Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Economics

Bachelor Thesis

Economic Analysis of Incoming Tourism to Prague

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Declaration

I declare that I have worked on my bachelor thesis titled "Economic Analysis of Incoming Tourism to Prague" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the bachelor thesis, I declare that the thesis does not break copyrights of any their person.

In Prague on 14 March, 2016.   _____

Nga Nguyenová

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Ekonomická analýza příjezdového cestovního ruchu Prahy

Souhrn

Cílem této bakalářské práce je určit hlavní zdrojové země, které tvoří největší podíl příjezdového cestovního ruchu v Praze a najít faktory ovlivňující jejich příjezdy.

Práce je rozdělena do dvou částí. První - teoretická část - představuje základní pojmy a definice týkající se cestovního ruchu, dopady cestovního ruchu na ekonomiku a charakterizuje cestovní ruch jak Česka, tak Prahy. Poté praktická část, hodnotí data každé zdrojové země zvlášť na základě regresní analýzy a prognostiky. Cílem této části je nejprve určit jaké ekonomické ukazatele dané země ovlivňují příjezdový turismus Prahy a také předpovědět následující počty příjezdů do Prahy z dané země.

Analýza například ukazuje, že směný kurz cizí měny ku české koruně je méně významný než nominální hrubý domácí produkt dané země jakožto faktor příjezdového cestovního ruchu.

Klíčová slova: Cestovní ruch, příjezdový cestovní ruch, domácí cestovní ruch, Praha, Česká Republika, příjezdy turistů, směný kurz, hrubý domácí produkt

Economic Analysis of Incoming Tourism to Prague

Summary

The purpose of this bachelor thesis is to determine the source countries travelling to Prague the most, as well as the factors which influence their arrivals.

The thesis is divided into two main parts. Initially, the theoretical part introduces and defines basic terms of tourism, impacts of tourism on economy and characterises tourism of country as well as Prague. Afterwards, the practical part evaluates data of each source country individually based on the regression analysis and the forecasting method. The aim of this section is firstly to determine what economic indicators of a given country influences incoming tourism to Prague, and secondly to forecast the future value of the number of tourist arrivals to Prague from a given country.

For instance, the analysis shows that in general, the exchange rate of a foreign currency to Czech koruna is less significant than the nominal GDP of a given country as a predictor of incoming tourism.

Keywords: Tourism, Prague, the Czech Republic, Incoming Tourism, Tourist Arrivals, Domestic Tourism, Exchange Rate, Gross Domestic Product

Table of Contents

List of Figures

List of Tables

List of Appendices

List of Abbreviations

bn.	Billion
CAE	Collective Accommodation Establishments
CNY	Chinese yuan
CZK	Czech koruna
etc.	*et cetera*
EU	European Union
EUR	Euro
GDP	Gross domestic product
M	Million
OECD	Organization for Economic Co-operation and Development
per capita	*by head*
PLN	Polish zloty
SKK	Slovak koruna
UK	The United Kingdom of Great Britain and Northern Ireland
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNWTO	United Nations World Tourism Organization
USA	The United States of America
USD	United States dollar
WTTC	World Travel & Tourism Council

Introduction

Tourism is a rapidly growing sector, which contributes significantly to the World's economy and to the economy of individual countries. Thanks to higher incomes and standards of living and more free time, travelling has become a part of people's lives. Globalization, lowering of barriers to travel, and a desire to explore the World reinforce the development of tourism.

Tourism is a mean of cultural education and education itself. It motives individuals to learn foreign languages and to get to know different cultures and habits. Tourism is a phenomenon which affects its environment and reversely this environment affects tourism. From an economic point of the view, tourism influences a number of other sectors such as accommodation, transportation, and food and beverages sector and by this it creates a multiplier effect. Tourism takes an influential share in the World's gross domestic product and provides a great number of job opportunities. It positively impacts the balance of payments as well.

The Czech Republic, as a developed country of the Central Europe and the European Union member, maintains a very popular status among inexpensive and worth visiting destinations. The combination of an accessible location, friendly prices, historical culture, and nightlife makes the Czech Republic, and especially its capital city Prague, one of the most visited cities in the World.

The number of tourists, who visit Prague from abroad as well as from other parts of the country, is increasing year by year. The non-resident tourists have a significant contribution to Prague's economy and have become an inseparable part of Prague in general. A major share of the tourist arrivals is made in particular by ten, the most important, countries for incoming tourism to Prague. Their arrival pattern has changed during a time and it can be explained by economic indicators of the individual country.

Objectives and Methodology

Objectives

The purpose of the thesis is to evaluate incoming tourism in the capital city of the Czech Republic as Prague as a destination accounts for 65% of the total tourism in the country The first goal is to determine the major counties whose residents travel to Prague the most, in other words, which are the source countries that take the largest share in the total arrivals to Prague. The second goal is to estimate whether changes of the chosen economic indicators, the nominal GDP and the currency of the other country, influence changes in incoming tourism to Prague or not.

Methodology

First of all, the theoretical part covers basic yet fundamental general information about tourism. Relevant data have been gathered for a purpose of illustrating the given definitions and terms. Afterwards, the importance of tourism is explained and exemplified from an economic point of view. Also as the part of this section, the Czech Republic and Prague have been individually described and evaluated as touristic locations. The background study is done by using the methods of synthesis, deduction, induction, and extraction.

The analytical part comprises empirical research of gathered data by used of statistical approach such as regression analysis, both qualitative and quantitative methods, as well as forecasting methods and data mining. Each source country has its dataset of collected annual data in a time period ranged from 2000 to 2015.

After evaluating each country separately and finding its significant predictors of incoming tourism to Prague, the results are taken, compared and analyzed as a whole. The general pattern and trends can be explained as a particular phenomenon. In order to visually depict the results, graphs and charts have been created and described.

Theoretical Part

Tourism

Definition of Tourism

Tourism comprises travelling, however, not all kinds of travelling is a form of tourism. Tourism comprises recreation, however, not all kinds of recreation is tourism. Tourism is being carried out in the free time, however, not all the free time is devoted to tourism. From these opening sentences it is evident that defining tourism is not simple (Pásková and Zelenka, 2002).

Tourism should be thought of like a phenomenon which affects an environment – where it is being carried out – and reversely this environment affects tourism. For objective understanding it is necessary to look at tourism from different points of view and facets. Tourism is presented as a system which depicts relationships with superior and different phenomena as well as its own components which are parts of the system. Particularly economic, social, political, technological, and ecological environments are considered as the superior systems (Vystoupil, 2006).

The subjects of tourism are visitors and the final destinations, facilities, and touristic organizations belong among the objects of tourism. The mentioned system then facilitates to understand the extent of the sector and its relationships with others (Vystoupil, 2006).

Appositely tourism should not be looked at as an independent sector, however, as an industry which is a result of other industry's services such as hospitality (accommodation and food and beverages sector) and transportation. If the industrial tourism is concerned, it is usually referred to the services of travel agencies (Horner and Swarbrooke, 2003).

In general, tourism is travelling for pleasure. As the globalization process, driven by international trade and investment and supported by information technology, has risen, tourists no longer travel for personal pleasure but also for business (Globalization101.org, 2015). The World Tourism Organization defines tourism in a broad sense as a phenomenon of a social, cultural and economic nature that comprises travelling and staying in places outside people's usual environment for at least 24 hours but not more than one consecutive year for personal,

business (professional) or other purposes. These people are called visitors (Media.unwto.org, 2015).

According to James Mak, the term "tourism" should be reserved to refer to pleasure travel especially as the tourist, whose origin of the word stems from the term tourism, travels for personal pleasure compared to other travellers (Mak, 2004).

Tourism is a way of fulfilling people's needs in a field of recreation, travelling, spa treatments, culture and it happens in the free time outside one's usual environment. It is a relocation of people from the place of their permanent stay to the touristic place. It is demanding services related to a stay in a particular touristic place.

Forms of Tourism

Three basic forms of tourism are distinguished; they are domestic tourism, inbound tourism, and outbound tourism. Sometimes the forth form is added and it is transfer tourism. Combination of these in various ways derives additional three forms of tourism and there are following: national, internal, and international tourism.

Domestic Tourism

Domestic tourism refers to tourism of domestic visitors to an area of a country of their residence. It comprises a part of a domestic tourism trip as well as a part of an outbound tourism trip. The domestic tourism trip is such a trip with the main destination within the particular country of the resident (International Recommendations for Tourism Statistics 2008, 2010).

Inbound Tourism (Incoming Tourism)

Inbound tourism is such a form of tourism which comprises travels to the country of reference by foreign visitors on their inbound tourism trip (International Recommendations for Tourism Statistics 2008, 2010).

Outbound Tourism (Outgoing Tourism)

Outbound tourism is understood as tourism of visitors outside the country of reference, which is the country of their residence, whether as a part of an outbound tourism trip or a domestic tourism trip. The consumption of resident visitors of the country of reference outside

the economy of reference is understood as the inbound tourism consumption. However, goods for travels bought in the own country belong to the consumption of domestic tourisms. Thus, outbound tourism is also referred to passive tourism when it comes to economic influence. The balance of payments shows not only outflow of tourism expenses abroad but also outflow of foreign exchange funds (International Recommendations for Tourism Statistics 2008, 2010).

Transit Tourism

This form of tourism is sometimes considered as a special type of inbound tourism. The country of reference is a transit from the country of resident to the country of the main destination. The non-resident visitors pass by the referenced country for an amount of time whose length differs but it is unimportant. The only requirement is that the foreign visitor generates some money to the referenced country by participating in an economic activity (International Recommendations for Tourism Statistics 2008, 2010).

Internal Tourism

Internal tourism, which includes domestic and inbound tourism, is the tourism of resident and foreign visitors to the economic area of the country of reference (International Recommendations for Tourism Statistics 2008, 2010).

National Tourism

Domestic and outbound tourism are part of national tourism and it involves activities of only resident visitors within and outside the economic area of the country of residence (International Recommendations for Tourism Statistics 2008, 2010).

International Tourism

International tourism comprises inbound and outbound tourism. Thus travels of foreigners to the economic area of the country of reference on their inbound tourism trips and also travels of resident visitor abroad from the country of reference, whether as part of domestic or outbound tourism trips, are considered as international tourism (International Recommendations for Tourism Statistics 2008, 2010).

Statistical Trends

As standards of living have been growing, thanks to education and technology people's awareness of the world and desire to explore are rising. Aided by the growth of free time and especially income, and improvements of infrastructure and mainly an easy entry to most of the countries, people's passion to travel can be met nowadays. As a result, tourism has grown rapidly over the last years, in the post-war period. It should be noted that contributions of economic, social, cultural, and environmental factors are fundamental to the growth (Harry Coccossis, Mary Constantoglou, 2006).

The ascending trend is depicted on graphs below. Used data to conduct the following section on trends in tourism have been taken from the statistics portals Statista.com and World Tourism Organization.

International Tourism by Purpose of Visit

In 2014, about 53 percent of international inbound travel was leisure travel. Twenty-seven percent of the travel was for purposes as visiting friends and relatives, religious, pilgrimage and medical tourism. Business and professional travel counted up to 14 percent and 6 percent was for other not specified purposes (Statista, 2015).

International Tourist Arrivals

International tourists are such tourists that travel to a country other than a country of their residence and stay overnight but not longer than for a period of twelve months. These data represent the number of arrivals, not the number of visitors. Therefore each trip of a person who visits a particular country several times in a tracked period is counted as a new arrival (Data.worldbank.org, 2015).

The numbers of arrivals of international tourists in the years from 1995 to 2015 are shown in the line graph below (see Figure 1). Year by year the number of people travelling the globe increases and over the last years it doubled, specifically from 527 million in 1995 to 1.03 billion in 2012. In 2015, the number of international arrivals reached 1.18 billion. The regular steep growth is observed and based on this tendency the number of arrivals is forecasted to meet the two billion mark by 2030 (Statista, 2015).

Figure 1. Number of international tourist srrivals worldwide from 1995 to 2015

International Tourist Arrivals
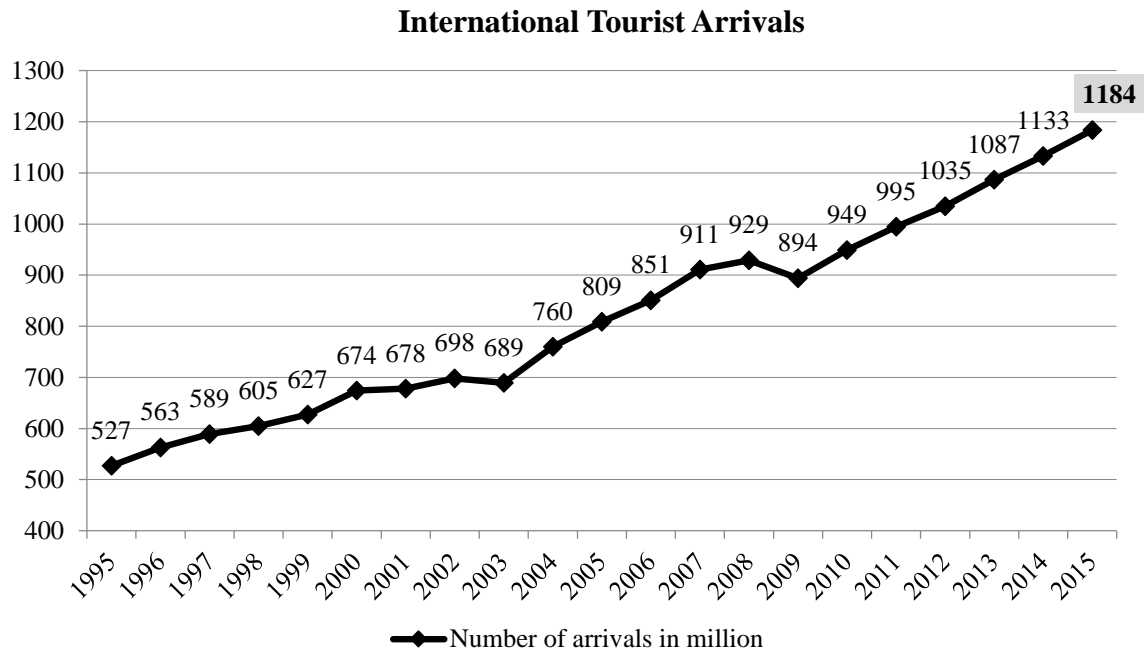
Source: own construction based on Statista.com (2015)

International Tourist Arrival by Region

Incoming tourism is unequally spread in the world. The most visited region has been Europe with the 581 million arrivals in the year 2014. How the total number of international arrivals is divided by region is shown in the bar chart bellow (see Figure 2).

Despite the large number of arrivals to Europe, the speedier growth of about 30 percent over six years is seen in international tourist arrivals to Asia Pacific. This region includes the part of the world in or near Western Pacific ocean, which is South Asia, Southeast Asia, East Asia, and Oceania. The growth of visits to North America is almost 20 percent from 2008 to 2014. According to the data from the Statista.com website, until 2008 the number of tourist arrivals to Middle East slightly grew and from then on it is rather unstable (Statista, 2015).

Figure 2. Number of international tourist arrivals by region in selected years

International Arrivals by Region
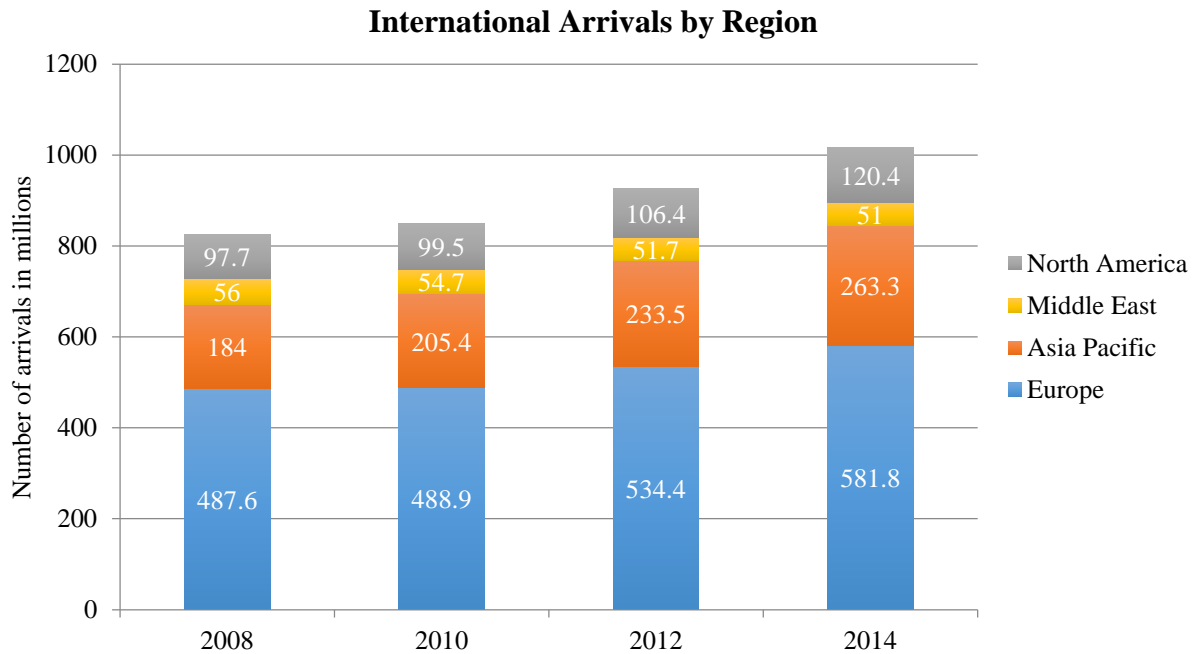
Source: own construction based on Statista.com (2015)

Top 10 Destinations and International Tourism Receipt

Ten most visited world's destinations are shown in the left side of Table 1 followed by numbers of international arrivals in million. The right side of Table 1 lists countries that profit the most from the international tourism, which means there is the order of destinations by the international receipts. Listed data are from the year 2014 and they are the most recent data for the current year (World Tourism Organization, 2015).

France has been the most visited country of the world for year, however, the United States, which is right after, increased the number of tourist arrival by 35% over last five years, whereas number of arrivals to France increased by 12%. The first ten countries generate approximately 43% of total international tourist arrival. A strong geographical concentration can be seen, especially in Europe, however, this trend is aiming to a gradual diversification. New destinations mostly from Asia Pacific will appear (Goeldner and Ritchie, 2014).

Table 1. World's Top 10 destinations by number of international arrivals and tourism receipts in 2014

International Tourist Arrivals			International Tourism Receipts		
Rank	Country	International tourist arrivals [M]	Rank	Country	International tourism receipts [bn.]
1	France	83	**1**	United States	177
2	United States	74	**2**	Spain	65
3	Spain	65	**3**	China	56
4	China	55	**4**	France	55
5	Italy	48	**5**	Macao (China)	50
6	Turkey	39	**6**	Italy	45
7	Germany	33	**7**	United Kingdom	45
8	United Kingdom	32	**8**	Germany	43
9	Russian Federation	30	**9**	Thailand	38
10	Mexico	29	**10**	Hong Kong (China)	38

Source: UNWTO (2016)

Interestingly, the top four places in both sides of the table are taken by the same destinations although in the mixed order. As far as international tourism receipts are concerned, the United States profit the most since they appeal to a large number of tourists, who spend a lot, stay a longer period of time and travel from further destinations (World Tourism Organization, 2015).

Most popular visited

As the research for this work is targeted at Prague, this subsection moves the focus from regions into cities. As depicted above, the number of visitors significantly varies from a region to another, in the same way; there are certain most popular cities that attract visitors to a particular region. The number of overnight visitors in the most travelled cities and the cities are listed in Figure 3. Apart from five cities, the most popular cities are also the leading cities in international visitor spending in 2015. The number of expenditures is correspondingly listed in the base of the bars in the chart.

Figure 3. The most popular city destinations, their number of visitors and total visitor spending in 2015

Number of Visitors in the Most Popular Cities and Total Visitor Spend in 2015

Number of international overnight visitors in millions ■ Visitor spending in billion USD
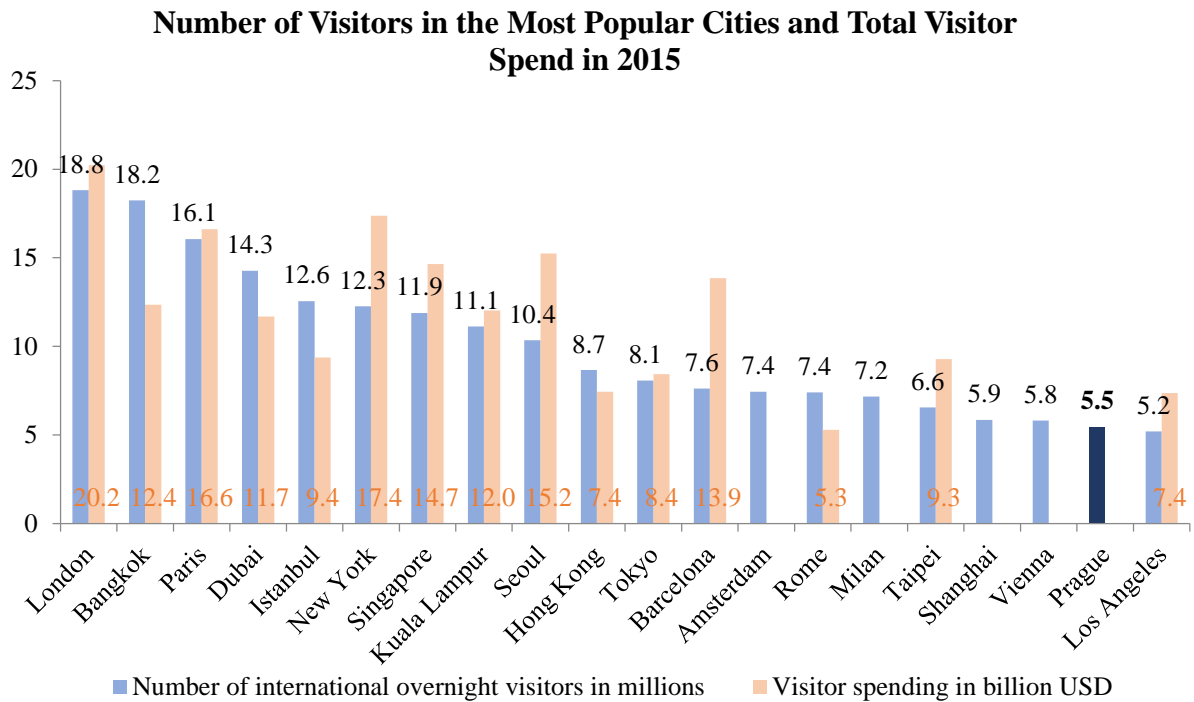
Source: own construction based on Statista.com (2015)

Out of twenty most popular city destinations eight lay in Europe, the same number in Asia Pacific, and the rest is also equally divided in North America and Middle East. The most visited city in the world is London which has comprised almost 19 million visits so far in 2015. Nearly half of the visits are holidays and about 25 percent counts for business visits. An interesting sector is a study sector which accounts relatively high number of visits in London than in the most of the cities. As far as travel expenditures, on average the most is spent during business visits – those cost double as holidays counted per day (London & Partners, 2014).

Not only the most popular but London is also the city where travellers have spent the most of money. That is corresponding considering the high number of visitors that must lead to high spending in total.

Surprisingly, Prague, the Czech Republic ranks among the top 20 cities based on the number of visitors. Based on a survey results by the blog of Statista.com according the readers, Prague is also the third best-rated city to travel to.

Economics of Tourism

Tourism presents an important and fast developing segment of the domestic and the world's economy. It ranks as fourth amongst industries of goods and services export. That is why sometimes tourism is considered and referred as an industry. It is an industry which creates a significant multiplier effect. Not only that tourism influences the growth of other industries but it also positively affects employment rate, growth of gross domestic product (GDP), balance of payments of the country and its incomes and investments (Harry Coccossis, Mary Constantoglou, 2006).

How tourism differs from other industries is the fact that the points of production are as well as the points of consumption, they coincide. As tourism keeps its ascending course, the globalization in the field of goods and services grows along with it. It contributes to economic growth in areas where tourism appears and is developed. The growth of tourism requires the contribution of environmental, cultural, economic and social factors. For such reason, tourism is described and characterized as a multifaceted sector (Harry Coccossis, Mary Constantoglou, 2006).

Tourism and its cross-sectional character positively interfere with a number of other segments of the economy. Those are in particular transportation, building industry, trade and commerce, telecommunication, banking, etc. Tourism Satellite Account records the link amongst tourism and the other sectors and the importance and benefits of tourism as a whole. Tourism has mostly positive influence also on environmental protection and maintaining cultural traditions (Goeldner and Ritchie, 2014).

The growth of tourism is instable in the last decade and its steep increase, accrual, or decrease has had an impact on tourism as a whole. However, in the long-term perspective, it is believed that initial factors will keep the sector of tourism growing. Tourism is highly affected by economic crises, terrorism, wars, natural catastrophes as earthquakes, tsunami, volcanic activities, and other factors, but as the figures and the progress show this is a sector which recovers quickly (Goeldner and Ritchie, 2014).

Demand

Demand in economics is defined as the quantity of a good or service that consumers are require and are able to purchase in a certain period of time. Defining determinants of demands in tourism and measurements of those demands comprises a range of analyses, such intensity of tourism between destinations, development of tourism, and prices, etc. Demand of tourism is usually measured by: number of tourist arrivals, tourism receipts, and a length of stay (Ioannides and Debbage, 1998).

The most major tourism demand determinants are price (exchange rate) and income. The exogenous determinants are considered to be general business trends, development in use of technologies and communication, economic growth, the social and political issues of a destination, and last but not least the advancement and availability of supply sources (Ioannides and Debbage, 1998).

Supply

Tourism is the aggregate of all tourism-related sectors whose activities provide good and services required to meet tourism demand. Components of tourism supply are infrastructure, superstructure, attractions, promotion and destination image (Ioannides and Debbage, 1998).

Multiplier Effect

The multiplier effect appears when new demand is added into the circular flow. New demand generates extra income that leads to more spending and thus it creates more income. The multiplier effect represents the increase in final income which was created by change in the spending (Economics Online, 2016).

The total multiplier effect of 1 USD in tourism accounts to 3.2 USD whereas in other economies it generates about 2.7 USD. The multiplier effect in the tourism industry is considered the third most important after the chemical and automotive industries (Palatková, 2011).

Economic Impacts

Undoubtedly the gross domestic product (GDP) and the unemployment rate are major indicators of impact of tourism on the world's economy.

Employment

The United Nations World Tourism Organization (UNWTO) and the World Travel & Tourism Council (WTTC) has been tracking economic impacts of tourism in the world and each particular region since 1991. The estimations published a year after proofed that tourism in one of the most extensive sectors of the world's economy and it is a source of high-quality work opportunities. The prognosis shows that tourism generated 236 million of direct and indirect job positions in the year 2010, which is more than eight percent of the total number of job positions. According to the prognosis, by the year 2020, tourism will employ up to 303 million of people that counts to 9.2% of total the employment (Goeldner and Ritchie, 2014).

Gross Domestic Product

Gross domestic product (GDP) is the value of all the finished goods and services produced within a country's borders in usually a year.

In 2010, the contribution to the world's gross domestic product reached 9.2% that is 5.75 USDbn. The assumed growth by the year 2020 is 11 USDbn. which creates about 10% of GDP. The volume of its sales is one of the three the most important economic sectors (Goeldner and Ritchie, 2014).

Tourism in the Czech Republic

The Czech Republic with its capital Prague has become one of the most popular tourist destinations in Europe. It is a continental country whose location is on one hand disadvantage for not having a seacoast, but on the other hand the country's strategic location in Central Europe allows easy access to entre from neighbouring countries.

Tourist vs. Visitor

In order to properly estimate the number of incoming tourism to the country, the Czech Statistical Office collects data by using a method of counting guests at collective

accommodation establishments (CAE). In the Register of accommodation establishments, on which a counting is based, they are all hotels and other lodging services of the territory of the Czech Republic listed. As mentioned before, tourism is understood to be a stay outside visitor's usual environment (within or outside a country) for at least 24 hours (Český statistický úřad, 2016).

However, out of total number of visitors, which is estimated by the Tourism Satellite Account, tourists by definition (the overnight visitors) represent a smaller proportion while same-day visitors, which comprise also transit visitors, account for a larger part (Czech Republic, OCED, 2014).

As far as all non-resident visitors are concerned, in 2012 there were 24 million arrivals to the Czech Republic. Out of them 14.4 million (60%) were the same-day and transit visitors. The total number of tourists counted up to 9.6 million and 7.2 million of tourists stayed at collective accommodation establishments (Czech Republic, OCED, 2014).

For this study, in order to refer and calculate with proper data and not with estimates the term 'the number of tourists', which always includes tourists who have stayed for at least one day and used any of the CAE, refers to the term 'the number of guests at collective accommodation establishments'. Thus in this study, the number of guests at CAE can be interchangeable with the number of tourists in the country (Český statistický úřad, 2016).

Inbound vs. Domestic Tourism

The number of resident tourists, who travel within the country throughout the last years, is stable. The change between years 2000 and 2015 is only about 8 % whereas the amount of non-residents tourist arrivals grew from 4.7 million to 8.1 million, which is almost 72% growth. In 2000, 6.5 million, which is 60% of the total tourists, is domestic tourists. Nowadays, inbound tourism counts for about 55% and domestic tourism has dropped on 45% (Český statistický úřad, 2016).

Both, foreign and domestic tourists stay in the country in average 2.8 nights and this number has not changed over the last years. From the long-term perspective, the number of nights spent is decreasing (Český statistický úřad, 2016).

Whereas the length of the stay shortens, the amount of money spent per day increases. The foreign tourist spends 4,880 CZK in average per day and a Czech tourist usually spends 1,230 CZK per day on his/her domestic trip (Český statistický úřad, 2016).

Development of Tourism

The development of tourism industry in the country is a partially result of significant events in the Czech history. The industry rose dynamically after the Velvet Revolution in 1989 throughout the 1990s. The pattern of incoming tourists is slightly unstable caused by events of worldwide or regional scale, such as terrorist attack in New York City in 2001 or floods in Prague in 2002. From a long-term perspective, tourism has ascending trend when it comes to the number of incoming tourists and tourism receipts (Hollands, 2005).

The year 2004 is understood to be as one of the most successful years for tourism as the country joined the European Union (EU) and for being a host country for the World Ice Hockey Championships (Hollands, 2005). In May 1, the Czech Republic became a member of the EU and it has brought several advantages in a form of a financial aid that contributed to the growth of culture and tourism in the country. In 2007, the country entered the Europe's borderless Schengen Area. By accepting the agreement the citizens of the EU are allow to travel within countries of the EU freely. Most of the border checkpoints are closed and EU citizens no longer have to prove their identity with the passport but the identity card can stand as a travel document (Mzv.cz, 2016).

Accessibility

Visas to travel to the Czech Republic are not required for travels up to 90 days by citizens of European Union countries, Iceland, Liechtenstein, Norway, and Switzerland. There is a list of about forty other countries with which an agreement on visa-free travel has been concluded. Citizens of those countries need only a passport to travel to the country. A citizen of any other country must follow visa requirements established for the particular country (Mzv.cz, 2016).

The Czech Republic thanks to its location and elaborated transportation system is considered to be very well connected to other European cities. More than one third of foreign tourists come by air transportation; the rest uses the road and railway transportation. This

accessibility attracts potential tourists, eases to plan the trip and eventually reinforces its realization (Hollands, 2005).

The Prague Airport is connected by direct flights with more than 200 airports and flights from and to Prague are provided by about 50 airlines. This important international carrier airlifts from 11 to 12 million of passengers every year (Prg.aero, 2016).

Importance of Tourism in Economy

Gross Domestic Product

In figure 4 the total contribution of travel and tourism to GDP in the Czech Republic, which generated 326.3 billion CZK (8.4% of total Czech GDP), in 2013 can be seen. The total contribution comprises also services of industries which are not directly connected with tourism. The share of the direct contribution of tourism was 2.9% of Czech GDP, which was 110.4 billion CZK (World Travel & Tourism Council, 2014) and 33.8% of the total contribution. Induced contribution includes spending of direct and indirect employees such as spending on food and beverages, housing, recreation, etc. The indirect contributions are spending on investments, the impact of purchases from suppliers and spending on government collective (World Travel & Tourism Council, 2014).

Figure 4. The Total ontribution of Travel and Tourism to GDP, 2013

Total Contribution of Travel and Tourism to GDP in the Czech Republic in 2013
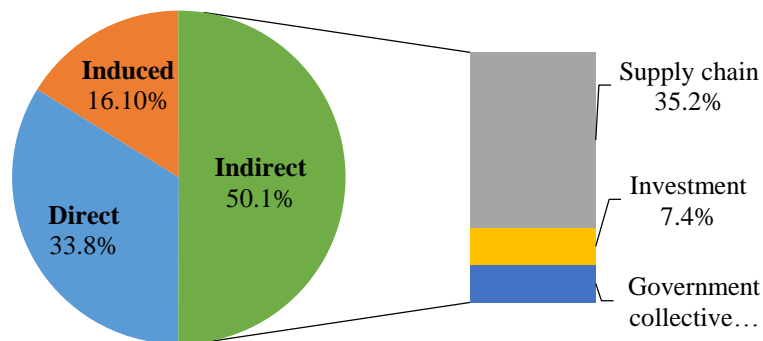
Source: World Travel & Tourism Council (2014)

29

Tourism's share of GDP has a stagnant or declining tendency in the last years caused by strong performance of other important industries (Czech Republic, OCED, 2014).

Employment

The number of people, who were employed in occupations related directly to tourism, totalled 248,500 which made 5% of total employment in 2013. The share of total employment is expected to rise. 81% of those people are employees and the remaining 19% is formed by self-employed businessmen (Czech Republic, OCED, 2014). Most of the employees, about 75%, work in fields which are typical of tourism such as accommodation services, food and beverage serving services, passenger transport services, travel agency and tourist guide services, and cultural, sport, recreation and other entertainment services (Český statistický úřad, 2016).

Total contribution of travel and tourism to employment was 10.4% of total employment in 2013. It comprises jobs that are indirectly connected with tourism; it generated 558,000 jobs (World Travel & Tourism Council, 2014). Approximately 60 thousand employees work in fields indirectly related with tourism. Those are for example manufacturing of maps and souvenirs, sales activity, or telecommunication (Český statistický úřad, 2016).

Tourist Attractions in the Czech Republic

More than 50% of the foreign tourists visit Prague for recreation and leisure purposes. About 18% come to the country in order to visit friends and relatives and 11% of the visits are for business purposes. The remaining part belongs to tourists that come for shopping, visiting a cultural event as a concert, or spa treatment.

In the Czech Republic there are 12 sights, which are on the list of World's heritage (UNESCO), and they are: Gardens and Castle at Kroměříž, Historic Centre of Český Krumlov, Historic Centre of Prague, Historic Centre of Telč, Holašovice Historic Village, Holy Trinity Column in Olomouc, Jewish Quarter and St Procopius' Basilica in Třebíč, Kutná Hora: Historical Town Centre with the Church of St Barbara and the Cathedral of Our Lady at Sedlec, Lednice-Valtice Cultural Landscape, Litomyšl Castle, Pilgrimage Church of St John of Nepomuk at Zelená Hora, Tugendhat Villa in Brno (CzechTourism, 2016).

Prague, the capital of the Czech Republic, is the most visited UNESO sight in the country and in general most popular destination in the country.

Tourism in Prague

Tourism is one of the main industries in the capital of the Czech Republic. Prague has become a very attractive destination for Europeans as well as tourists from all over the World. It is well-known for especially for its historical cultural sights and nightlife.

From the total number of inbound tourism, which has come to the Czech Republic, about 65% heads to Prague. Out of ten most visited attractions in the country six of them are located in Prague (CzechTourism, 2016).

Flights

A large number of direct flights to Prague from large transport hubs enable easy access to the country. Moreover, the air transport is relatively inexpensive nowadays. The number of flights from cities, which offer the most direct flights to Prague per day, is listed in Table 2. The most direct flights are between Prague and London. There are 25 different flights in a day from five major London airports. From Moscow, which is the farthest city from the Table, there are up to 11 flights per day to Prague.

Table 2. Number of direct flights from various destinations to Prague

Destination	Direct flights per day
London	25
Paris	12
Rome	12
Moscow	11
Milan	10
Amsterdam	8
Frankfurt	7

Source: own construction based on Prg.aero (2016)

Accommodation facilities

In Prague there are almost 800 accommodation establishments as of 2014. The number of accommodations lowers compared to the previous years due to a decrease of low standard

accommodation facilities such as camps, pensions/guesthouses, etc. More than 250 hotels in Prague four or five-star and they offer rooms that costs up to 10,500 CZK per night. The cheapest room can be rented at a price from 250 to 600 CZK per night depending on a discount which is often put on accommodation (Český statistický úřad, 2016).

Most visited attractions

The most popular and visited sight in Prague as well as in the Czech Republic is the complex of the Prague castle. In 2014, there were 1.8 million of tourists, who paid to get inside and see the excursion and about 6 million of tourists who visited and passed by the complex (Český statistický úřad, 2016).

The Old Town Hall, from where a beautiful view of the Old Town can be seen, was visited by 670 thousands tourists in 2014. In the same year, the Petřín observatory was visited by 560,000 tourists. Among all museums and galleries, the most popular is the National Museum, which gets about 600 thousands visits a year. Another sight, which attracts a large number of tourists, is The Jewish Quarter.

Analytical Part

Inbound Tourism to Prague

In 2000, Prague was visited by 2.62 million of tourists, out of them 88.5% were foreign tourists (2.32 million) and 0.3 million were residents. As of 2015, the total number of tourist arrivals to Prague accounts for 6.57 million which represents a growth of 150.8% (average annual growth 10.7%). Domestic tourism to Prague has increased by 200% and inbound tourism by 144.7% over these selected years.

Figure 5 shows annual internal tourism arrivals (in which domestic tourist arrivals are distinguished by colour from inbound tourists) in a time period from 2000 to 2015. A growing trend can be observed, as well as number of arrivals in million and proportion of domestic and foreign tourists.

Figure 5. Total Arrivals of Residents and Non-residents to Prague in 2000-2015

Total arrivals of residents and non-residents to Prague in 2000-2015
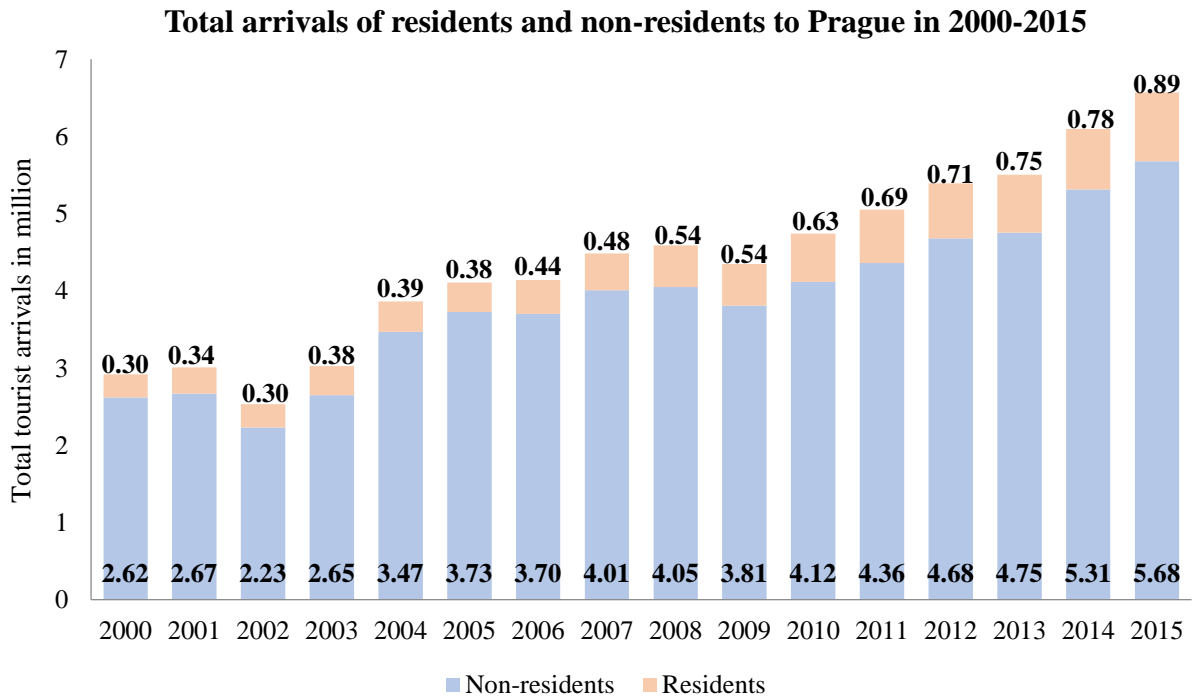
Source: own construction based on Český statistický úřad (2016)

As far as seasonality is concerned, most of the foreign tourists visit Prague in the second or the third quarter of the year, which is a time period from April to September, whereas residents arrive to Prague evenly throughout the year. The trend is shown in a graph which depicts arrivals in each quarter in 2015 (Figure 6).

Figure 6. Tourist Arrivals to Prague by Quarters

Tourist Arrivals to Prague by qurters in 2015
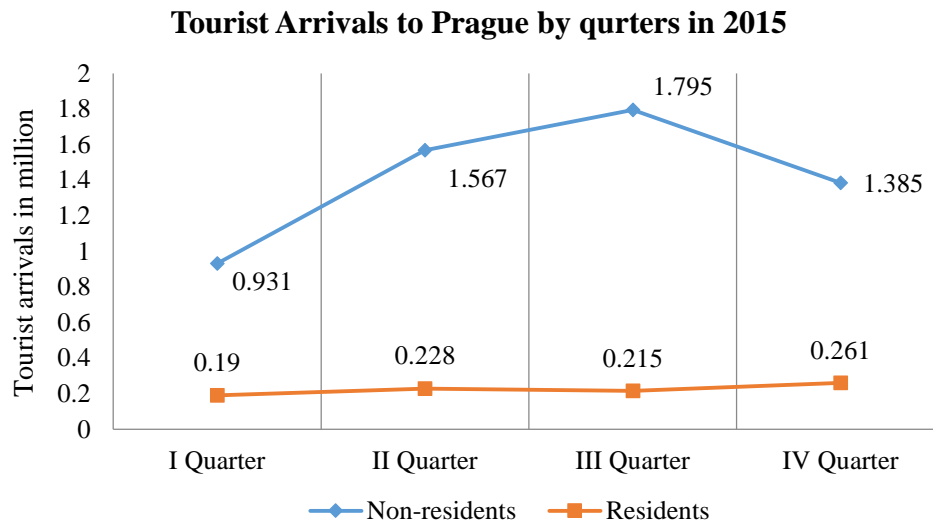
Source: own construction based on Český statistický úřad (2016)

Top Source Countries

A significantly larger proportion of arrivals is made by foreign tourists. Foreign tourists also contribute to tourism receipts radically more than residents since a foreigner spends in average 4 times more on his/her trip.

The top source countries are such countries whose residents visit Prague the most. Only those top 10 countries form 57.5% of total inbound tourism in Prague. The countries, their ranking and the number of tourists from those countries who came to Prague in 2015, are listed in Table 3.

Table 3. List of Top 10 countries

Rank	Country	No. of tourists	Rank	Country	No. of tourists
1	Germany	821,561	6	Slovakia	238,294
2	USA	446,384	7	France	213,698
3	UK	379,745	8	China	196,563
4	Italy	304,817	9	Poland	193,408
5	Russia	292,156	10	Spain	180,852
Sum of Top 10				**3,266,979**	
Other countries				**2,412,623**	
Total non-resident tourists				**5,679,602**	

Source: own construction based on Český statistický úřad (2016)

For the last 15 years, German tourists have ranked as first in inbound tourism to Prague with two exceptions in the years of 2004 and 2005 in which British tourists totalled more arrivals to Prague (Český statistický úřad, 2016).

Seven out of the top ten source countries are European (including Russia). The United States of America (USA) are the only American country listed and it has maintained a very good position, usually ranks in the top 4. The rest of the countries are Asian countries, whose contributions are very significant and are expected to grow. Japan, which has dropped from the top ten and is ranked as 13th, was replaced by China whose number of tourists has increased rapidly. Until 2005 China and the Republic of Korea (ranked as11[th], not included in the table) were counted together with other Asian countries and the only Asian country counted separately by that time was Japan (Český statistický úřad, 2016).

The number of arrivals by each source country in a time period from 2005 to 2015 has been summed up. The shares of tourists from individual top countries, who have visited Prague in that 10 year period, are shown in Figure 7.

The Number of Tourist Arrivals to Prague by Top Countries in 2005-2015
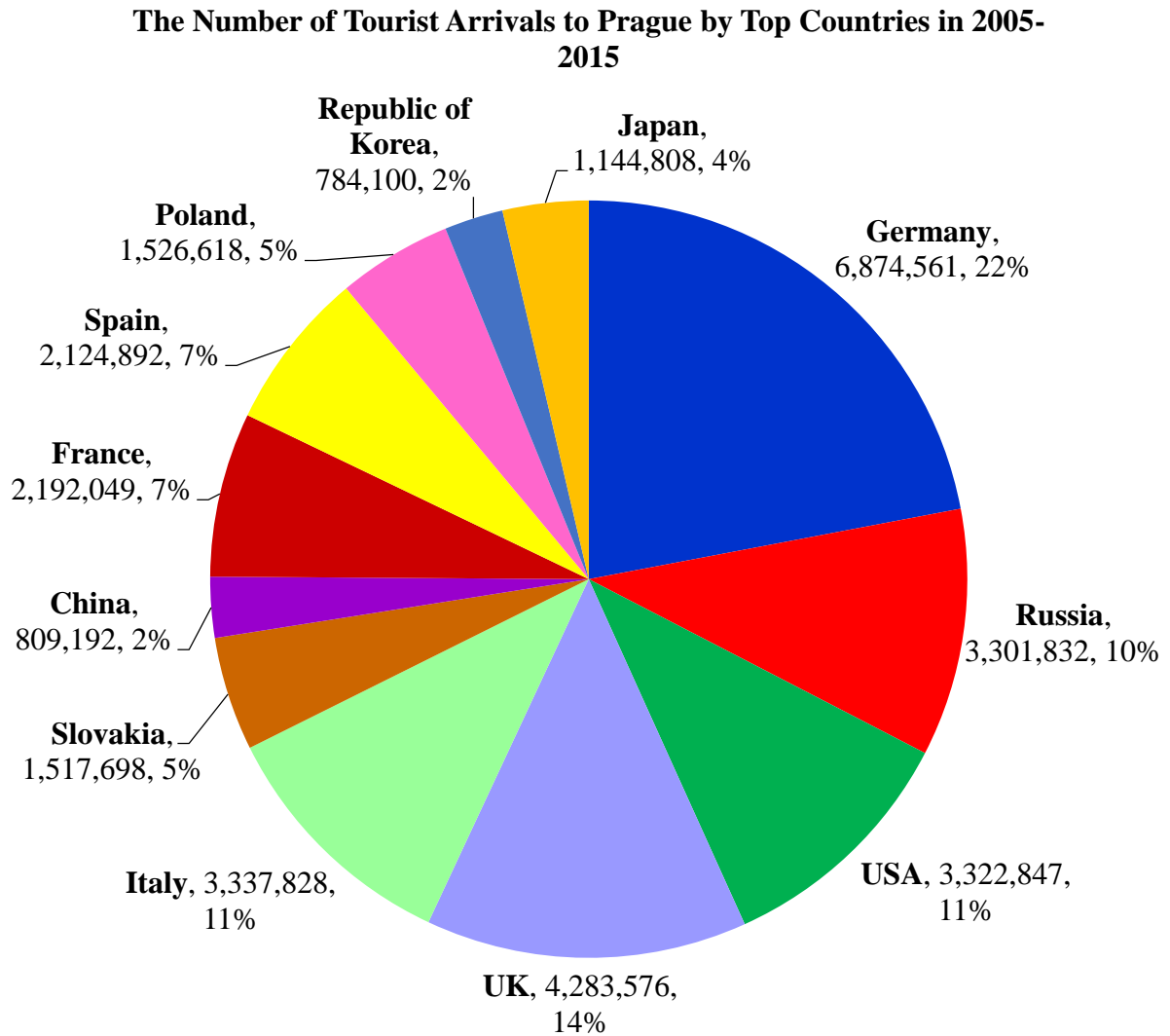
Source: own construction based on Český statistický úřad (2016)

China, which has ranked as 7th in the last tracked year, totals the second least tourist arrivals (0.81 million) in the selected period. This observation shows that inbound tourism from China in the last year must have grown significantly compared to previous years. The neighbouring countries, Germany, Slovakia, and Poland, form more than one third of the arrivals.

Analysis of Inbound Tourism to Prague from the Top 10 Countries

The purpose of this analysis is to estimate relationships among the number of tourist arrivals from each source country and the chosen explanatory variables; to quantify the relationships and determine whether the variables influence the inbound tourism and if so by how much. Also, by using forecast equation, the prognosis of inbound tourism for the future year is counted. Every country is evaluated separately.

Regression Analysis

In order to conduct this work regression analysis and other techniques, which fall within this statistical process, are used. Regression analysis is a statistical procedure which allows determination of relationships among a dependent variable and one (Simple Linear Regression) or more (Multiple Regression) independent variables. The regression model (regression equation) is the main tool used in the analysis (Bubáková, 2014).

Regression model and Variables

Table 4. Regression Model

$y_t = \beta_0 + \beta_1 x_{1t} + \beta_2 x_{2t} + \mathcal{E}_t$
Where:
y = number of tourist arrivals from a particular country in thsd
x_1 = exchange rate, currency of a particular country/CZK
x_2 = nominal gross domestic product pc/ $/ thsd
β = unknown parameter
$\mathcal{E}$ = random component
t = time series data

Source: own construction

The regression model, which is shown in Table 4, has three variables. The model of two and more variables is called Multiple Regression. In the shown model there are a dependent (explained) variable and two independent (explanatory) variables.

The dependent variable is the number of tourist arrivals from a particular source country to Prague in thousands in a year *t*. The variable x_1 represents an exchange rate of a currency of

a particular country and the Czech koruna. The data show a value of the foreign currency that equals to 1 CZK. The variable x_2 stands for the nominal GDP per capita or also called GDP in current dollars.

The nominal GDP is the gross domestic product of a particular country divided by a number of its population in midyear. GDP is the sum of gross value added by all producers within a particular country plus any product taxes and minus any subsidies not included in the value of the products. Nominal GDP is GDP that is calculated at the current market price and so it is not adjusted for inflation. Data are in current US dollars and are converted to thousands for calculation purposes (Data.worldbank.org, 2015).

The regression model has been made to be applied on data of each source country. The chosen variables, a country's GDP and its currency, are ones of the most significant economic indicators.

Statistical Verification

After estimation the quality of the regression model is supposed to be evaluated. It is done by measuring two basic characteristics of the model – significance of parameters and goodness of fit (Bubáková, 2014).

Significance of Parameters

Table 5. Hypothesis testing

Decision rule: P-value ≤ 0.05	
Hypotheses	**P-value**
H_0: $\beta i = 0 \rightarrow$ Insignificant parameter	P-value > 0.10 → not significant
	P-value ≤ 0.10 → marginally significant
H_1: $\beta i \neq 0 \rightarrow$ Significant parameter	P-value ≤ 0.05 → significant
	P-value ≤ 0.01 → highly significant

Source: own construction

Decision rule shown in Table 5 is base on the P-value. The P-value is the probability which is obtained from the regression analysis. For the following analysis, no confidence level or significance level (denoted as alpha, α) were chosen, thus decision is made bade on a guideline in Table 5. If the P-value is less or equal than 0.05, the null hypothesis can be rejected.

The null hypothesis (H_0) states that the parameter is insignificant. The alternative hypothesis (H_1) is the assertion that the parameter is statistically significant (Bubáková, 2014).

<u>Goodness of Fit</u>

Goodness of fit is measured by the Coefficient of determination also called R^2. The investigated dependent variable y_t has its own variance. The coefficient of determination measures the percentage of the total sample variation in y_t which is explained by the sample variations in the independent variables x_{it} from the model. The evaluation shows whether the variation in x_{it} is a proper predictor of y_{it} variation. For a multiple regression Adjusted R-squared is used (Bubáková, 2014).

Data

In order to conduct the analysis, data for each country ware gathered and put into individual datasets. Data and created datasets are crucial in a research. Based on them regression analysis can be run and then evaluated.

Data for the number of tourist arrivals (tourists and visitors are defined above) are collected from the Czech statistical office (Český statistický úřad, 2016). Average annual exchange rates of foreign currencies to CZK are gathered from US Forex Foreign Exchange. The nominal GDP values of each country for given years have been found in Data.worldbank.org.

Collected data cover a time period from 2000 to 2015 (if not listed differently). This type of data is called time series data. They are in the order from the past to the present and the chosen frequency is annual. Every variable has corresponded data for each year of the time series. An example of the dataset is shown in Appendix A.

Models of Source Countries

The countries are listed based on Figure 7 in which shares of countries' tourist arrivals to Prague are depicted. The order starts with a country with the largest share to the country with the least. Japan and the Republic of Korea, which are shown in Figure 7 for a comparison purposes, are excluded from the analysis.

Germany

The arrivals of German tourists to Prague have been very consistent and ascending. From the first year to the last of the time series, the number of arrivals doubled and it accounts for 821.6 thousands tourists in 2015. Germany is a neighbouring country of the Czech Republic which allows very easy access to entry the country either by car, train or bus.

Germany is a leading economy in Europe and whose GDP per capita ranked as 18th in 2015. The German GDP grew from $23,700 to $41,200 over 16 years. As a member of EU, Germany accepted Euro (EUR) as its currency in 1999 and it has started being officially used since 2002. Thus for the analysis the time series starts from 2002 (Data.worldbank.org 2016).

Regression Model

Based on the dataset of 14 observations, the regression model was created. The results shows a high P-value of the variable x_1, the exchange rate of EUR to CZK, thus based on the decision rule the parameter is insignificant and will be omitted from the model. The former results from the regression can be seen in Appendix B.

In the rebuilt model (Table 6) a new x_1 stands for the GDP of Germany. The P-value of the variable is after rebuilding the model very low. R-squared expresses the percentage of variance explained by the model, which is in this case 60.1%. According to the model, the nominal GDP per capita of Germany is very significant variable influencing the number of inbound tourism from Germany to Prague at the confidence level of 99%.

Table 6. Estimation of the Rebuilt Regression Model - Germany

Regression Statistics			
R-squared	0.601		
Observations	14		
Parameter Estimates			
Variable	Label	Coefficients	P-value
Intercept	Intercept	58.88	0.647
Variable x_1	GDP	13.21	0.001
Regression model: y = 58.88 + 13.21x_1			
Decision rule			
Variable x_1	P-value (0.001) < 0.05	Reject H_0	

Source: own construction

<u>Forecast</u>

A trend line is a linear expression calculated based on the least squared method of data from the time series. R-squared indicates how the data fit the line. The annual number of incoming tourists from Germany to Prague in the time period from 2000 to 2015 is shown in Figure 8. The number of arrivals in 2016 is seen to be lower than in the preceding year. By substituting the 'x' in a given equation *y = 22895x + 373589*, the exact forecast is calculated. The 'x' is the period of the time, which is to be forecasted, in this case 17 based on the model of 16 observations. For the year 2016 the prognosis of tourist arrivals is 762.8 thousands.

Figure 8. Forecast of German Tourist Arrivals to Prague

Forecast of German Tourists

$y = 22895x + 373589$

◆ Number of arrivals

— Linear (Number of arrivals)
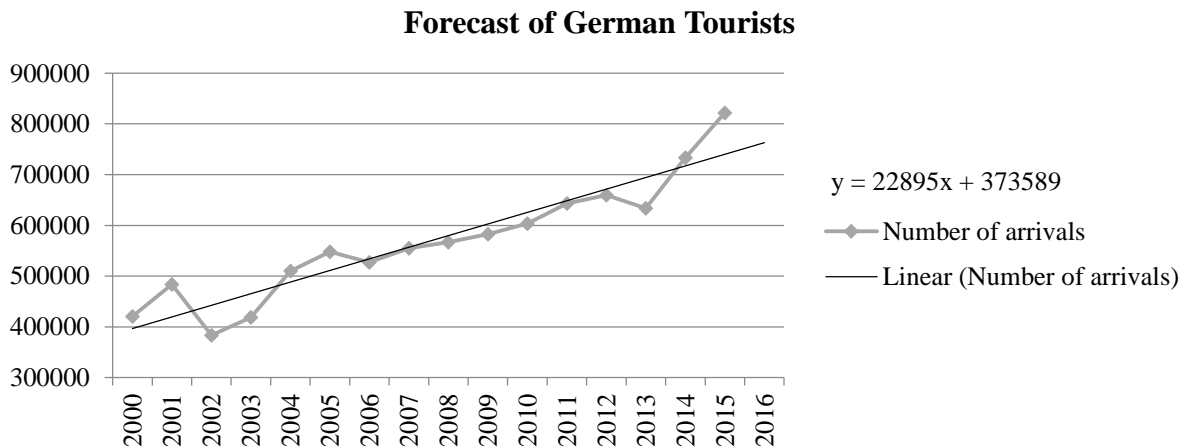
Source: own construction based on Český statistický úřad (2016)

The United Kingdom

Tourist arrivals from the UK (The United Kingdom of Great Britain and Northern Ireland) have been relatively uneven. The UK's arrivals reached the first place in the raking in 2004 (after the Czech Republic entered the EU) with almost 600 thousands and maintained the consistent, high, number of arrivals for the next four years after. Then the number dropped significantly by 100 thousands tourists to 327 thousands in 2009 and continued falling. In the last tracked years tourist arrivals from the UK to Prague has been slightly increasing.

The UK's economy is very strong in the European and worldwide scale. It ranked as 14th with its nominal GDP per capita among all countries. Although, the UK is one of the former members of EU, it has its own currency – the Pound sterling denoted as GBP. GBP has

depreciated with respect to CZK (from 58.4 in 2000 to 34.8 in 2016) due to various economic events, the latest one is considered to be possible leaving of the UK from the EU. However, the GBP is one of World's strongest currencies (US Forex Foreign Exchange 2016).

Regression Model

Based on the dataset of 16 observations a regression model was created (Table 7). Parameters for both of the variables have turned out significant based on the decision rule.

Table 7. Estimation of Regression Model - the UK

Regression Statistics			
Adjusted R-squared	0.426		
Observations	16		
Parameter Estimates			
Variable	Label	Coefficients	P-value
Intercept	Intercept	-665.26	0.050
Variable x_1	GBP/CZK	8.81	0.029
Variable x_2	GDP	17.8	0.003
Regression model: y = -665.26 + 8.81x_1 + 17.8x_2			
Decision rule			
Variable x_1	P-value (0.029) < 0.05	Reject H_0	
Variable x_2	P-value (0.003) < 0.05	Reject H_0	

Source: own construction

Adjusted R-squared indicates that only 42.6% of variance is explained by the model. According to the model, the exchange rate of GBP to CZK is a significant parameter of the incoming British tourists to Prague at the confidence level of 94%. As far as the British nominal GDP per capita is concerned, it is a very significant parameter at a confidence level of 99%.

The negative intercept indicates that is all variables equal to zero, there will be no incoming tourism from the UK to Prague. If the exchange rate increases by one unit, the incoming tourism will increase by 8810 arrivals. If the GDP per capita increases by 1000 units, the incoming tourism will increase by 17,800 arrivals.

Forecast

In Table 8 the vertical axis shows the number of British tourist arrivals in each tracked year which is on a horizontal axis. As can be observed, the incoming tourism has been unstable

with very high peaks and relatively low falls. The forecast of future incoming tourists from the UK to Prague based on these points shows a slightly decreasing trend. In the year 2016 it is expected to fall to 367 thousands of tourists, which is 12.7 thousands less than in the previous year (379.7 thousands).

Table 8. Forecast of Britis Tourist Arrivals to Prague

Forecast of British Tourists

$y = -446.42x + 374581$

Number of arrivals

Linear (Number of arrivals)
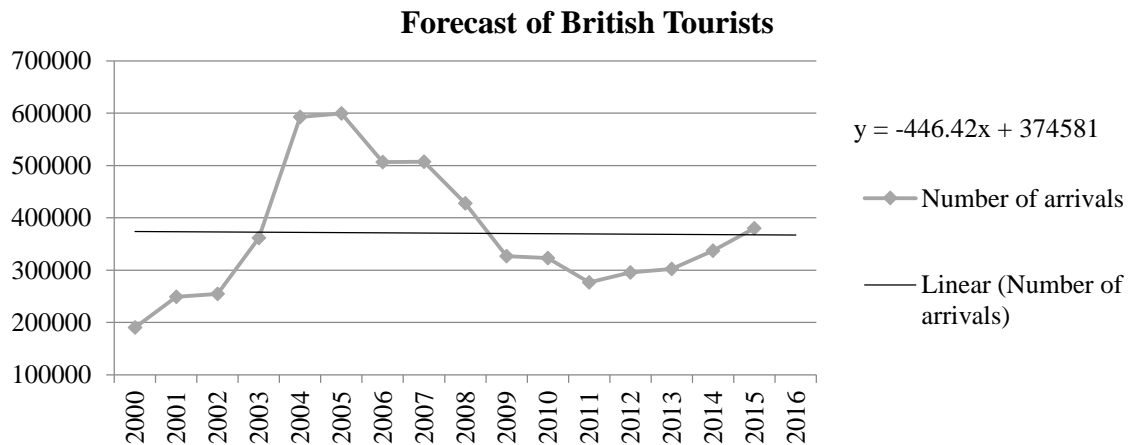
Source: own construction based on Český statistický úřad (2016)

Italy

A very similar trend as in the UK case can be seen with Italian tourist arrivals. Italy has been consistently among the top 5 countries, which visit Prague the most, in the tracked period. The number has doubled from 170.5 thousands in 2000 to 343.4 thousands in 2007. That year is also the year with the highest number of arrivals so far. Since 2007 the number of tourists from Italy to Prague seems to stagnate.

The Italian economy used to be very strong and dominant along with other leading economies. However, the country has been in an economic crisis in the last years. Italy ranked as 26th with its nominal GDP per capita of 29,847 $ in 2015. As a member of the EU, euro is the official currency of Italy; however, Italy has not adopted EUR until the beginning of the year 2002. The previous currency was Italian Lira. Therefore, the regression model has a changed period of tracked time and that is from 2002 until 2015 (Data.worldbank.org, 2016), (US Forex Foreign Exchange, 2016).

Regression Model

A former regression model (Appendix C) shows a P-value of the variable x_1, the exchange rate of EUR to CZK, which is greater than 0.05. The null hypothesis cannot be rejected and the parameter is insignificant and will be omitted from the model.

Table 9. Estimation of the Rebuilt Regression Model - Italy

Regression Statistics			
R-squared	0.451		
Observations	14		
Parameter Estimates			
Variable	Label	Coefficients	P-value
Intercept	Intercept	86.788	0.207
Variable x_1	GDP	6.010	0.009
Regression model: y = 86.79 + 6.01x_1			
Decision rule			
Variable x_1	P-value (0.009) < 0.05	Reject H_0	

Source: own construction

In the rebuilt model, x_1 stands for the Italian nominal GDP per capita (Table 9). The P-value of the variable x_1 is 0.009. Based on the decision rule, the null hypothesis is rejected. It fallows that the Italian nominal GDP per capita is a very significant parameter of incoming tourism from Italy to Prague at the confidence level of 98%.

Forecast

The blue curve shown in Figure 9 represents the annual number of tourist arrivals from 2000 to 2015. The trend line depicts a progressive tendency of incoming tourism from Italy to Prague. From the year 2004 until present the arrivals are relatively high and consistent. By using the forecast equation the number of incoming tourists in the next period (17th) can be calculated. The forecast for the 17th period (year 2016) is 328.5 thousands of tourist arrivals. The calculation in based on the equation, which is a result of the least squared method, however, the R-squared says that only 45% of variance is explained by the model.

Figure 9. Forecast of Italian Tourist Arrivals to Prague

Forecast of Italian Tourists

$y = 5917.8x + 227936$
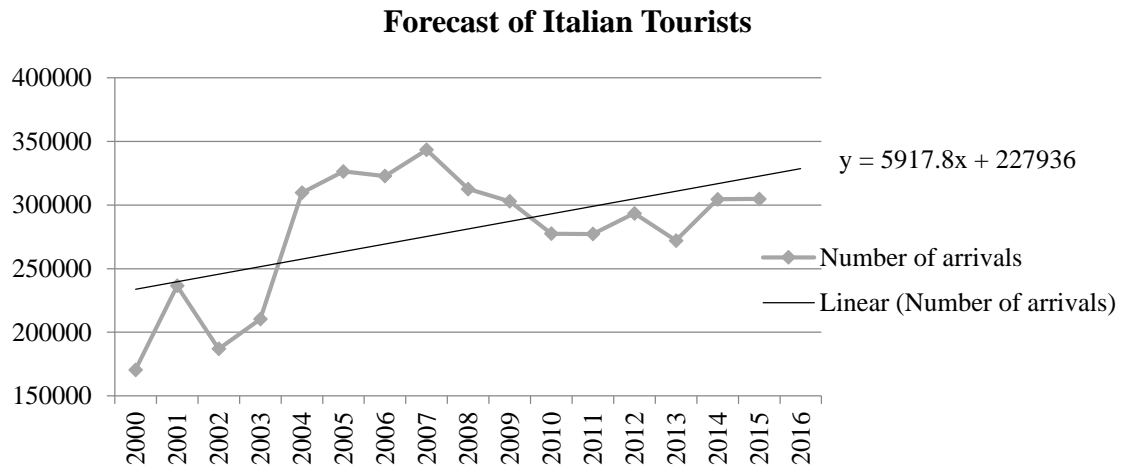
Source: own construction based on Český statistický úřad (2016)

The United States of America

The number of tourists, who came to Prague from the United States of America (USA), was slightly growing from 158.7 thousands in the base year (2000) to 339.3 thousands in 2013. In the last two tracked years (2014 and 2015) the arrivals reached the highest peaks (388.8 thousands arrivals in 2014) and ranked as 2nd among all countries with 446,384 tourist arrivals to Prague in 2015.

The US nominal GDP per capita in the period from 2000 to 2015 has been increasing and slightly dropped in 2009, when the economic crisis effected most of the economies. In 2015 the nominal GDP per capita reached 55,904 current $ and ranked at the 5th among all countries in the World (Data.worldbank.org 2016).

On the other hand, the currency of the USA, the American dollar (USD) has been unstable in the tracked period compared to CZK. The average annual value of 1 USD in the base year equalled 39.08 CZK. The lowest exchange rate was observed in 2008 when 1 USD equalled 17.08 CZK in annual average. In 2015 the currency appreciated, 1 USD was equal to 24.6 CZK (US Forex Foreign Exchange, 2016).

Regression model

Table 10. Estimation of the Regression Model - USA

Regression Statistics			
Adjusted R-squared	0.946		
Observations	16		
Parameter Estimates			
Variable	Label	Coefficients	P-value
Intercept	Intercept	-646.847	0.005e-03
Variable x_1	USD/CZK	4.715	0.002
Variable x_2	GDP	17.159	0.0001e-04
Regression model: y = -646.847 + 4.715x_1 + 17.159x_2			
Decision rule			
Variable x_1	P-value (0.002) > 0.05	Reject H_0	
Variable x_2	P-value (<0.001) < 0.05	Reject H_0	

The estimation of the regression model based on a dataset for the USA shown in Table 10 has resulted very positively. Adjusted R-squared, which is used for a multiple regression, says that 94.6% of variance is explained by the model. P-values of both of the variables are less than 0.05 thus in both cases the null hypothesis is rejected. Both parameters, the exchange rate of USD to CZK and the US nominal GDP, have turned out very significant and a good predictors of incoming tourism from the USA to Prague at a confidence level more than 99%.

Forecast

The blue curve in Figure 10 shows the annual number of the US tourist arrivals from 2000 to 2015. A highly steep growth can be observed. The distance of each dot is relatively close to the trend line thus the prognosis can give more exact number. Based on the given equation, the forecast for the future period (2016) is slightly less than the previous year, it is 399,925 thousands of US tourist arrivals to Prague.

Figure 10. Forecast of US tourist Arrivals to Prague

Forecast of US Tourists

$y = 16235x + 123930$

— Number of arrivals

—— Linear (Number of arrivals)
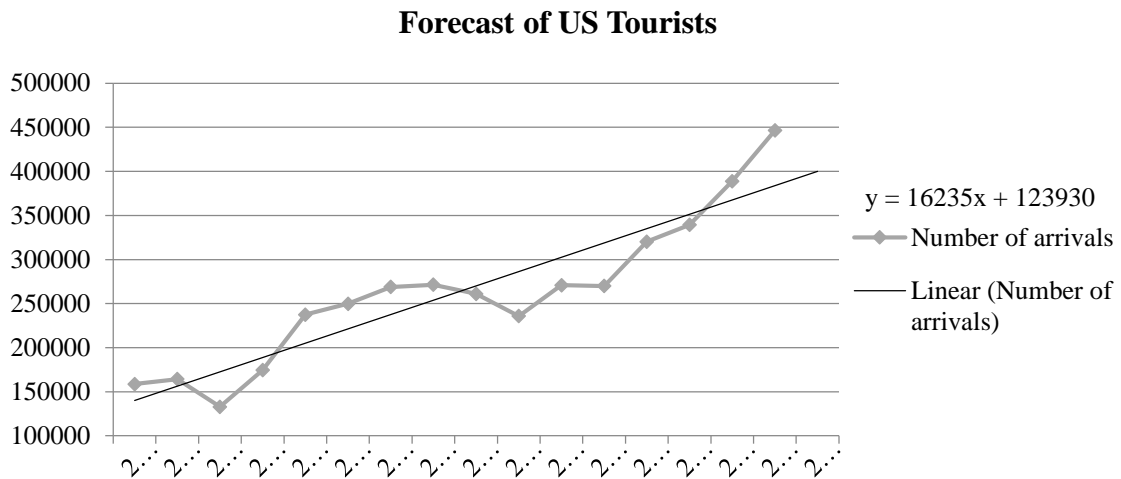
Russia

Russian visits to Prague have been rapidly increasing. In the base year, the total arrivals were 50 thousands, which equalled to one eighth of German arrivals to Prague of that year. In 2013, the number of incoming Russian tourists reached more than a half of the million. The percentage change between those 14 years is by 928.5%. However, in the last two tracked years, the number of arrivals significantly dropped. In 2015, there were 292,000 of Russian tourists in Prague.

The Russian nominal GDP per capita has been slightly increasing with the highest value of 14,487 current $ in 2013. The country ranked as 72nd with its GDP in 2015. The year 2015 was crucial, the number of arrivals dropped as well as the nominal GDP (8,447) and the currency. Russian rouble (RUB) has depreciated compared to CZK and in 2015 1 CZK equalled to 0.4 RUB, whereas in the base year (2000) the value of the rouble was 3.4 higher compared to CZK (Data.worldbank.org 2016).

Regression Model

Estimation for a former regression model based on 16 observations in a time period from 2000 to 2016 is to be found in Appendix C. In the model, the parameter of variable x_1, the

exchange rate of RUB to CZK, has turned out as an insignificant parameter of incoming tourism from Russia to Prague due to a high P-value. Thus the null hypothesis cannot be rejected and the variable will be omitted from the model.

In the rebuilt model (Table 11) a P-value for the new variable x_1, GDP, can be seen. R-squared, which is used for a simple linear regression, says that 89.3% of variance is explained by the model. The P-value of the variable is less than 0.001. It follows that the nominal Russian GDP per capita is a very significant parameter of incoming tourism from Russia to Prague at a confidence level more than 99%.

Table 11. Estimation of the Rebuilt Regression Model - Russia

Regression Statistics			
R-squared	0.893		
Observations	16		
Parameter Estimates			
Variable	Label	Coefficients	P-value
Intercept	Intercept	-43.425	0.149
Variable x_1	GDP	33.595	0.003e-5
Regression model: y = -43.425 + 33.595x_1			
Decision rule			
Variable x_1	P-value (<0.001) < 0.05	Reject H_0	

Source: own construction

Forecast

Figure 11. Forecast of Russian Tourist Arrivals to Prague

Source: own construction based on Český statistický úřad (2016)

48
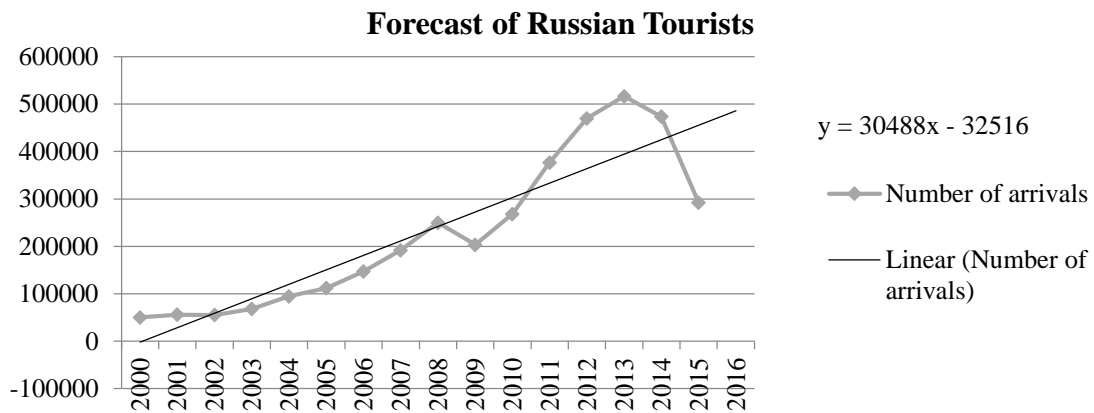
Figure 11 shows the annual number of Russian tourist arrivals to Prague (a blue curve) as well as a steeply growing trend line. The suggested increase of Russian arrivals to Prague in 2016 is 66% from the previous year; based on the given equation there will be 485,774 arrivals.

France

The number of tourist arrivals from France to Prague has increased; however, compared to other countries of Top 10, the growth is less steep. In the base year there were 112.8 thousands of tourist arrivals whereas in the last tracked year there were 213.7 thousands arrivals, which accounts 90% change between the base and the current year.

As of 2015 the French nominal GDP was 37,728 current $ per capita and it ranked as 20th among all countries. The GDP decreased by 5,000 from a previous year and can be compared to the GDP in 2006. Until the year 2015, the nominal GDP was increasing and from the base year (22,465 current $ in 2000) to 2014 (42,732 current $) it almost doubled (Data.worldbank.org 2016).

As other former member countries of the EU, also France has euro as an official currency since 1999. The euro notes and coins were not adopted until the beginning of 2002. Thus the time series data for the analysis are in a period from 2002 to 2015.

Regression Model

Estimation of the regression model, which is shown in Table 12, based on a dataset of 14 observations, P-values for both of the variable are greater than 0.05. Thus based on the decision rule, neither the exchange rate of EUR to CZK, nor the nominal GDP per capita, are significant predictors of tourist arrivals from France to Prague.

Table 12. Estimation of the Regression Model - France

Regression Statistics			
Adjusted R-squared	0.593		
Observations	14		
Parameter Estimates			
Variable	Label	Coefficients	P-value
Intercept	Intercept	146.301	0.505
Variable x_1	EUR/CZK	-3.657	0.479
Variable x_2	GDP	3.668	0.112
Regression model: y = 146.301 - 3.657x_1 + 3.668x_2			
Decision rule			
Variable x_1	P-value (0.479) > 0.05	Cannot reject H_0	
Variable x_2	P-value (0.112) > 0.05	Cannot reject H_0	

Source: own construction

Forecast

The blue curve in Figure 12 represents annual arrivals from France to Prague in a 16 tracked periods, from 2000 to 2015. A steep growth from 2002 to 2004 and 2009 to 2011 can be seen. However, compared to the other countries the change in figures is not very significant; the increase was by 50 to 70 thousands. The increases are balanced with some stagnation periods. Overall, a trend line shows growing tendency with a suggested increase to 245,994 tourist arrivals in 2016.

Figure 12. Forecast of French Tourist Arrivals to Prague

Source: own construction based on Český statistický úřad (2016)

50
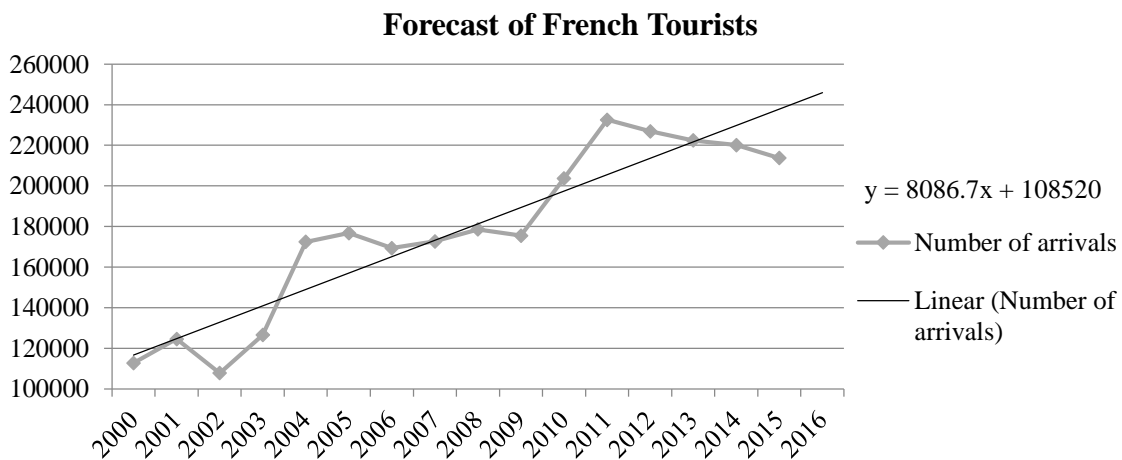
Spain

A similar pattern as there is for the incoming tourism to Prague from France can be seen for the incoming tourism from Spain. There is a slight change from the base year, where the total tourist arrivals accounted for 117 thousands, to the last year of the period (180 thousands in 2015) with a few peaks, which exceeded the current number. Overall, the number of tourists from Spain to Prague seems to stagnate.

Spanish economy is one of the Europeans economies, which have been facing a long-term crisis. The nominal GDP per capita was growing from 14,789 current \$ in 2000 to 35,579 current \$ in 2008. Since 2008 the GDP has been falling down and in 2015 it dropped to 26,327 current \$ per capita and it ranked as 29th (Data.worldbank.org, 2016).

Spain similarly as Germany, Italy, and France, has EUR as the country's official currency since 1999 and adopted it at the beginning of 2002 (US Forex Foreign Exchange, 2016). The time series data for this analysis are in a period from 2002 to 2015.

Regression Model

The result from the estimation of a former regression model based on dataset for Spain is shown in Appendix E. The P-value of the first variable, which stands for the exchange rate of EUR and CZK, is 0.122 and based on the decision rule, the null hypothesis cannot be rejected. The exchange rate is not a statistically significant parameter of the incoming tourism from Spain to Prague and will be omitted from the model.

Table 13. Estimation of the Rebuilt Regression Model - Spain

Regression Statistics			
R-squared	0.559		
Observations	14		
Parameter Estimates			
Variable	Label	Coefficients	P-value
Intercept	Intercept	49.323	0.159
Variable x_1	GDP	4.763	0.001
Regression model: y = 49.323 + 4.763x_1			
Decision rule			
Variable x_2	P-value (0.001) < 0.05	Reject H_0	

Source: own construction

The new rebuilt model is shown in Table 13. The model is based on 14 observations from 2002 to 2015 and 55.9% of variance has been explained by the model. The P-value of a new variable x_1 equals to 0.001. Based on the decision rule, the Spanish nominal GDP per capita is a very significant parameter which influences the tourist arrivals from Spain to Prague at a confidence level higher than 99%.

Forecast

The graph in Figure 13 shows annual tourist arrivals from Spain to Prague in years between 2000 and 2015. A relatively uneven pattern, which is depicted by the blue curve, can be observed. There are a several deviations from a trend line that can be proved by a quite low R-squared of 55.9%. The slope of the trend line is low yet shows a progressing growth. The suggested increase for the future period calculated by the given equation is 21,446 tourists, which is 202,298 tourists from Spain in 2016.

Figure 13. Forecast of Spanish Tourist Arrivals to Prague

Forecast of Spanish Tourists

$y = 2954.8x + 152066$

Number of arrivals

Linear (Number of arrivals)
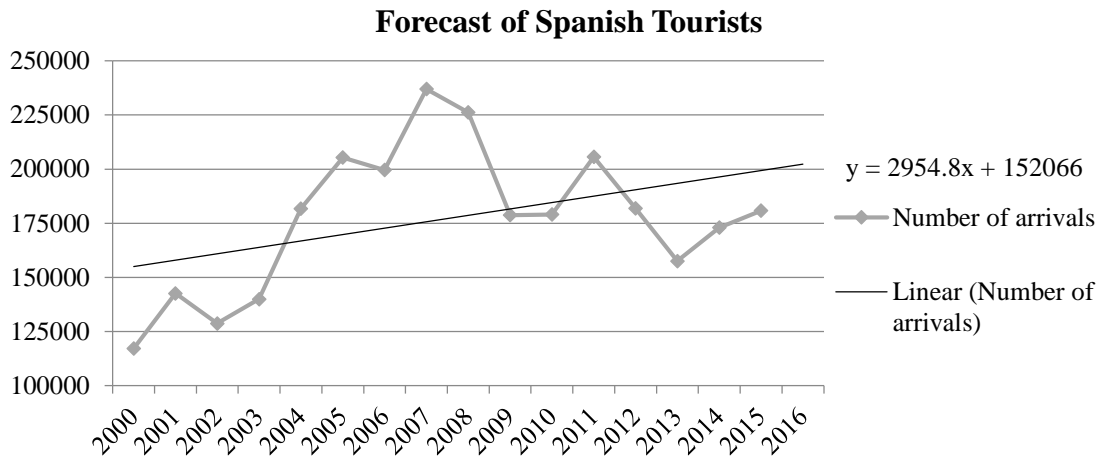
Source: own construction based on Český statistický úřad (2016)

Poland

Arrivals from Poland, one of the four neighbouring countries of the Czech Republic, to Prague shows a consistent and relatively high growth from 59,652 tourists in 2000 to 193,408 tourists in 2015. The change between the base and the current year is 225%.

The nominal GDP of the country increased from 4,492 current $ per capita in 2000 to 14,342 current $ in 2014. In 2015, the nominal GDP per capita ranked as 54th with a value of 12,662 current $ per capita.

Polish zloty (PLN), the official Polish currency, has not depreciated with respect to CZK as significantly as other currencies. In the base year 1 PLN equalled to 8.91 CZK whereas in the last year of the tracked period 1 PLN is equal to 6.52 CZK.

Regression Model

A former regression model (shown in Appendix F), which is built from a dataset for Poland of 16 observations, shows a relatively high adjusted R-squared indicating a good fit of a model. However, the P-value of variable x_1, exchange rate, is lower than 0.05. Based on the decision rule, the null hypothesis cannot be rejected; the parameter is insignificant and must be omitted from the model.

Table 14. Estimation of the Rebuilt Regression Model - Poland

Regression Statistics			
R-squared	0.812		
Observations	16		
Parameter Estimates			
Variable	Label	Coefficients	P-value
Intercept	Intercept	15.325	0.771
Variable x_1	GDP	1.435	0.002e-03
Regression model: y = 15.325 + 1.435x_1			
Decision rule			
Variable x_1	P-value (<0.001) < 0.05	Reject H_0	

Source: own construction

Results from a new rebuilt model are shown in Table 14. R-squared of 0.812 says that 81.2% of variance is explained by the model. The R-squared indicated a very good fit of the model. In the new model, variable x_1 stands for the nominal GDP per capita. Its P-value is less than 0.001. Based on the decision rule, the null hypothesis can be rejected. It follows that the nominal GDP per capita of Poland is a statistically significant parameter of incoming tourism from Poland to Prague at a confidence level higher than 99%.

The graph in Figure 14 depicts annual arrivals from Poland to Prague from 2000 to 2015. A very low deviation from a trend line and a stable progressive growth can be observed. For the next future period an increase of tourist arrivals is forecasted. Based on the given equation the calculated number for the year 2016 is 195,155 tourists from Poland.

Figure 14. Forecast of Polish Tourist Arrivals to Prague

Forecast of Polish Tourists

$y = 9207.4x + 38629$

Number of arrivals

Linear (Number of arrivals)

Source: own construction based on Český statistický úřad (2016)

Slovakia

The number of tourist arrivals from Slovakia to Prague has grown from one the lowest number in the based year (2000) among the countries (30,260 arrivals) to one of the highest (238 thousands) and has ranked as 6th in the Top 10. The arrivals have been evenly increasing with no falls in a period from 2000 to 2015.

The nominal GDP of Slovakia trebled from 5,403 current $ per capita in 2000 to 15,893 current $ per capita in 2015, even though in 2015 the GDP was 3 thousand less than in the previous year (18,501$ in 2014).

As a member of the EU, Slovakia adopted EUR as its official currency in 2009. Until that year, the official currency was Slovak koruna (SKK). In years from 2000 to 2008 the value of SKK is observed to not have changed significantly. The lowest annual average value was

0.708 SKK to 1 CZK in 2002, whereas the highest value was 0.835 SKK to 1 CZK in 2000. For the analysis two regressions are run.

Regression Models

The first regression model analyzes the period in which Slovakia has not accepted EUR as its currency yet (Appendix G). The model is conducted on data in a time period from 2000 to 2008. In the multiple regression model, where variable x_1 stands for exchange rate of SKK and CZK and variable x_2 for the nominal GDP, the variable x_1 has turned out insignificant based on the decision rule.

Results from a new rebuilt model are shown in Table 15. A very high R-squared of 89.5% indicates a good fit of the model. The P-value of the variable x_1, which stands for GDP, is less than 0.001 thus the null hypothesis can be rejected. By rejecting the null hypothesis, the alternative hypothesis becomes valid. It states that the nominal GDP per capita of Slovakia was a statistically significant parameter of incoming tourism to Prague from Slovakia in a period from 2000 to 2008 at a confidence level higher than 99%.

Table 15. Estimation of the Rebuild Regression Model - Slovakia 2000-2008

Regression Statistics			
R-squared	0.895		
Observations	9		
Parameter Estimates			
Variable	Label	Coefficients	P-value
Intercept	Intercept	20.151	0.0151
Variable x_1	GDP	4.058	0.0001
Regression model: y = 20.151 + 4.058x_1			
Decision rule			
Variable x_1	P-value (<0.001) < 0.05	Reject H_0	

Source: own construction

In the model shown in Table 16 a period from 2009 to 2015, in which the EUR has been the official currency of Slovakia, is analysed. P-values of both variables are greater than 0.05 thus based on the decision rule, the null hypothesis cannot be rejected in both of the cases. The fit of the model is not good according to a very low R-squared. The incorrectness of the model can be seen in a not sufficient amount of data.

Table 16. Estimation of the Regression Model - Slovakia 2009-2015

Regression Statistics			
Adjusted R-squared	0.082		
Observations	7		
Parameter Estimates			
Variable	Label	Coefficients	P-value
Intercept	Intercept	-670.139	0.305
Variable x_1	EUR/CZK	25.893	0.193
Variable x_2	GDP	9.575	0.629
Regression model: y = -670.139 + 25.893x_1 + 9.575x_2			
Decision rule			
Variable x_1	P-value (0.193) > 0.05	Cannot reject H_0	
Variable x_2	P-value (0.629) > 0.05	Cannot reject H_0	

Source: own construction

Forecast

Figure 15 shows a graph of annual tourist arrivals from Slovakia to Prague in years between 2000 and 2015. A consistent and stable growth with a few deviations from a trend line can be seen. The forecasted value for the future period is yet lower than in a previous year. The number of arrivals from Slovakia to Prague in 2016 is calculated by the given equation and it accounts for 219,058 tourists.

Figure 15. Forecast of Slovak Tourist Arrivals to Prague
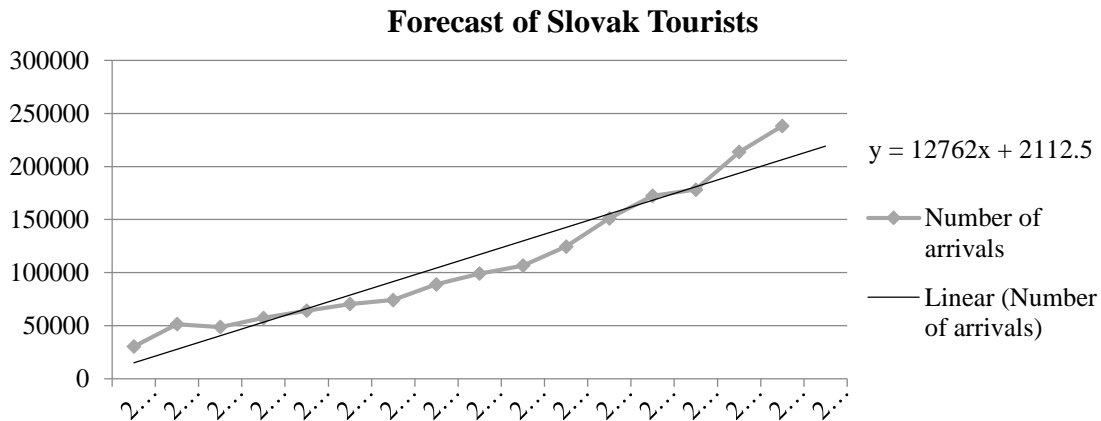
Source: own construction based on Český statistický úřad (2016)

China

Incoming tourism from China to Prague shows a rapidly progressive growth. Until 2005, the number of tourist arrivals from China was counted together with other Asian countries' tourists. In 2005, the number of arrivals accounted for 12,194 and China started to be counted separately. For the next eight years the growth was consistent and regular, from 12,194 in 2005 it grew to 108,198 in 2013 with the average annual growth of 11%. Steep increases are seen in the two last years. In 2014, the increase was by 38%; 149.5 thousands of arrivals. And in the last tracked year, the number of tourists from China to Prague almost reached 200 thousands, which is 16 times more compared to 12 thousands arrivals in 2005. The change from the base year to the last year is by 1512%.

The nominal GDP per capita of China increased almost 9 times over a period of 16 years. Chinese economy has become one of the leading and major World's economies in the last years and is expected to grow. However, China is also the most populated country, thus the GDP per capita is relatively low. As of 2015, China was listed as 74th with a GDP of 8,280 current $.

The yuan (denoted as CNY, ¥) is the basic unit of the renminbi, which is the official currency of China, and is generally used to be referred as the Chinese currency. In a period from 2005 to 2015 the yuan had appreciated with respect to CZK.. 1 CNY equals to 3.91 CZK based on average annual rate of 2015.

<u>Regression Model</u>

The analysis for Chinese tourists, whose result is shown in Table 23, is conducted in based on available data, which are 11 observations from a period between 2005 and 2015. Adjusted R-squared of 0.976 indicated a very good fit of a model. It says that 97.6% of variance is explained by the model. P-values of both of the variables are less than 0.001, thus the null hypothesis can be rejected in both of the cases. It follows that the exchange rate of CNY and CZK as well as the nominal GDP per capita of China are very significant parameters of incoming tourism from China to Prague at the confidence level higher than 99%.

Table 17. Estimation of Regression Model - China

Regression Statistics			
Adjusted R-squared	0.976		
Observations	11		
Parameter Estimates			
Variable	Label	Coefficients	P-value
Intercept	Intercept	-179.798	0.0002
Variable x_1	CNY/CZK	57.389	0.0009
Variable x_2	GDP	17.191	0.002e-2
Regression model: y = -179.798 + 57.389x_1 + 17.191x_2			
Decision rule			
Variable x_1	P-value (<0.001) < 0.05	Reject H_0	
Variable x_2	P-value (<0.001) < 0.05	Reject H_0	

Source: own construction

Forecast

The graph, which is depicted in Figure 16, shows a remarkable growing tendency of tourist arrivals from China to Prague. In the last tracked year, Prague was visited by exceptionally high number of tourist that is why the suggested number of tourists for the future period decreases. Based on the equation, which is calculated by the least squared method and where the R-squared accounts for 97.6%, the forecasted number of tourist arrivals in 2016 is 175,1 thousands.

Figure 16. Forecast of Chinese Tourist Arrivals to Prague
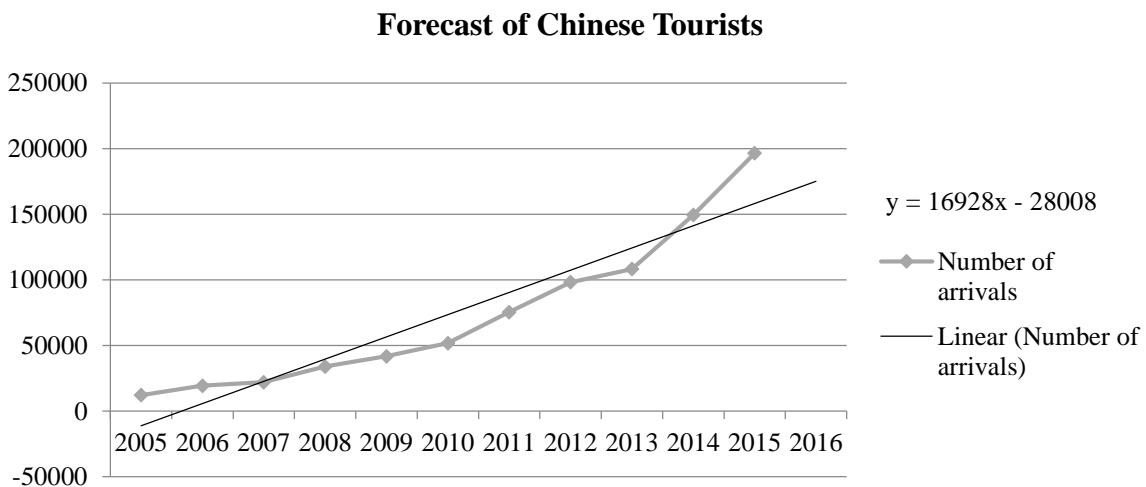
Source: own construction based on Český statistický úřad (2016)

Discussion

In datasets of ten countries, two independent variables have been observed – the nominal GDP and the exchange rate. Only in three countries, the UK, the USA and China, both predictors have turned out as significant parameters of incoming tourism to Prague. Out of these, the models for the USA and China have had a high adjusted R-squared value that indicates a very good fit of the model, whereas the model for the UK explained only 43% of the variance. It follows that the nominal GDP per capita as well as the exchange rate are very significant parameters that influence tourism to Prague from the USA and China. For the summarization purposes these countries will be denoted as group 1.

Also in the next three cases, the similar pattern has been observed. For Russia, Poland and Slovakia (when SKK was the official currency), the nominal GDP per capita of the country is found as a significant parameter of incoming tourism. Their R-squared values range between 0.81 and 0.9 that indicate a good fit of the models. In all three models, the exchange rates have turned out insignificant. For the summarization purposes these countries will fall within Group 2.

R-squared of Germany, Italy and Spain have resulted between 0.45 and 0.6 and it does not indicate a good fit of the model. In all three models, the exchange rate is not a significant parameter. However, the nominal GDP per capita of the countries has turned out as a significant parameter influencing incoming tourism to Prague. These countries fall within Group 3

As far as of France, the model has shown both parameters insignificant for estimation. The same result is found as well as in the model for Slovakia (when EUR is the official currency). Neither the nominal GDP nor the exchange rates are predictors of incoming tourism to Prague. These last countries belong to Group 4.

Based on these results, it can be stated that trips of Group 1, tourists, who came from faraway countries as the USA or China to Prague, are highly influenced by the economy of their country. As their nominal GDP grows, the number of tourist arrivals grows along. Despite the currency that depreciates in comparison to a preceding year, the number of tourist arrivals still increases.

Group 2 comprises Russia, Poland and Slovakia. These countries have in common a fact that their GDP is less than Czech. It can be assumed that if the nominal GDP decreases or stagnates in a given year, the number of arrivals does not increase by much. On the other hand, if the nominal GDP increases, a higher grow of incoming tourism from these countries can be expected. The demand for tourism to Prague shifts to the right as the country's economy is prospering. However, the shape (slope and size) of the curve cannot be determined due to lack of data.

The common fact for Group 3 is that those are the former EU countries - Germany, Italy Spain (except of France) and whose GDP is greater than Czech. It can be supposed that if the nominal GDP decreases or stagnates in a given year, citizens of such countries will prefer travelling to Prague since Prague is inexpensive for them. If their GDP increases, the tourist arrivals will not decrease either. This group of countries presented a lower R-squared and it can be explained by an assumption that the deviations from the trend line are caused by different factors that influence incoming tourism which is not only the GDP.

Table 18 shows a comparison of the results from the models of each country. The given groups are distinguished by colours. Yellow represents Group 1, blue denotes Group 2, in orange Group 3 is highlighted and Group 4 is in red.

Apart from the grouping the total percentage from the base to the current year of the number of arrivals, as well as the average annual change can be observed. It is evident that despite the losing the value of every currency, the number of arrivals increases year by year.

Table 18. Comparison of the Results from the Models

Country	Incoming tourism		GDP			Currency	
	Change in %[1]	Average annual change	Rank	Change in %*[1]	Result	Change in %*[1]	Result
Germany	95.4	6.36	18th	73.99	VS[4]	-23.22	I[5]
UK	99.5	6.63	14th	67.11	VS	-35.69	S
Italy	78.8	5.26	26th	48.79	S[6]	-23.22	I
USA	81.3	5.42	5th	53.37	VS	-37.05	S
Russia	481.8	32.12	72nd	376.8	VS	-71.22	I
France	89.5	5.97	20th	67.94	I	-23.22	I
Spain	54.5	3.63	29th	78.03	VS	-23.22	I
Poland	224.2	14.95	54th	181.8	VS	-26.82	I
Slovakia[2]	222.63	27.83	44th	244.3	VS	-1.098	I
Slovakia[3]	113.43	18.91	44th	-3.45	I	-23.22	I
China	1512	161.2	74th	767.4	VS	-17.16	VS

Source: own construction[1]

[1]

$$change\ in\ \% = \frac{last\ tracked\ year * 100}{base\ year} - 100$$

[2]   A period from 2000 to 2008, when SKK was the official currency

[3]   A period from 2009 to 2015 when EUR is the official currency

[4]   VS – very significant

[5]   I – insignificant

[6]   S - significant

Conclusion

Incoming tourism plays an important role in Prague's culture, as well as economy as it contributes greatly to the city's income. It is evident from the provided figures how inbound tourism has grown remarkably after joining the European Union in 2014, and the Schengen borderless area in 2007.

Regardless the level of the gross domestic product or the exchange rates, Prague is a very attractive touristic destination for demanding and less demanding tourist, for wealthy as well as modest tourists, for culture seekers also the stag party members. Simply, Prague has numerous different qualities to offer which most of tourists can choose from.

The conducted analysis shows results that surprisingly could be generalized and stated as a particular phenomenon. The first finding is that for tourists from faraway countries, such as China or the USA, their income, estimated based on the significant results for the nominal GDP, is an important indicator since travelling to a far destination requires a sufficient amount of finances. Rapidly growing Chinese GDP and years permanently high US GDP are followed by the corresponded number of arrivals to Prague.

Spanish and Italian economic crises can be read from pattern of the tourist arrivals as it dropped the year when the crises hit the economies. On the other side, Italian crisis and falling down in GDP can be seen contributing to incoming tourism to Prague as the Czech Republic is inexpensive destination for tourists from countries like Italy.

The last finding is that countries producing less GDP than the Czech Republic show a very regular incoming pattern as well. Regardless a growing or a falling GDP and depreciation of their currency, incoming tourism to Prague eels growing with slight deviations. Except of Russia, whose crises in 2014, effected arrivals to Prague, the GDP, and the rouble in the greater scale.

In general, the gross domestic product of a given country is seen as an important predictor of inbound tourism to Prague and it can be explained in three different ways. Prague is an advantageous and rare destination and one of more stops in Europe for wealthier citizens of faraway countries. An alternative yet expectation meeting destination for European countries

with a strong economy. Lastly, an affordable yet both culture and entertainment offering destination for more Eastern Europe countries. The future value forecasted is expected to rise.

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Appendices

Appendix A. Example of a dataset - Germany

Germany			
Year	Number of arrivals '000	EUR/CZK	GDP '000
T	y_t	x_{1t}	x_{2t}
2000	420.398	35.53	23.7187
2001	483.732	34.07	23.6873
2002	383.475	30.81	25.2052
2003	418.805	31.83	30.36
2004	510.188	31.88	34.1659
2005	548.086	29.73	34.6966
2006	527.198	28.34	36.4479
2007	554.659	27.73	41.8148
2008	566.848	24.98	45.6992
2009	582.961	26.44	41.7327
2010	603.353	25.29	41.788
2011	643.409	24.58	45.9361
2012	659.504	25.14	44.0109
2013	633.741	25.97	46.4417
2014	733.241	27.53	47.8219
2015	821.561	27.28	41.267

Source: Český statistický úřad (2016), US Forex Foreign Exchange (2016),

Data.worldbank.org (2016)

Appendix B. Former Regression Model - Germany

Regression Statistics			
Adjusted R-squared	0.536		
Observations	14		
Parameter Estimates			
Variable	Label	Coefficients	P-value
Intercept	Intercept	-217.58	0.750
Variable x_1	EUR/CZK	6.84	0.681
Variable x_2	GDP	15.4	0.028
Regression model: y = -217.58 + 6.84x₁ + 15.4x₂			
Decision rule			
Variable x_1	P-value (0.680) > 0.05	Cannot reject H_0	
Variable x_2	P-value (0.028) < 0.05	Reject H_0	

Source: own construction

Appendix C. Former Regression Model - Italy

Regression Statistics			
Adjusted R-squared	0.462		
Observations	14		
Parameter Estimates			
Variable	Label	Coefficients	P-value
Intercept	Intercept	-258.15	0.298
Variable x_1	EUR/CZK	8.346	0.159
Variable x_2	GDP	9.398	0.008
Regression model: y = -258.15 + 8.35x_1 + 9.4x_2			
Decision rule			
Variable x_1	P-value (0.159) > 0.05	Cannot reject H_0	
Variable x_2	P-value (0.008) < 0.05	Reject H_0	

Source: own construction

Appendix D. Former Regression Model - Russia

Regression Statistics			
Adjusted R-squared	0.877		
Observations	16		
Parameter Estimates			
Variable	Label	Coefficients	P-value
Intercept	Intercept	-67.678	0.552
Variable x_1	RUB/CZK	20.518	0.825
Variable x_2	GDP	34.593	0.002e-2
Regression model: y = -67.677 + 20.518x_1 + 34.593x_2			
Decision rule			
Variable x_1	P-value (0.552) > 0.05	Cannot reject H_0	
Variable x_2	P-value (<0.001) < 0.05	Reject H_0	

Source: own construction

Appendix E. Former Regression Model - Spain

Regression Statistics			
Adjusted R-squared	0.613		
Observations	14		
Parameter Estimates			
Variable	Label	Coefficients	P-value
Intercept	Intercept	-168.951	0.233
Variable x_1	EUR/CZK	5.551	0.122
Variable x_2	GDP	7.049	0.002
Regression model: y = -168.951 + 5.551x_1 + 7.049x_2			
Decision rule			
Variable x_1	P-value (0.122) > 0.05	Cannot reject H_0	
Variable x_2	P-value (0.002) < 0.05	Reject H_0	

Source: own construction

Appendix F. Former Regression Model - Poland

Regression Statistics			
Adjusted R-squared	0.783		
Observations	16		
Parameter Estimates			
Variable	Label	Coefficients	P-value
Intercept	Intercept	11.726	0.901
Variable x_1	PLN/CZK	-0.755	0.938
Variable x_2	GDP	10.987	0.001
Regression model: y = 11.726 – 0.755x_1 + 10.987x_2			
Decision rule			
Variable x_1	P-value (0.938) > 0.05	Cannot reject H_0	
Variable x_2	P-value (0.001) < 0.05	Reject H_0	

Source: own construction

Appendix G. Former Regression Model - Slovakia 2000-2008

Regression Statistics	
R-squared	0.9
Observations	9

Parameter Estimates			
Variable	Label	Coefficients	P-value
Intercept	Intercept	51.81	0.3905
Variable x_1	SKK/CZK	-41.99	0.5896
Variable x_2	GDP	4.18	0.0004

Regression model: $y = 51.81 - 41.99x_1 + 4.18 x_2$			

Decision rule		
Variable x_1	P-value (0.5896) > 0.05	Cannot reject H_0
Variable x_2	P-value (<0.0004) < 0.05	Reject H_0

Source: own construction