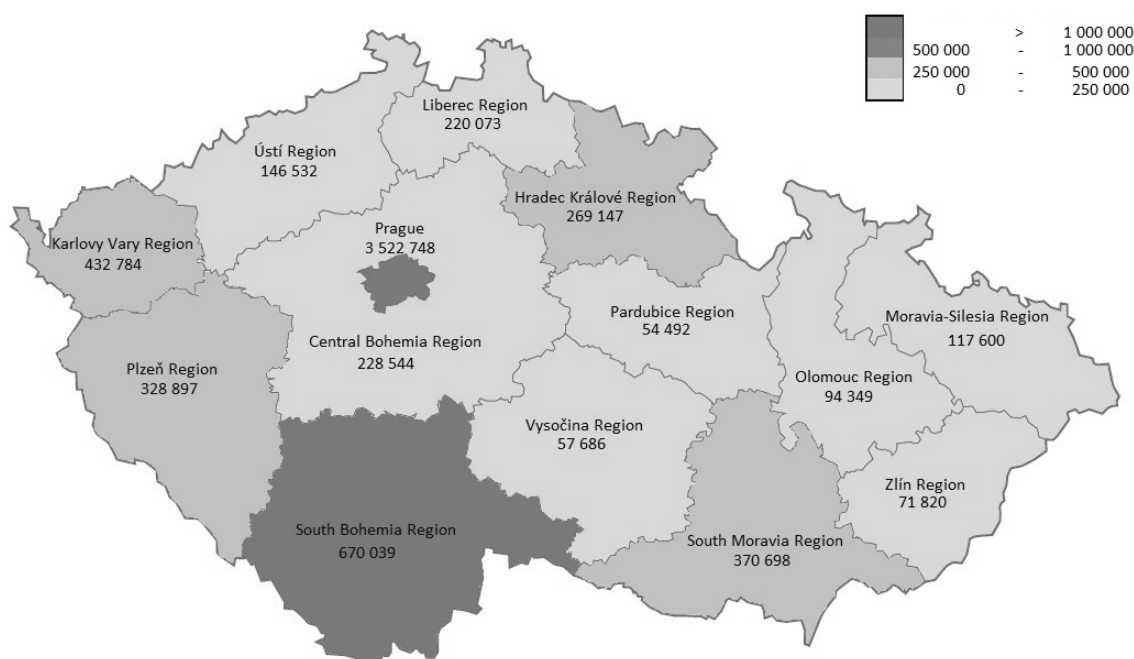
Table 5.2: Number of international guests in collective accommodation establishments by category, 2012

Category	Year		Yearly Average Growth Rate (%) **	Number of Beds	
	2000 *	2012 *		2000 *	2012 *
☆☆☆☆ hotels	418 381	959 023	7.57%	5 966	12 431
☆☆☆☆ hotels	1 144 020	3 230 743	9.88%	23 476	65 576
☆☆☆ hotels	1 064 297	2 050 672	7.02%	127 629	125 243
☆☆ hotels	638 721	126 037	-11.02%		
☆ hotels	204 625	29 672	-12.6%		
hotel garni	93 212	177 090	8.86%		
boarding houses	533 464	233 199	-5.86%		
campsites	418 661	144 368	-5.42%	60 593	68 177
holiday dwellings	18 453	3 510	-10.33%	24 116	30 004
hostels	47 572	35 798	-0.16%	60 580	54 357
other establishments	191 388	214 464	2.85%	n/a	n/a
				135 080	116 227

Source: (*) CSO, Czech Statistical Office;(**) computed by author, n/a = not available

Both at the beginning and the end of the analysed period, most of international guests opted for First Class 4 - star hotels. The number of guest was rising rapidly each year with an average growth rate of 9.88% as more hotels were being built and the number of beds available almost tripled. The luxurious 5-star hotels also went through a big boom, the number of beds more than doubled and so did the number of guests. The least popular option for international guests remained the holiday dwellings throughout the whole period. If we look into the number of accommodated guest in each region of the Czech Republic, by far the most visited is the capital city – Prague. The average number of guests for the period 2000-2012 by regions can be found in the Figure 5.2.

Figure 5.2: Average number of guests in collective accommodation establishments by regions of the Czech Republic for the period 2000-2012



Source: CSO = Czech Statistical Office, elaborated by author

Prague, graced with beautiful nicknames such as “The Heart of Europe” or “The City of a Hundred Spires”, repeatedly ranks in the top 30 in the official Top 100 City Destination Ranking, which has been released annually since 2007 by Euromonitor International (Euromonitor International, 2014). It has been the goal destination of 3 522 748 tourists on average and is responsible for more than a half of all tourist arrivals each year. Most tourists arrived from

Germany, the United Kingdom, Russia, the United States of America and Italy. Russia has been a significant source of tourists only in the second half of the period with highest AAGR of all countries 21.77%. For comparison the AAGR of the biggest source of Prague's tourists Germany is 4.32%. Germany has been responsible for the biggest share of tourist arrivals to Prague, except for the years 2004 and 2005 when it was surpassed by the United Kingdom that generated 82 525 and 51 597 more tourists respectively. One of the possible explanations is the introduction of new cheap flights by various low-cost airlines connecting the biggest cities in the UK with Prague. There were up to 16 regular flights per day in 2004 (Fojtáčová, 2005).

A considerable amount of tourists also visited the South Bohemia Region. The fact that it shares a border with Austria and Germany certainly has an effect on the composition of tourists by origin. According to the data collected by CSO the largest share of total tourist arrivals to the South Bohemia Region consistently belonged to Germany. Austria and the Netherlands have tied for the second place throughout the whole period except for the year 2012. Interestingly enough, more tourists from China arrived to the South Bohemia Region in 2012, than from Austria or the Netherlands.

5.2 Explanatory Variables and Hypotheses Formulation

As mentioned in Chapter 4, based on a classical economic theory, the tourism demand is expected to be influenced mainly by income and price factors. In addition, various other geographical or economic factors were proven to be significant in influencing the volume of tourism demand. Based on the overview of most used determinants of tourism demand in Chapter 4 and data availability, following variables will be incorporated in our model.

I - Income: The measure of income is the Gross Domestic Product (GDP) of each country of tourism's origin which is expressed in *per capita* terms. All data were collected from the World Bank, except for the 2012 value of Israel's GDP, which was gained from Index Mundi. With higher income the tourists are more likely to afford to travel, so tourism demand generally increases. There-

fore a positive sign of the estimated coefficient of income is expected.

P - Price: Tourism prices express the cost of goods and services at destination. They will be measured by an exchange rate adjusted CPI ratio formula constructed based on formula (4.1). The data on CPI indices and exchange rates were collected from the International Monetary Fund (IMF). According to the demand theory, the demand for international tourism is an inverse function of these prices, which means that the lower the cost of living at destination relative to the country of tourism's origin, the greater the demand or the other way around. Therefore, a negative sign of estimated price coefficient is expected.

TO - Trade openness : The international arrivals are said to be determined by the level of business activities among the destination and the country of tourism's origin. According to WTTC (2014b) the business tourism spending consistently generated about 18% of all spending in the Czech Republic, that is why the trade openness variable could play a significant role as one of the determinants of tourism demand. It will be measured as the total value of import plus export between Czech Republic and the country of tourism's origin divided by the total value GDP per capita of the Czech Republic plus the GDP per capita of country of tourism's origin (Ibrahim and Abbas, 2011). The data on exports and imports were collected from International Monetary Fund (IMF). The sign of the estimated parameter for this variable is expected to be positive.

D2001, Drecession- dummy variables: The following dummy variables will be included in the model, in order to account for the one-off events that could possibly have affected the volume of tourism demand during the sample period. The *D2001* variable was chosen in order to capture the impact on tourism demand after the September 11th terrorist attacks. Because the terrorist attacks took place in the third quarter of the year 2001, let's assume that the main effect became noticeable during the following year 2002 (Garin-Munoz and Montero-Martin, 2007). The dummy variable will therefore take the value of 1 in the year 2002 and 0 otherwise. Based on Figure 5.1, I suspect that it will significantly and negatively affect the tourism demand. The *Drecession* variable was also chosen based on its possible effect deduced from Figure 5.1. It will take the value of 1 for the years 2008 and after and the value of 0 for the years before. A negative sign is expected.

TA_{t-1}-lagged value of dependent variable : This variable will be included amongst the regressors in order to account for the effect of WoM, eWoM and repeated visits as a result of habit formation. A positive sign is expected for the estimated coefficient of this variable.

Lastly, in order to reduce the error variances across all countries of tourism's origin, the *population* variable is going to be included in the model serving as a scale variable. That means that not only the GDP, but also the dependent variable and its lagged value will be expressed in *per capita* terms. This allows for comparability across countries (Garin-Munoz and Montero-Martin, 2007).

5.3 Methodology and Model Specification

I will be using a balanced panel (also known as longitudinal) data set of annual data for my analysis. Several advantages stem from working with the panel data. The first one is that they offer a large number of observations, resulting in more degrees of freedom reducing collinearity among explanatory variables, and thus improving the efficiency of estimates. Moreover, using this type of data allows to measure effects of variables that vary little within countries and a lot across countries (Hsiao, 2003). At the beginning of this section I will give an overview of two main forms of models used in estimating pooled datasets - static and dynamic.

Models, specified in static form were used in tourism demand studies mainly during the second half of twentieth century. Static panel model is represented by the equation (5.1).

$$Y_{it} = \alpha + \beta_i x'_{it} + \varepsilon_{it}, i = 1, \dots, N; t = 1, \dots, T; \varepsilon_{it} = \mu_i + u_{it} \quad (5.1)$$

, where N is the total number of countries, t is a time period, Y_{it} is a dependent variable, x'_{it} is a vector of all independent (explanatory) variables and ε_{it} is a zero mean residual. The unobservable time invariant individual effects, like tourist preferences, are denoted by μ_i (Ledesma-Rodriguez *et al.*, 2001, p.12 – 13).

As pointed out by Witt and Song (2000), static models can suffer from

number of problems, for example spurious regression, structural instability and lastly do not account for the effect of changing tourists' preferences.

These problems can be overcome by a dynamic specification of the model, characterized by inclusion of a lagged dependent variable among the regressors. Dynamic panel model is represented by equation (5.2) (Baltagi, 2005, p. 135).

$$Y_{it} = \delta Y_{i,t-1} + \beta_i x'_{it} + \varepsilon_{it}, i = 1, \dots, N; t = 1, \dots, T; \varepsilon_{it} = \mu_i + u_{it} \quad (5.2)$$

In our case $Y_{i,t-1}$ is the lagged value of tourism demand and measures the habit persistence or changing preferences of tourists. However, there is a problem resulting from the inclusion of a lagged dependent variable. Because Y_{it} is a function of μ_i , then so is its lagged value. That means $Y_{i,t-1}$ is correlated with the error term. Thus, if performing the Ordinary Least Squares (OLS) technique to estimate the model, it would result in biased and inconsistent estimators.

In the case of using a fixed effects (FE) estimator, there is a possibility how to get rid of μ_i , which is causing the correlation. The solution would be to do a so called within transformation of equation (5.2), and thereby eliminating the fixed effect μ_i . A within transformation is performed in two steps. First, we average the equation (5.2) across time for each i (5.3) and after that, by subtracting (5.3) from (5.2) we get a time-demeaned equation (5.4).

$$\bar{Y}_i = \delta \bar{Y}_{i,-1} + \beta_i \bar{x}'_i + \mu_i + \bar{u}_i \quad (5.3)$$

, where $\bar{Y}_i = T^{-1} \sum_{t=1}^T Y_{it}$, similarly for \bar{x}'_i and \bar{u}_i

$$(Y_{it} - \bar{Y}_i) = \delta(Y_{i,t-1} - \bar{Y}_{i,-1}) + \beta_i(x'_{it} - \bar{x}'_i) + (u_{it} - \bar{u}_i) \quad (5.4)$$

However, even after performing the within transformation and successful elimination of the unobservable individual effect μ_i , there is still a problem of $(Y_{it} - \bar{Y}_i)$ being correlated with $(u_{it} - \bar{u}_i)$. That occurs because $Y_{i,t-1}$ is correlated with \bar{u}_i , which by construction also contains $u_{i,t-1}$. This results in a biased fixed effects estimator of order $O(1/T)$ that is inconsistent for large N and fixed T (Baltagi, 2005).

Baltagi (2005) further emphasizes an alternative transformation that gets

rid of the unobservable individual effects μ_i and that is a first difference (FD) transformation (5.5):

$$(Y_{it} - Y_{i,t-1}) = \delta(Y_{i,t-1} - Y_{i,t-2}) + \beta_i(x'_{it} - x'_{i,t-1}) + (u_{it} - u_{i,t-1}) \quad (5.5)$$

$$\text{or } \Delta Y_{it} = \delta \Delta Y_{i,t-1} + \beta_i \Delta x'_{it} + \Delta u_{it}$$

In this case, in order to handle the correlation between $Y_{i,t-1}$ and $u_{i,t-1}$, Anderson and Hsiao (1981) came up with an idea of using further lags of ΔY_{it} as instrumental variables (IV) for $Y_{i,t-1}$. Instrumental variables are sometimes introduced to a model in order to obtain consistent estimators. To achieve that, the instruments have to satisfy two assumptions (Wooldridge, 2009):

1) The covariance between an IV and unobservable error is equal to zero, i.e. an IV for ΔY_{it} has to be uncorrelated with Δu_{it} .

2) The covariance between an IV and an endogenous variable (meaning there is a correlation between the variable and the unobservable error) is not equal to zero, i.e. an IV for ΔY_{it} has to be correlated with Δu_{it} .

Anderson and Hsiao (1981) suggested that if u_{it} is IID (independent identically distributed, i.e. there is no autocorrelation of u_{it}), a possible valid instruments for ΔY_{it} would be $\Delta Y_{i,t-2} = (Y_{i,t-2} - Y_{i,t-3})$ or simply $Y_{i,t-2}$. Their estimation method successfully leads to consistent estimates of parameters. However, they are not always efficient as they use only a single moment condition and not all of the moment conditions that are available (Baltagi, 2005).

In 1991 Arellano and Bond introduced a generalized method of moments (GMM) estimation procedure that led to both consistent and more efficient estimates than those proposed by Anderson and Hsiao (1981). They also based their method on performing a FD transformation (5.5) in order to eliminate the unobservable individual effects μ_i . In addition, they emphasize the importance of using all available lagged values of a dependent variable and of all exogenous variables (the variables that aren't correlated with the unobservable error) as instruments. By creating these additional moment restrictions, the model gains efficiency (Baltagi, 2005).

Due to the ability of producing consistent and efficient estimates, the Arellano and Bond's GMM estimator has been used in vast majority of tourism demand studies that specified their model in a dynamic form. The dynamic form was implemented by, for example, Garin-Munoz and Montero-Martin (2007) who identified the habit formation to play an important role in identifying the international tourism demand in Balearic Islands. Leitao (2010) and Aslan *et al.*(2008) came to the same conclusion after analysing the main determinants of Portuguese and Turkish tourism demand respectively. Because I believe that the effect of habit formation on tourism demand to the Czech Republic is worth exploring and might play a significant role in determining its volume, our model will be specified in a dynamic form and will be estimated using the Arellano-Bond GMM estimation method. The model will take on a log-log form, so the parameters can be interpreted as elasticities:

$$\ln TA_{i,t} = \alpha + \beta_1 \ln TA_{i,t-1} + \beta_2 \ln I_{i,t} + \beta_3 \ln P_{i,t} + \beta_4 \ln TO_{i,t} + \beta_5 D2001 + \beta_6 Drecession + v_{i,t}$$

, where $i=1, \dots, 38$; $t=2000, \dots, 2012$, $v_{it} = \lambda_t + \mu_i + \varepsilon_{i,t}$ is a FE decomposition of the error term, λ_t is the unobserved time-invariant specific effect, μ_i is the unobserved country-invariant specific effect and $\varepsilon_{i,t}$ is the error term. The error term is assumed to be IID with $E(\varepsilon_{i,t}) = 0$ and $Var(\varepsilon_{i,t}) = \sigma^2 > 0$ (Leitao, 2009). In addition, $\varepsilon_{i,t}$ is also assumed to be uncorrelated with $\ln TA_{i,t}$ for $t=2, \dots, T$ and with μ_i for any t (Garin-Munoz and Montero-Martin, 2007). It is important to note that the estimated parameters will be the short run demand elasticities. The long run elasticities can be obtained by dividing the estimated coefficients by $(1 - \beta_1)$ (Garin-Munoz, 2006).

5.4 Empirical Results

The model was estimated by the Arellano-Bond GMM estimation method using the STATA statistical software. At first, performing this estimation method resulted in having too many instrumental variables (71) compared to the cross-sectional sample size (in our case 38) (see Appendix). This represents a certain problem, because having too many instruments increases finite sample bias (Garin-Munoz, 2006). To prevent this from happening, we are going to limit the lag depth and use only instruments lagged up to three periods (Mehrhoff, 2009). This reduces the number of instruments to 36. New estimation results

can be found in Table (5.3).

Table 5.3: Arellano-Bond GMM estimation results

Variable	Arellano-Bond Estimator	Expected Signs	Long Run Parameters
$\ln TA(t-1)$	0.31(4.44) ***	+	
$\ln I$	0.39(7.27) ***	+	0.56
$\ln P$	-0.39(-4.70) ***	-	-0.56
$\ln TO$	0.017(0.39)	+	0.025
$D2001$	-0.18(-7.32) ***	-	
$Drecession$	-0.02(-1.70)*	-	
Sargan test	35.23 (0.197) d.f. 29		
Autocorrelation(2)	-1.02(0.31)		
Wald test	1122.42 (0.00) d.f. 6		

Source: data processed by author. T- statistics are in parentheses. (*) statistically significant at 10% level, (**) 5% level, (***) 1% level, d.f.=degrees of freedom

Before the results can be interpreted, we need to make sure, that the estimates are valid, i.e. there is no second order autocorrelation in the errors and the instruments used are valid. A Sargan test of overidentifying restrictions was used in order to test for validity of instruments. Under the null hypothesis the overidentifying restrictions are valid. The test resulted in a p-value of 0.197 (see Table 5.3) so we did not reject the null hypothesis and thereby confirmed the validity of instruments (Sargan, 1958). No significant evidence of second order autocorrelation in errors was proven by conducting an Arellano-Bond test. We failed to reject the null hypothesis of second order autocorrelation in FD errors. That means the estimators are consistent.

The results show that all estimators have the expected signs. The lagged value of the dependent variable is significant and positive, which confirms the hypothesis that the habit formation and WoM positively affect the international tourism demand in the Czech Republic. In fact, 31% of total tourist arrivals consist of tourists that return to the country after having a pleasant experience and of tourists that have been attracted by the means of WoM.

The estimated coefficients of income both in the short-run (0.39) and long-

run (0.56) show that the tourism demand is income inelastic, i.e. the income elasticity is positive but less than one. Especially in the short run, the low value the coefficient suggests, that tourism demand to Czech Republic is not very dependent on the economic situation in countries of tourism's origin. In other words, the results show that tourism to the Czech Republic is not considered to be a luxury service, which coincides with the findings of Smeral (2003). He forecasted that tourism in general or to a specific country will be gradually losing its luxurious status.

The estimation results show that tourism prices are a significant variable in explaining the changes of volume of tourism demand. Their effect is negative. In the short-run a 1% increase in tourism prices leads to a 0.39% decrease in the number of tourist arrivals or vice versa. Similarly, in the long-run a 1% increase leads to a 0.56% decrease in the number of tourist arrivals or vice versa. This finding is consistent with the demand theory which suggests that demand for international tourism is an inverse function of tourism prices.

One thing the price and income variables have in common is that their estimated elasticities are greater in the long-run than in the short-run. This suggests that tourists tend to be more influenced by the income and price changes in the long-run. These results are in line with those of Aslan *et al.* (2008), who estimated the effects of determinants of tourism demand for Turkey using the same econometric approach. They found out, that international tourism demand to Turkey is both income and price inelastic, with higher elasticities detected in the long run. The similarity of tourism demand responsiveness to changes in income and price variables is supported by the fact that Turkey offers similar tourism products as the Czech Republic and their tourists originate mainly from the same source markets (WTTC, 2004a).

The trade openness variable has an expected positive sign but it is insignificant in explaining tourism demand. Therefore, bilateral trade doesn't help to explain the changes in tourism demand. Similarly, the Great Recession dummy variable has the expected negative sign and is significant, but only at 10% level. This corresponds with our finding, that tourism demand to the Czech Republic is income inelastic. Therefore, poor economic conditions in the tourism generating countries had only a minor negative effect on the level of tourism. The D2001 variable was included in the model in order to reflect the impacts of the

9/11 attacks. As suspected, the results show that the terrorist attacks had a significant and negative impact on the number of arrivals.

Chapter 6

Conclusion

The purpose of this bachelor thesis was to summarize the factors that affect international tourism demand, identify the most important factors and examine how these factors influenced the international tourism demand for the Czech Republic in the period 2000-2012.

Firstly, we touched upon the subject of economic importance of international tourism, defined what exactly do the terms “tourism” and “tourist” stand for and summarized possible measures of tourism demand. Tourism is seen as a major driving force of economic recovery and growth. Its main beneficial effects on a country’s economy arise from the volume of tourism spending and its further redistribution. We found out that there are three main types of effects- *direct*, *indirect* and *induced*, collectively known as *total* effects. The *direct* effects are associated with initial flow of tourism spending, which means money spent at accommodation establishments, restaurants, on a train ticket or other tourism products. The *indirect* effects are changes in the scale of production, government expenditure and investment in tourism as a result of further secondary flows of tourism spending. The additional expenditure of individuals or households, which has been possible due to higher employment caused by both *direct* and *indirect* effects represent the *induced* effect of tourism. In 2013 tourism contributed USD 7 trillion (9.5%) to the world’s GDP, from which one third resulted from *direct* effects and two thirds from *indirect* and *induced* effects (WTTC, 2014a).

The second part of the thesis was devoted to a summarization of determinants of tourism demand and further econometric analysis of factors influencing

the inbound tourism to the Czech Republic from thirty-eight different countries. The period between years 2000-2012 was investigated. We estimated a dynamic panel data model using the Arellano-Bond GMM estimation method, which was proven to produce consistent and efficient estimates. The number of guests registered annually at collective accommodation establishments (CAE) was used to measure the number of tourist arrivals, i.e. tourism demand. Income, tourism price, trade openness and the dummy variables for terrorist attacks in 2001 and the Great Recession were chosen as explanatory variables. The income variable was measured by GDP per capita, tourism price by the exchange rate adjusted CPI ratio formula (4.1) and finally trade openness was specified as the total value of import plus export between Czech Republic and the country of tourism's origin divided by the total value GDP per capita of the Czech Republic plus the GDP per capita of country of tourism's origin. In addition, the dynamic specification of the model allowed us to account for the effects of previous consumption – i.e. repeated visits.

The results showed that tourism demand to the Czech Republic is income and price inelastic both in the short-run and the long-run. The small responsiveness of tourism demand to fluctuations of income and price variables suggests that tourism demand to Czech Republic is not very dependent on the economic situation in countries of tourism's origin. This assumption was supported by the low and almost insignificant estimated coefficient of the Great Recession dummy variable. The fear for one's safety while travelling after the 9/11 terrorist attacks was estimated to have a significant and negative effect on tourism demand to Czech Republic. On the other hand, bilateral trade represented by the trade openness variable was found statistically insignificant. Moreover, one of the main conclusions of the analysis is the significant and positive coefficient of the dependent variable (0.31), which suggests that 31% of total tourist arrivals are attributable to habit formation and the Word-of-Mouth effect.

This has significant implications for the design of future policies aiming to attract foreign tourists. The results of econometric modelling suggest that public and private sector organisations concerned with sustaining/increasing inbound tourism (measured as the number of tourists lodging at collective accommodation establishments) should focus on enhancing the experience of foreign tourists, for example by improving the services offered to them, thus

further strengthening habit formation and WoM.

Appendix A

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Appendix B

Appendix

STATA Output:

Arellano-Bond dynamic panel-data estimation (too many instruments)

```
. xtabond lnTA lnI lP lnTO D2001 drecession, nocons
```

```
Arellano-Bond dynamic panel-data estimation   Number of obs       =       418
Group variable: country1                     Number of groups    =        38
Time variable: year

Obs per group:   min =       11
                  avg =       11
                  max =       11

Number of instruments =       71                Wald chi2(6)        =    1083.96
                                                Prob > chi2         =       0.0000
```

One-step results

	lnTA	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
lnTA						
L1.		.4613429	.061042	7.56	0.000	.3417028 .580983
lnI		.3279774	.0508033	6.46	0.000	.2284048 .4275501
lP		-.493969	.0811068	-6.09	0.000	-.6529355 -.3350026
lnTO		.0193379	.0419687	0.46	0.645	-.0629191 .101595
D2001		-.1906652	.0253734	-7.51	0.000	-.2403962 -.1409342
drecession		-.0335429	.0148919	-2.25	0.024	-.0627305 -.0043553

Instruments for differenced equation

GMM-type: L(2/.)lnTA

Standard: D.lnI D.lP D.lnTO D.D2001 D.drecession

Arellano-Bond dynamic panel-data estimation (maximum number of lags (3))

```
. xtabond lnTA lnI lP lnTO D2001 drecession, lags(1) maxldep(3)

Arellano-Bond dynamic panel-data estimation   Number of obs   =   418
Group variable: country1                     Number of groups =   38
Time variable: year

Obs per group:   min =   11
                  avg =   11
                  max =   11

Number of instruments =   36                  wald chi2(6)    =  1122.42
                                                Prob > chi2     =   0.0000

One-step results
```

	lnTA	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
	lnTA						
	L1.	.3100222	.0698257	4.44	0.000	.1731664	.446878
	lnI	.3953098	.054351	7.27	0.000	.2887838	.5018359
	lP	-.3912425	.0833029	-4.70	0.000	-.5545133	-.2279717
	lnTO	.0169258	.04294	0.39	0.693	-.067235	.1010866
	D2001	-.1797221	.0245415	-7.32	0.000	-.2278226	-.1316217
	drecession	-.0242628	.014293	-1.70	0.090	-.0522766	.0037511
	_cons	-7.716314	.8543982	-9.03	0.000	-9.390904	-6.041725

```
Instruments for differenced equation
GMM-type: L(2/4).lnTA
Standard: D.lnI D.lP D.lnTO D.D2001 D.drecession
Instruments for level equation
Standard: _cons
```

Sargan test of overidentifying restrictions and Arellano-Bond test for zero autocorrelation

```
. estat sargan
Sargan test of overidentifying restrictions
H0: overidentifying restrictions are valid

chi2(29)    =  35.23344
Prob > chi2 =   0.1970
```

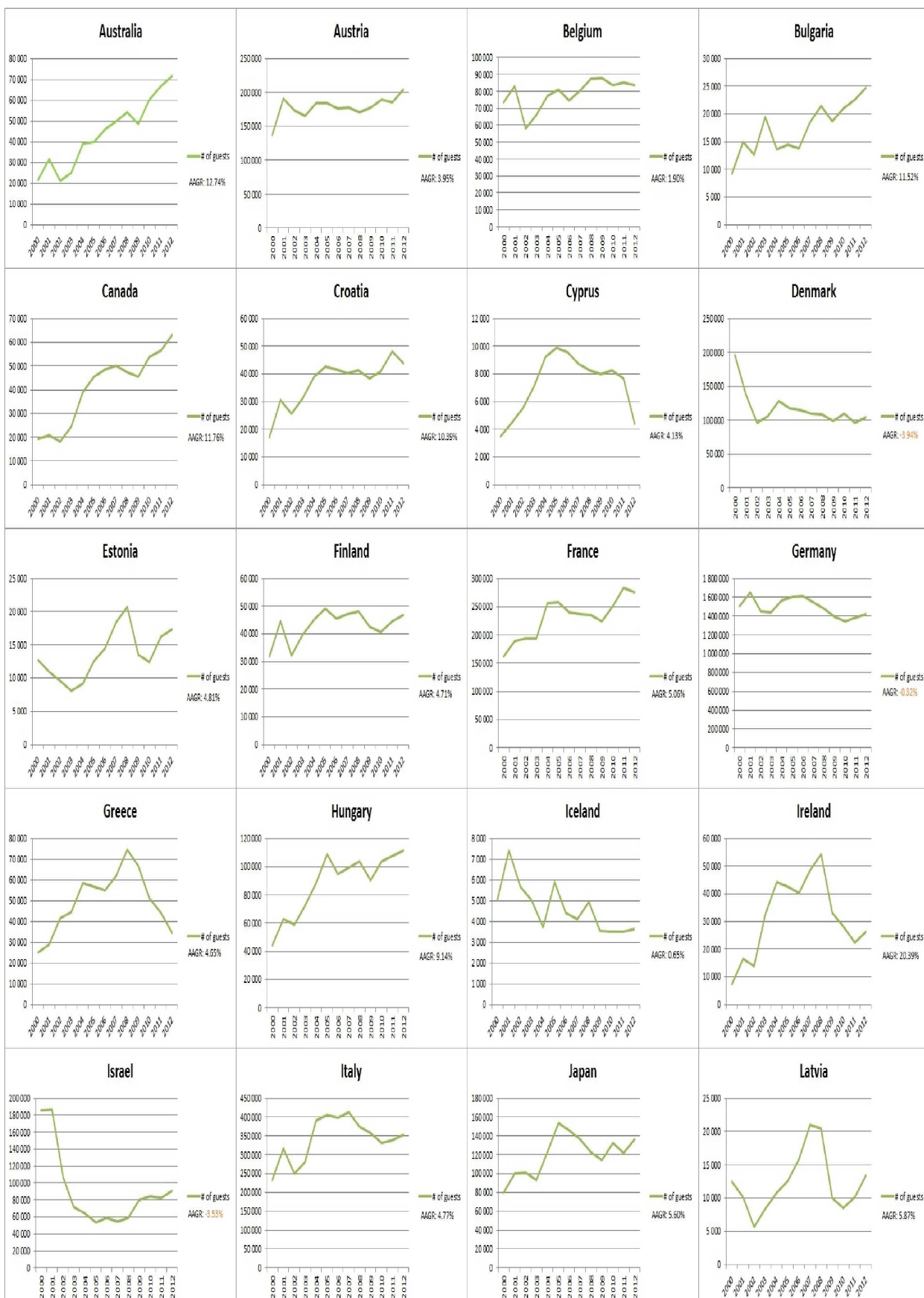
```
. estat abond
```

Arellano-Bond test for zero autocorrelation in first-differenced errors

Order	z	Prob > z
1	-3.5179	0.0004
2	-1.0172	0.3091

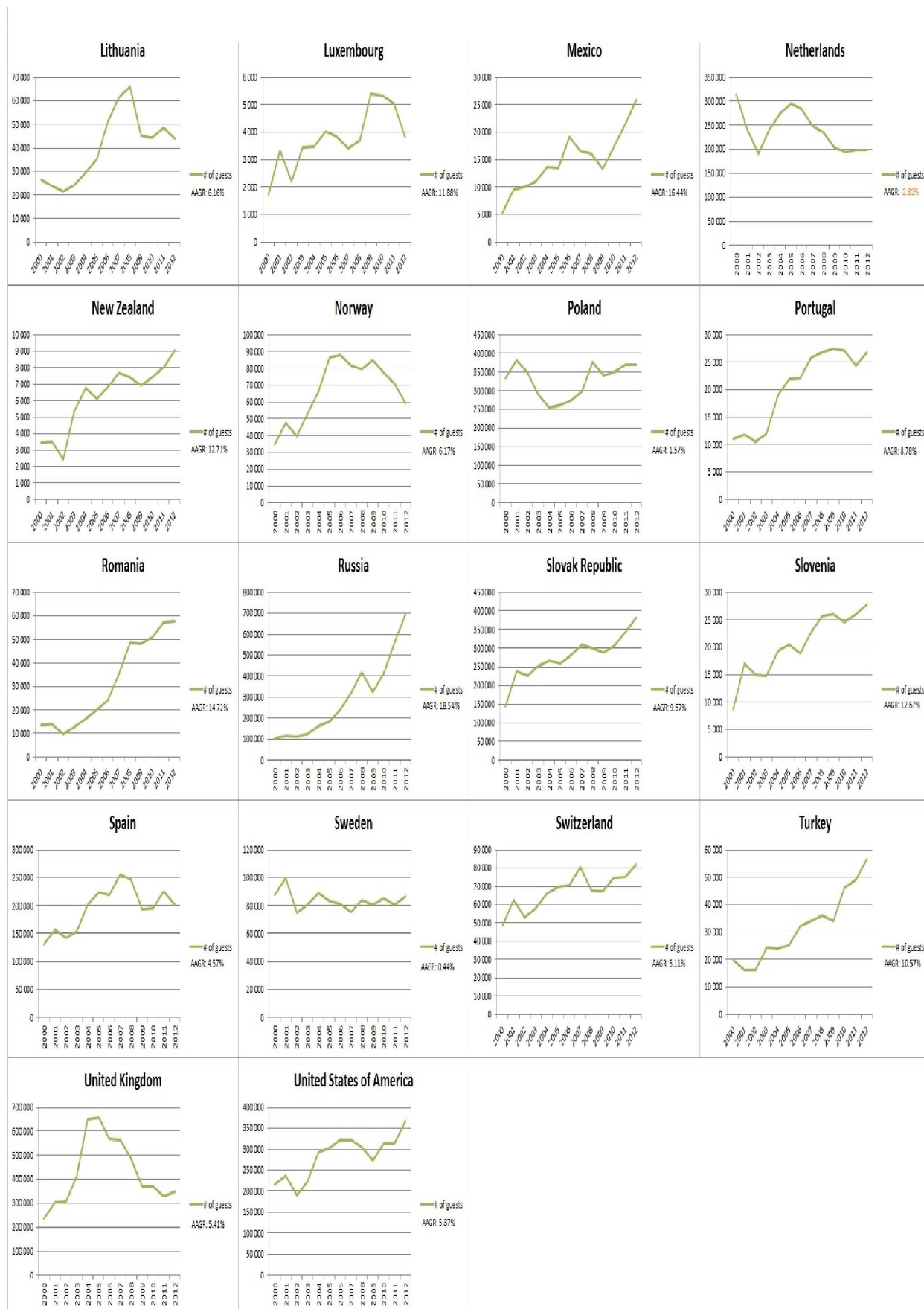
H0: no autocorrelation

Figure B.1: Average Annual Growth Rate (AAGR) of 38 analyzed countries, 2000-2012



Source: CSO = Czech Statistical Office, elaborated by author

Figure B.2: Average Annual Growth Rate (AAGR) of 38 analyzed countries, 2000-2012, cont.



Source: CSO = Czech Statistical Office, elaborated by author