Czech University of Life Sciences Prague

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Diploma Thesis

Exchange rate and its impact on tourism

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Faculty of Economics and Management

DIPLOMA THESIS ASSIGNMENT

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Economics and Management

Thesis title

Exchange rate and its impact on tourism

Objectives of thesis

The aim of the thesis is to evaluate impact of exchange rate fluctuation on tourism of the Czech Republic. This case study will by focused especially on profit in hospitality industry, with using the example of the specific hotel and its internal data. Data of Czech Statistical Office and Czech National Bank will be utilised too. Also to make a recommendation for geographical segmentation of market according to the results of the case study.

Methodology

For the literature review methods of synthesis, induction, deduction and abstraction will be used including statistical monitoring of tourism in the Czech Republic. Data which were gathered in the theoretical part will be utilised for construction of one-equation econometric model together with internal data of obtained from hotel Noir in Prague. The final step is model application and presentation of results including geographical segmentation of market.

The proposed extent of the thesis

60 – 80 pages

Keywords

exchange rate, devaluation, tourism, currency, occupancy, geographical segmentation, visitor

Recommended information sources

Finance a úvěr = Czech Journal of Economics and Finance. UNIVERZITA KARLOVA. FAKULTA SOCIÁLNÍCH VĚD, – ČESKÁ NÁRODNÍ BANKA, – ČESKO. MINISTERSTVO FINANCÍ. Praha: ISSN 0015-1920.

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Declaration

I declare that I have worked on my diploma thesis titled "Exchange rate and its impact on tourism" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the diploma thesis, I declare that the thesis does not break copyrights of any their person.

V Praze dne 31.3.2017 _____

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Exchange rate and its impact on tourism

Summary

This diploma thesis is focused on relationship of tourism and selected economic variables especially the exchange rate. The thesis is divided in two main parts – Theoretical part and Practical part. The first subchapter of theoretical part deals with tourism industry as more and more significant part of global economy. The next subchapter is focused on exchange rate. The exchange rate is one of variables which are expected to influence inbound tourism of the Czech Republic. This eventual relationship is described in third subchapter of theoretical part. For the theoretical part was utilized many literature resources. In all cases the quotation is presented. The second part of the thesis is called practical part and it provides results of own case study which observes the relationship of the number of inbound tourists in the Czech Republic and exchange rate. There are chosen 4 countries with highest number of tourists in the Czech Republic and different currency – Germany, United Kingdom, Russia and Poland. For each of these countries is created individual econometric model with 4 exogenous variables – unemployment rate, exchange rate, average wage and inflation. The data for creation of model are sourced from CSZO, statistical offices of selected countries and Eurostat. The time period is 16 years – 2000-2015.

Keywords:

exchange rate, devaluation, tourism, tourist, currency, geographical segmentation, econometric model, fluctuation, impact, interventions

Měnový kurz a jeho dopad na cestovní ruch

Souhrn

Tato diplomová práce se zaměřuje na vztah cestovního ruchu vybraných ekonomických proměnných zejména pak měnového kurzu. Práce je rozdělena na dvě hlavní části – teoretickou a praktickou. První podkapitola teoretické části se zabývá průmyslem cestovního ruchu jakožto vice a vice významnou částí světové ekonomiky. Další podkapitola je zaměřena na měnový kurz. Měnový kurz je považován za jednu z proměnných, která ovlivňuje příjezdový cestovní ruch České republiky. Tento eventuální vztah je popsán ve třetí podkapitole teoretické části. Pro teoretickou část bylo využito mnoho literárních zdrojů. Ve všech případech jsou tyto zdroje citovány. Druhá část práce - praktická část - poskytuje výsledky vlastní případové studie, ve které je zkoumán vztah počtu příjezdových turistů v České republice a měnového kurzu. Jsou vybrány 4 země s nejvyšším počtem turistů v České republice a odlišnou měnou – Německo, Velká Británie, Rusko a Polsko. Pro každou z těchto zemí je vytvořen vlastní ekonometrický model se čtyřmi exogenními proměnnými – míra nezaměstnanosti, měnový kurz, průměrná mzda a míra inflace. Pro vytvoření modelu byla použita data Českého statistického úřadu, statických úřadů vybraných zemí a Eurostatu. Data jsou zkoumána v časovém úseku 16 let - 2000 – 2015.

Klíčová slova:

měnový kurz, devalvace, cestovní ruch, turista, měna, geografická segmentace, ekonometrický model, fluktuace, dopad, intervence

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1 Introduction

This thesis is focused on exchange rate and its eventual influence of tourism. The tourism industry is becoming more and more important part of national economies. There are several reasons for travelling such as culture, education, health, sport, leisure, etc., but there is one characteristic which is common for all participants of tourism – finance. The topic of this work focuses on this financial aspect of tourism.

It is important to understand international tourism as an export industry even if no product leaves the original country. Sometimes tourism is considered as reverse export, because travellers come to the country and spend money there, rather than goods leaving the original country for foreign markets. That's why it is expected that there is relationship between tourism and exchange rate. The devaluation of CZK makes the visit of Czech Republic cheaper for inbound tourists. But this fact is also advantage for the other side of tourism market. For example if the hotel prices its rooms in EUR it gets more CZK from each EUR if the CZK is devaluating.

This thesis provides many information about tourism in global aspect and also in connection with Czech Republic. There are also mentioned facts about tourism classification, institutions dealing with it and some macroeconomic data. Next chapter is focused on exchange rate and its history, determinants and institutions dealing with it. The final chapter of theoretical part deals with eventual influence of exchange rate and it explains this relationship on case studies of several countries.

The practical part brings the results of own case studies of 4 countries - Germany, United Kingdom, Russia and Poland. The influence is researched using econometric methods. For the model was utilized statistical data about inbound tourists to Czech Republic differentiated by country during period 2000-2015. The previously mentioned countries were selected because their number of inbound tourists to Czech Republic are highest and they have different currencies. Except the exchange rate, the influence of other three variables was tested – unemployment rate, average wage and inflation of selected countries. Final results were interpreted. According to findings the geographical segmentation was formulated.

2 Goals and Methodology

The main goal of this diploma thesis is to evaluate the eventual impact of exchange rate on tourism. According to this goal the following hypothesis was stated:

"The devaluation of CZK has positive influence on inbound tourism of the Czech Republic"

For the literature review methods of synthesis, induction, deduction and abstraction is used including statistical monitoring of tourism in the Czech Republic. There were utilized many of quoted sources. In the practical part are utilized econometric methods such as ordinary least square method, normality test of residuals and Breusch-Pagan test. Text also conatins the economic interpretation of results. The final step is model application and presentation of results including geographical segmentation of market.

List of abbreviations

BoE – Bank of England

CNB – Czech National Bank

ČSÚ – Czech Statistical Office

CSZO – Czech Statistical Office

CZK – Czech Crown

ECB – European Central Bank

EU – European Union

EUR – Euro of European Union

GBP – Great Britain Pound

GDP – Gross Domestic Product

GDS – Global Distribution System

IMF – International Monetary Fund

ISO – International Organization for Standardization

JPY – Japanese Yen

ÖIFW – Austrian Institute for Economic Development

OLS – Ordinary Least Square

PLN – Polish Zloty

RUB – Russian Rouble

SNB – Swiss National Bank

UK – United Kingdom

UNWTO – World Tourism Organization

USA – United States of America

USD – United Stated Dollar

WEF – World Economic Forum

WTO – World Tourism Organization

WTTC – World Travel & Tourism Council

ZLB – Zero Lower Bound

3 Theoretical part

3.1 General information about tourism

Tourism means the temporary short-term movement of people to destinations outside the places where they normally live and work, as well as their activities during their stay at these destinations. It should be noted that all tourism should have some travel, but not all travel is tourism. It is a complex phenomenon, a multi-sectoral, multifaceted business and this in itself creates difficulties when attempting to generalise about the management of tourism businesses. It is multi-sectoral because it encompasses different industrial sectors.

3.1.1 Definition of tourism

There is no universally accepted definition of the tourism industry. Indeed, there is no agreement that tourism can be described as an industry. Mill and Morrison argue that it is hard to describe tourism as an industry given that there is a great deal of complementarity as well as competition between tourism businesses. They place definitions of tourism in context by highlighting the link between travel, tourism, recreation and leisure. Mill and Morrison stated the definition of tourism as follows:

"Tourism is an activity. It is an activity that takes place when, in international terms, people cross borders for leisure or business and stay at least 24 hours but less than one year."[1]

The one of most widely accepted definition of tourism was stated by Chadwick in 1994:

"The activities of a person outside his or her usual environment for less than a specified period of time and whose main purpose of travel is other than exercise of an activity remunerated from the place visited." [2]

[1] MILL, R., MORRISON, A.: The Tourism System: An Introductory Text, Kendell/Hunt Publishing Co., 1998, p. 2

[2] CHADWICK, R.: Travel Tourism and Hospitality Research: A Handbook for Managers and Researchers, John Wiley and Sons, New York, 1994, p. 66

One of the more recent form of definition brings us UNWTO in its statistics Guidelines from 2010:

"Tourism is defined as the activities of persons identified as visitors. A visitor is someone who is making a visit to a main destination outside his/her usual environment for less than a year for any main purpose including holidays, leisure and recreation, business, health, education or other purposes. This scope is much wider than the traditional perception of tourists, which included only those travelling for leisure."

Debate has surrounded many of the aspects of definitions of tourism. For example, some have argued for the inclusion of day visitors in definitions, while others have argued against this. Similarly, some prefer to include business trips, while others exclude these. Arguments have also surrounded precise distances and purposes of visit to be included in definitions.[3]

3.1.2 **Classification of tourism and its components**

Because of the heterogeneous nature of tourists, it is important that they can be classified in a variety of ways. The most obvious distinction is that between domestic and international tourists. This has something in common with the WTO's distinction between three basic forms of tourism:

- domestic – travel by residents within their own country
- inbound – travel by residents from overseas into a country
- outbound – travel from the generating country to another country [3]

Figure 1 - Classification of tourist – outbound and inbound tourism

Source: Introduction to Tourism, Personal, Social and Humanities Education Section Education Bureau, Hong Kong, 2013, p. 29

[3] PENDER, L., SHARPLEY, R.: The Management of Tourism, SAGE Publication Ltd, London, 2005, pp. 5-6

Cohen's Classification of tourist

Cohen's classification of tourist is based on the theory that tourism is the combination of the curiosity to seek out new experiences with the need for the security of familiar reminders of home. Major part of tourists prefers to explore the destinations from a familiar base. Cohen divides the degree of familiarity into the four tourist roles:

- The Organized Mass Tourist

  The organized mass tourists are the least adventurous and spend most of their time in their comfortable "environmental bubble" throughout their trip. "Environmental bubble" means the tourists surrounded by his/her similar living environment while he/she is abroad. A guided tour in an air-conditioned bus traveling through the countryside is a typical example of the organized mass tourist. The itinerary is decided in advance, and all the attractions and stopping points are well fixed and guided. Tourists have almost no decisions on their trip.

- Individual Mass Tourist

  This type of tourists is similar to the organized mass tourist, except that the tour is not entirely fixed. The tourist has a certain amount of control over his/her time and itinerary, and is not bound to a group. However, all the major arrangements are still made through a tour agency. The tour does not bring them much further afield than the organized mass tourists do. They are still confined by their "environmental bubble".

- Explorer

  This type of tourists arranges their trips alone. They try to go somewhere unusual, but still look for comfortable sleeping places and reliable means of transportation. They retain some of the basic routines and comforts of their native way of life. They try to mix with the people they visit and also try to speak their language. The explorers dare to leave their "environmental bubble" more readily than the organized mass tourists and individual mass tourists, but they are still careful about their ventures.[4]

[4] COHEN. E.: Toward a Sociology of International Tourism, Social Research, 1972

- Drifter

  This type of tourists goes further away from the "environmental bubble" and from the accustomed ways of life in their home countries. They keep away from any kind of connection with the tourism establishment, such as hotels and tour coaches. The drifters have no fixed itinerary or timetable. They tend to make their trips wholly on their own, live with the local people and often take odd-jobs to keep themselves going. They try to live the way the locals live, and to share their houses, food, and habits.[5]

Plog's Classification

Plog created a theory that associates the popularity of a destination to the inherent personalities of travellers. Plog suggests that travellers can be classified into the following types based on their different personalities: allocentric, psychocentric and mid-centric.

- Allocentric Type

  An allocentric tourist is a person who seeks new experiences and adventure in a variety of activities. This person is outgoing and self-confident in behavior. An allocentric person prefers to fly and to explore new and unusual areas before others do so. Allocentrics enjoy meeting people from foreign or different cultures. They prefer good hotels and food, but not necessarily modern or chain-type hotels. For a tour package, an allocentric would like to have the basics such as transportation and hotels, but not be committed to a structured itinerary. They would rather have the freedom to explore an area, make their own arrangements and choose a variety of activities and tourist attractions.[6]

- Psychocentric Type

  Psychocentrics are more conservatively oriented. They tend to be inhibited and non-adventuresome. They prefer to return to familiar travel destinations where they can relax and know what types of food and activity to expect. Psychocentrics prefer to drive to destinations, stay in typical tourist accommodations, and eat at family-type restaurants. When arranging a package tour, psychocentrics would prefer a

[5] COHEN, E.: Toward a Sociology of International Tourism, Social Research, 1972
[6] PLOG, S.: Leisure Travel – Making It a Growth Market Again, John Wiley & Sons, 1974

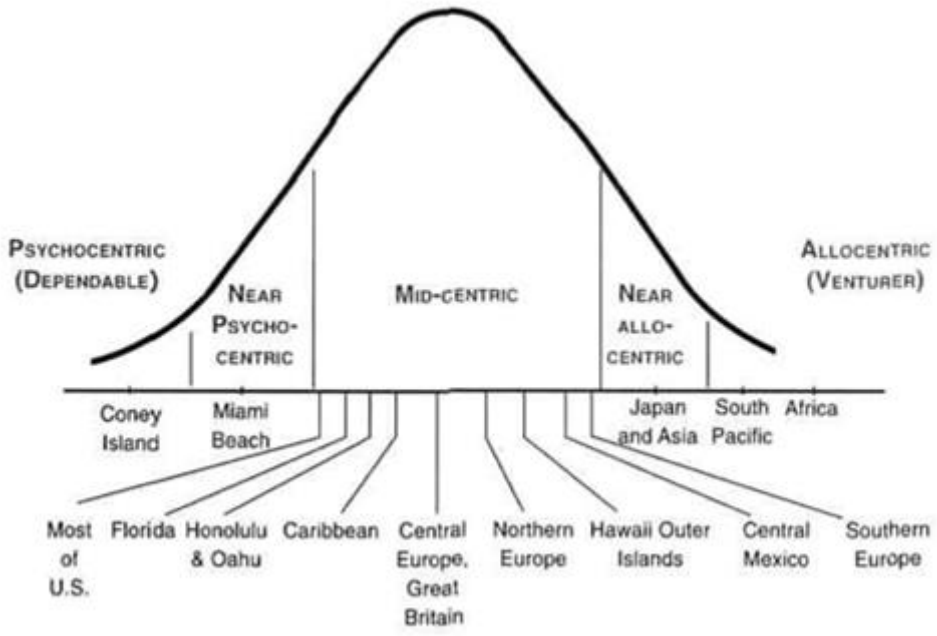
heavily structured itinerary so that they know what to expect. Safety and security are very important to this group.

- Mid-centric Type

  There is a large number of people falling between the allocentric and the psychocentric types of tourists. This type of tourists is called mid-centrics. Mid-centric tourists are not particularly adventurous, but they are receptive to new experience.[7]

In the Figure 2 below are shown destination choices of different personalities according to Plog's Classification

Figure 2 - Plog's Classification Of Tourist



Source: PLOG, S.: Leisure Travel – Making It a Growth Market Again, John Wiley & Sons, 1974

Plog also adds to his model that in the understanding of the typologies of tourists, this topic is highly complex and depends on a range of factors. We cannot hope to encompass the complex patterns of behaviour we see in the real world with one single typology. Some of the above historical research on tourists' needs, motivations and expectations may actually come up with fairly similar dimensions but may label them differently.[8]

[7] PLOG, S.: Leisure Travel – Making It a Growth Market Again, John Wiley & Sons, 1974
[8] GOVERNENT OF HONG KONG, Introduction to Tourism, Personal, Social and Humanities Education Section Education Bureau, Hong Kong, 2013, p. 29

3.1.3 **Institutions dealing with tourism**

UNWTO

The World Tourism Organization (UNWTO) is the United Nations agency responsible for the promotion of responsible, sustainable and universally accessible tourism. As it is described on its official webpage, it is an international organization in the field of tourism, UNWTO promotes tourism as a driver of economic growth, inclusive development and environmental sustainability and offers leadership and support to the sector in advancing knowledge and tourism policies worldwide. [9]

UNWTO encourages the implementation of the Global Code of Ethics for Tourism, to maximize tourism's socio-economic contribution while minimizing its possible negative impacts, and is committed to promoting tourism as an instrument in achieving the Sustainable Development Goals, geared towards reducing poverty and fostering sustainable development worldwide.[9]

UNWTO generates market knowledge, promotes competitive and sustainable tourism policies and instruments, fosters tourism education and training, and works to make tourism an effective tool for development through technical assistance projects in over 100 countries around the world. UNWTO's membership includes 157 countries, 6 Associate Members and 500 Affiliate Members representing the private sector, educational institutions, tourism associations and local tourism authorities.[9]

[9] UNWTO: [online], available from < http://www2.unwto.org/en > [cit. 2017-03-03]

UNWTO publishes many important articles, codes and other documents. As the most interesting one can be considered the "Global Code of Ethics for Tourism". It describes behaviour of tourists in an active and tolerant way and it pushes the tourists to respect and learn about the legitimate differences between peoples, cultures and their diversity. Among the most important points belong:

- Open your mind to other cultures and traditions – it will transform your experience, you will earn respect and be more readily welcomed by local people. Be tolerant and respect diversity – observe social and cultural traditions and practices.
- Respect human rights – Exploitation in any form conflicts with the fundamental aims of tourism. The sexual exploitation of children is a crime punishable in the destination or at the offender's home country.
- Help preserve natural environments – Protect wildlife and habitats and do not purchase products made from endangered plants or animals.
- Respect cultural resources – Activities should be conducted with respect for the artistic, archaeological and cultural heritage.
- Your trip can contribute to economic and social development – Purchase local handicrafts and products to support the local economy using the principles of fair trade. Bargaining for goods should reflect an understanding of a fair wage.
- Inform yourself about the destination's current health situation and access to emergency and consular services prior to departure and be assured that your health and personal security will not be compromised. Make sure that your specific requirements (diet, accessibility, medical care) can be fulfilled before you decide to travel to this destination.
- Learn as much as possible about your destination and take time to understand the customs, norms and traditions. Avoid behaviour that could offend the local population.[10]

[10] UNWTO: [online], The Responsible tourist and Traveller, available from <http://ethics.unwto.org/sites/all/files/docpdf/responsibletouristbrochureen.pdf> [cit. 2017-03-03]

- Familiarize yourself with the laws so that you do not commit any act considered criminal by the law of the country visited. Refrain from all trafficking in illicit drugs, arms, antiques, protected species and products or substances that are dangerous or prohibited by national regulations.[11]

WTTC

The World Travel & Tourism Council (WTTC) was formed in 1991 by a group of Travel & Tourism CEOs who felt that the sector's contribution to economies and job creation was not being recognised. Its objectives were to use empirical evidence to promote awareness of Travel & Tourism's economic contribution, to expand markets in harmony with the environment, and to reduce barriers to growth. [12]

WTTC is described on its official webpage as the only global body that brings together all major players in the Travel & Tourism sector (airlines, hotels, cruise, car rental, travel agencies, tour operators, GDS, and technology), enabling them to speak with One Voice to governments and international bodies. It is important that WTTC has the broadest geographical representation and includes all aspects of the sector, including organisations that provide vital services to Travel & Tourism. With Chief Executives of over 140 of the world's leading Travel & Tourism companies as its members, WTTC has a unique mandate and overview on all matters related to Travel & Tourism. WTTC works to raise awareness of Travel & Tourism as one of the world's largest sectors, supporting 284 million jobs and generating 9.8% of global GDP. [12]

WTTC follows its 3 main missions:

- Freedom to Travel - WTTC believes in the right of people to cross international borders efficiently for leisure or business travel purposes, without compromising national security. Despite an increasing number of visa waiver programmes around the world, too many individuals still find it too difficult to enter certain countries as international travellers. WTTC's ongoing focus is visa facilitation, convincing

[11] UNWTO: [online], The Responsible tourist and Traveller, available from <http://ethics.unwto.org/sites/all/files/docpdf/responsibletouristbrochureen.pdf> [cit. 2017-03-03]
[12] WTTC: [online], available from <https://www.wttc.org/> [cit. 2017-03-03]

governments of the huge economic advantages generated by visa policies which encourage inbound visitors.

- Policies for Growth - WTTC informs governments about ways to implement policies that ensure the business environment is conducive to the growth of Travel & Tourism. This means planning and investing in appropriate infrastructure and creating a tax regime which allows the private sector to be competitive. WTTC has made it a priority to raise awareness of the negative impact punitive taxation has – particularly aviation tax - on inbound and outbound tourism.
- Tourism for Tomorrow - WTTC has a huge responsibility for safeguarding the environment and ensuring that the growth of our sector is managed responsibly, finding the balance between people, planet and profits. WTTC continues to promote the very best in sustainable tourism through our Tourism for Tomorrow Awards. We are also spearheading environmental initiatives and our Members' global reach means that they are in a unique position to drive greener practices into core business models.[13]

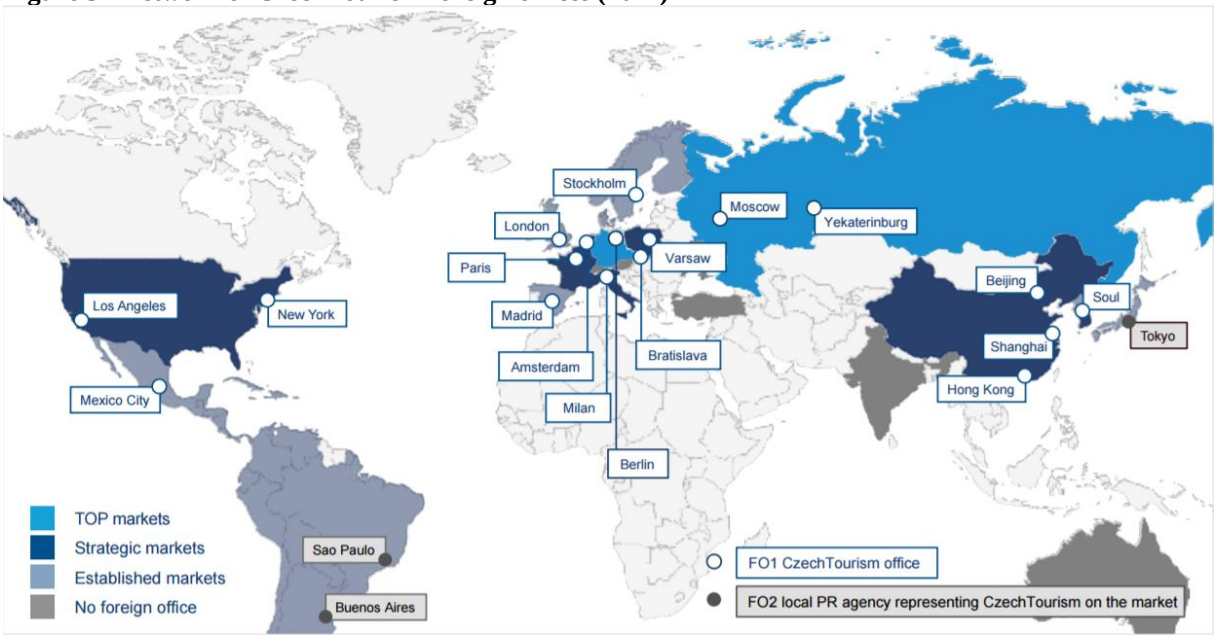
After the institutions operating in the global context were being mentioned it is also necessary to mention the one which operates in the national level of the Czech Republic.

CzechTourism

CzechTourism is engaged in the development of tourism in the Czech Republic through a number of key activities that promote tourism domestically and abroad. It is a state-funded organization administered by the Czech Ministry for Regional Development. It uses central office in the Czech Republic as well as a global network of foreign offices.[14]

[13] WTTC: [online], available from <https://www.wttc.org/> [cit. 2017-03-03]
[14] CZECHTOURISM: [online], available from < https://www.czechtourism.com/about-czt/> [cit. 2017-03-03]

Figure 3 - Network of CzechTourism foreign offices (2014)



Source: CZECHTOURISM: [online], CzechTourism Annual Report 2014 available from <http://www.czechtourism.com/Czechtourism/media/CzT-Media/1-brochures/en/report2014/index.html/> [cit. 2017-03-03]

The key objective of CzechTourism's network of foreign offices is to promote the Czech Republic in the relevant markets, build destination brand awareness and stimulate the volume of arrivals of foreign visitors in the Czech Republic. The main vision of the CzechTourism agency is to create a new perception of the Czech Republic, in particular its transformation from a post-communist destination to an attractive location for tourists. One of the tasks of the agency is to convince domestic clients and foreign visitors to discover the beauty of the Czech Republic. In addition to the capital city of Prague, which has an exceptional reputation in the world, it primarily aims to show the potential of undiscovered regional places. Other objectives of CzechTourism include increasing the repetition of visits and the satisfaction of tourists.[15]

The CzechTourism agency presents the Czech Republic at several fairs and through the use of leaflets it ensures the promotion of tourism bodies. In addition, the organization publishes a number of clear and graphically attractive brochures and maps, which offer visitors an overview of the interesting tourist destinations from various thematic aspects.[15]

[15] CZECHTOURISM: [online], available from < https://www.czechtourism.com/about-czt/>[cit. 2017-03-03]

Key targets of CzechTourism, as it is stated in its annual report from 2014

- sourcing, funding and coordination of marketing activities on the local and foreign markets
- support for sector-wide development of the tourism and travel industry
- cooperation in the tourism sector with state and local governments, professional organizations, financial institutions, universities, research and advisory agencies and similar foreign organizations
- preparation, organization and implementation of educational activities in the field of tourism and related services to ensure and maintain competitiveness of the tourism and travel industry on the domestic and foreign markets
- creation of a favourable image of the "Czech Republic" tourist destination and its promotion on the domestic market and, notably, on foreign markets
- design and development of priority products characteristic for the Czech Republic destination
- support for creating environmentally friendly tourism products
- ensuring cooperation with local and foreign journalists and media
- information service for the tourism and travel industry in the Czech Republic, in particular publishing experts' reports that contain primarily marketing and regional information
- publishing promotional materials about the Czech Republic in respective language versions
- collaboration with regions in the Czech Republic, involvement in the development of natural tourism areas, enhancement of their tourism potential and attractiveness
- encouraging the Czech public to treat foreign visitors in a friendly manner and emphasize the importance of tourism for the Czech Republic
- setting up offices abroad with the aim to inform foreign journalists, professionals and the general public about the travel offerings in the Czech Republic and actively promote the sale of national tourism products.[16]

[16] CZECHTOURISM: [online], CzechTourism Annual Report 2014 available from <http://www.czechtourism.com/Czechtourism/media/CzT-Media/1-brochures/en/report2014/index.html/> [cit. 2017-03-03]

Czech statistical office

The Czech Statistical Office (CSZO) is a central body of the state administration of the Czech Republic. It was established on 8 January 1969. It collects, analyses, and publishes statistical information for the various parts of the local and national government. Although tourism doesn't belong to the main objectives of CSZO it is worthy to mention it as an institution dealing with tourism. CSZO publishes every year "Tourism Satellite Account" which analyses economic indicators of tourism from both, demand and supply point of view and measures impact of tourism industries on the economy of the Czech Republic. It also collect many important data about inbound tourism of the Czech Republic.[17]

In this thesis were utilized data and information published by all of previously mentioned institutions.

3.1.4 The governance of tourism in the Czech Republic

The Ministry of Regional Development of the Czech Republic is responsible for coordinating and setting guidelines in the field of tourism. The Tourism Department carries out activities related to the development and implementation of tourism policy. It also implements measures arising from tourism related strategies, and undertakes activities to enhance awareness and recognition of tourism as an important industry of the national economy and to strengthen international co-operation. The preparation of relevant legislation, as well as monitoring and collecting of statistical information is also under control of Ministry. It is also responsible for developing tourism in the regions and supporting improvement in the quality and structure of tourism services. The National Collegium of Tourism is a consultative and advisory body for the Ministry.[18]

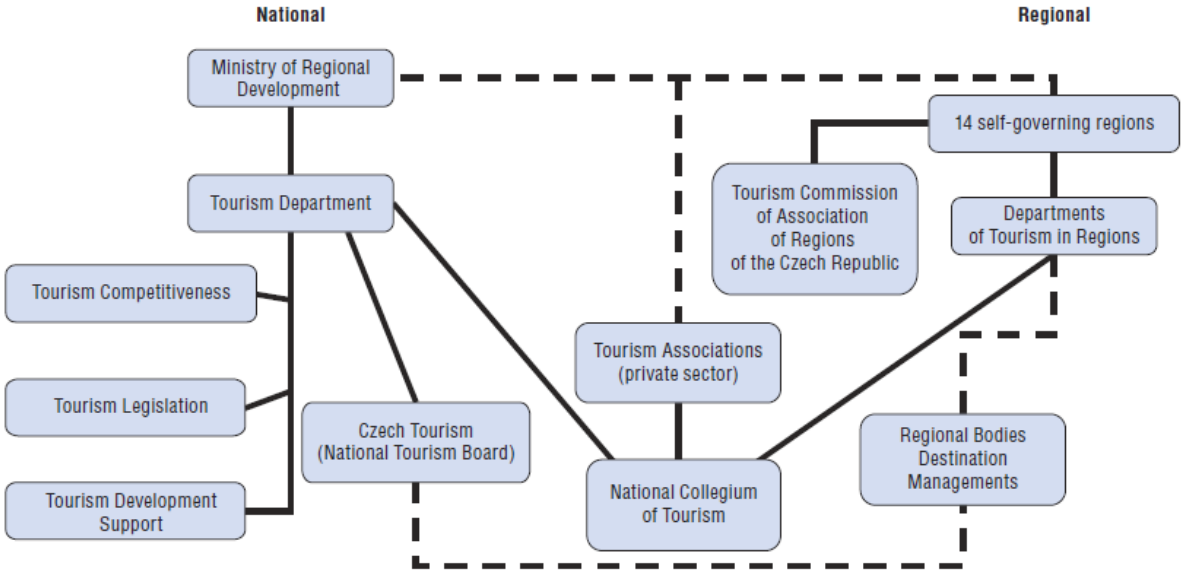
The organization of tourism in the Czech Republic is strongly influenced by the existence of respective administrative systems of the 14 self-governing regions in the country. These regions and individual communities are represented by different public institutions. The co-operation between national and regional tourism organizations over the marketing strategy includes both tourism stakeholders and residents. The Ministry is responsible for the negotiation with the regions regarding marketing activities and product development. A

[17] CSZO: [online], available from < https://www.czso.cz/csu/czso/home > [cit. 2017-03-03]
[18] OECD: "Czech Republic", in OECD Tourism Trends and Policies 2016, OECD Publishing, Paris, 2016

state officer has been appointed to every region to co-ordinate the marketing activities of CzechTourism and all public tourism bodies in the region. [19]

There was an allocation of public funds amounting to almost CZK 55 billion during period 2007-2013. CzechTourism's budget in 2014 was EUR 29.3 million which has been reduced by 14.5% year on year. The main source of funding over the 2007-2013 period was from European Union Structural Funds.[19]

Figure 4 - Organizational chart of tourism bodies



Source: OECD, "Czech Republic", in OECD Tourism Trends and Policies 2016, OECD Publishing, Paris, 2016

[19] OECD., "Czech Republic", in OECD Tourism Trends and Policies 2016, OECD Publishing, Paris, 2016

3.1.5 **Tourism in the global context**

Nowadays, tourism is one of the most important part of the world economy. International tourism generates more than one trillion USD yearly. This classifies tourism among the most important export markets of the world (after oil, chemical and automotive industry). The estimations of UNWTO (2011) and WTTC (2012) indicate 5% of direct share of tourism on global GDP. If we include also the indirect effects the value can be even doubled. [20]

Dynamic development of domestic and international tourism is long-term and stable. The international tourism has been annually increasing in average by 4.5% last 60 years. The periods of decrease were always short, followed by fast demand recovery. The prognosis of UNWTO estimates the increase of international arrivals to 1.6 billion of tourists in 2020.

The development of tourism and its effects are differentiated. The decrease of traditional destination is balanced by growth of new developing markets in Asia. The good example can be gradual weakening of European position. However, the European position is still strong (26% of world tourism GDP). The percentage of international arrivals is even higher (51%) and international earnings from tourism as well (42%).[20]

European market is well developed with high intensity of tourism. Unlike developing regions and destinations is not easy to find some new sources of growth. That's why the prognosis of UNWTO estimates only 3% of growth in following years. This percentage is lower than global average level. According to analysis of ÖIFW (Austrian institute for economic development) is necessary to find the sources of increase in new markets. Meanwhile the outbound tourism in Western Europe is probably going to stagnate, the higher growth can be expected in markets of Middle and Eastern Europe.[20]

[20] MINISTERSTVO PRO MÍSTNÍ ROZVOJ ČR (MMR). Koncepce státní politiky cestovního ruchu v České republice na období 2014 – 2020, Prague, 2014, p. 6

3.1.6 **Tourism of the Czech Republic**

The Czech Republic has fully integrated in to the tourism market since 90's of last century. This related to fast increase of number of inbound and outbound tourists especially during the first decade. International tourism is positively affecting balance of payments of the Czech Republic for a long time. There is positive difference between income from inbound tourism and expenditures on outbound tourism, but this active ratio is gradually decreasing (approximately by 33 % in 7 years). According to Kamenický this can be explained especially by increasing value of expenditures of Czech tourist abroad, and also by world financial crisis which affected particularly passive side of tourism.[21]

Tourist destination Czech Republic can be defined as small or medium-small market in the European context. The share of the Czech Republic of the global arrivals and incomes from tourism does not exceed 1%. The share of number of arrivals in the European region is approximately 2% which corresponds to Sweden or Switzerland. In case of income in European context the percentage is even lower (approximately 1,3% in 2014). This value is comparable with Hungary or Norway. According to UNWTO the share of inbound tourism of the Czech Republic was between 2010 and 2014 on both global and European market decreasing. [22]

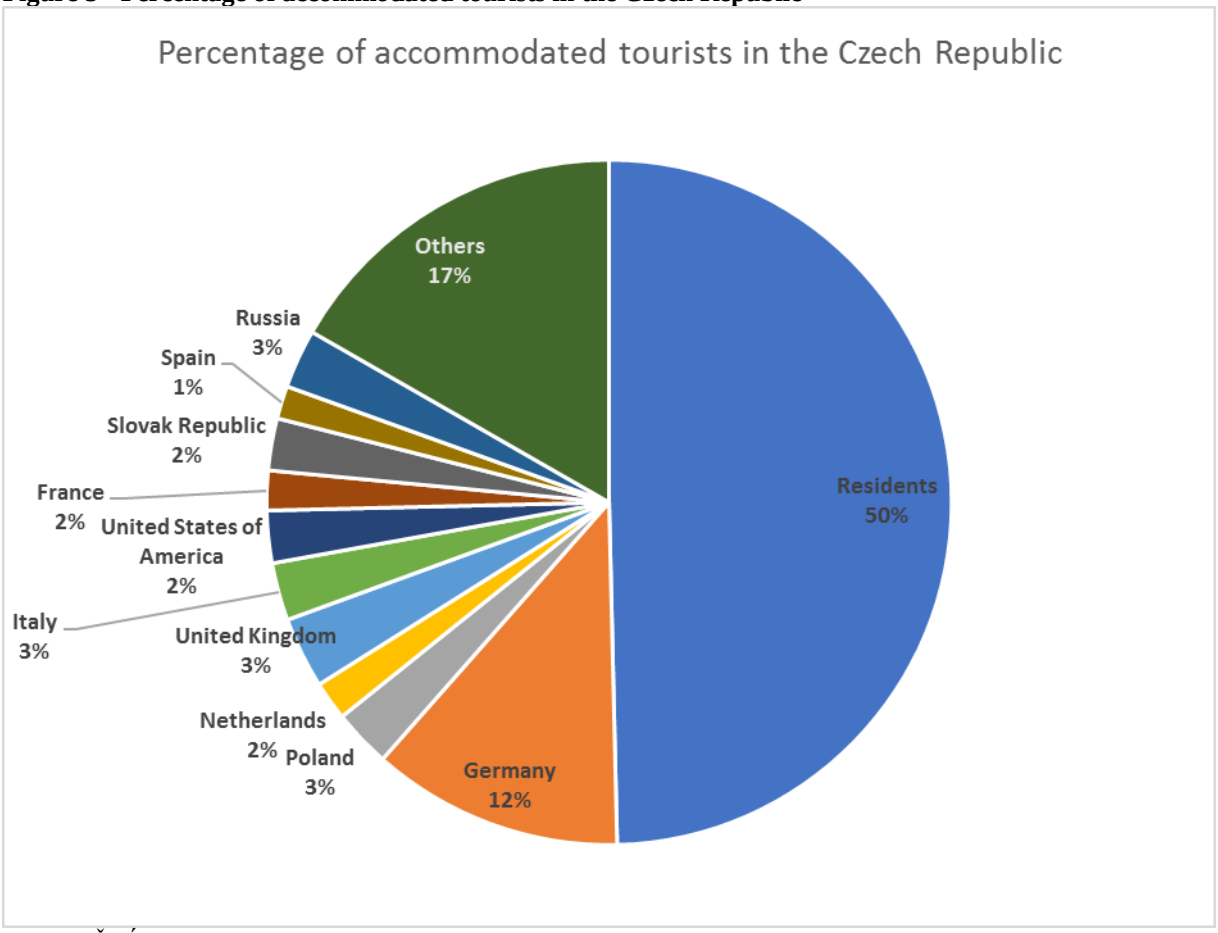
In comparison with GDP is the position of the Czech Republic more favourable. The ratio of income from inbound tourism and GDP is approximately 3,5%. According to data from 2013 this ranked Czech Republic to 13th position in comparison of 28 EU countries. Among the countries with highest percentage in EU context belong southern countries where the numbers are double digit (Croatia 16.7%, Malta 14.5%, Cyprus 13,2%). On the other side, Romanian income from inbound tourism indicates only 0,8 % of GDP. Germany, Finland, or Great Britain indicates percentage between 1% and 2% of GDP.[23]

The changes in locations of the main markets of the world tourism are also affecting the structure of inbound tourism of the Czech Republic. With respect to geographical location

[21] KAMENICKÝ, J.; KUČERA, L., Vybrané aspekty cestovního ruchu České republiky, Český statistický úřad, 2014.
[22] UNWTO: Tourism Highlights 2015 [online]. available from. <http://www.e-unwto.org/doi/pdf/10.18111/9789284416899> [cit. 2017-02-14]
[23] EUROSTAT, Tourism Sattelite Accounts in Europe, Publications Office of the European Union, Luxembourg, 2013

of the Czech Republic the main source of inbound tourists is Europe. It is highly probable that this trend will continue even though the number of European tourists is decreasing (from 87% in 2004 to 79% in 2014). It is also noteworthy that during the last decade the number of tourists from Asia and America is increasing. In the comparison of continents America occupies 3rd place after 2nd Asia. The tourists from Australia and Africa do not play an important role in Czech tourism. For this diploma thesis is more important to handle the rank of countries than continents. The graph Figure 5 is showing the top 10 countries which visited the Czech Republic is presented below. The reported period is 2000-2015.

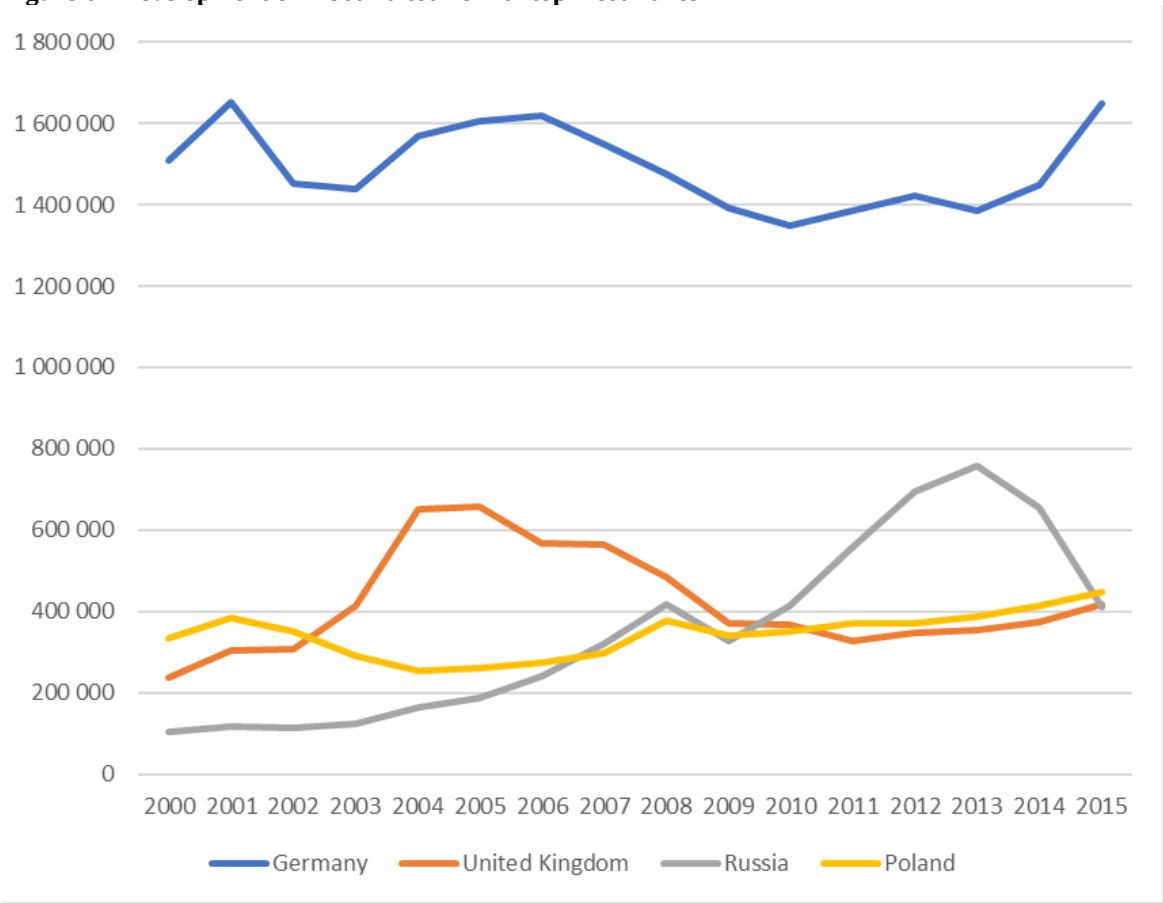
Figure 5 - Percentage of accommodated tourists in the Czech Republic



Source: ČSÚ, own calculation

From this Figure 5, we can find out that the highest number of accommodated tourists in the Czech Republic belongs to the tourists from Germany. High positions are also occupied by Poland, United Kingdom, Russia, Italy and USA. Approximately 50% created residents of Czech Republic.

Figure 6 - Development of inbound tourism of top 4 countries



Source: ČSÚ, own computation

Figure 6 shows the development of four countries with highest number of tourists accommodated in the Czech Republic during the period 2000-2015. Germany occupies the 1st position during the entire period. The main changes in this period relate to fluctuating number of tourists from Russia. There was a rapid increase of Russian tourists. However, the importance of new market cannot be overvalued because of its lower level of stability. On the example of Russian-Ukrainian conflict in 2013 is obvious that this market is affected by political, economic and other influences. The number of Russian tourists in Czech accommodation facilities was stably increasing until 1st quarter of 2014. After this peak the numbers started to rapidly decrease. [24]

[24] CSZO: Česko je letos turisticky atraktivnější [online], available from.
< https://www.czso.cz/csu/czso/cesko-je-letos-turisticky-atraktivnejsi > [cit. 2017-02-14]

During the first quarter of 2015 was the number of Russian tourists lower by 50% than during the same period in 2014. This decrease was fortunately compensated by increase of tourists from China and South Korea and mainly from traditional markets (Germany, Slovakia, Poland, USA, etc.).

Due to this compensation, the Czech balance of payment from tourism wasn't negative. It is also visible that outbound tourism to Czech Republic from all of the observed countries experienced decrease after world economic crisis in 2008. On the other hand, according to Czech Statistical Office, in the comparison of income from tourism is Russian Federation even on the 1st position because their visits in our country are longer and they are willing to spend more money than other tourists. Although the number of tourists from China and Korea are not presented in the graph because it numbers are still not even in top 10, it is noteworthy that Czech Republic is experiencing rapid increase in arrivals from these countries. It is highly probable that the tourists from Eastern Asia will replace tourists from traditional destinations (Netherlands, Denmark, Italy, Great Britain). The introduction of new direct flight connection between Prague and Peking has positively affected the development of numbers of tourists from China. On the other hand, the next key factor is the visa requirement for tourists from these countries. The simplification and acceleration of visa process would positively affect the interest about visits to the Czech Republic. Because of this trend are the Czech companies changing their management and marketing processes and are targeting more and more to these segments.[25]

The neighbour countries such as Germany, Slovakia, and Poland must be understood as the extremely important markets for inbound tourism because the tourists from these countries are not visiting only the city of Prague, but also other regions throughout the Czech Republic. This trend is not typical for other markets. Approximately two thirds of tourists are accommodated in the facilities of Prague region. [26]

[25] CSZO: Česko je letos turisticky atraktivnější [online], available from.
< https://www.czso.cz/csu/czso/cesko-je-letos-turisticky-atraktivnejsi > [cit. 2017-02-14]
[26] VOŠTA, M., ABRHÁM, J.: Globální cestovní ruch a implikace pro Českou republiku, VŠE, 2015, pp. 73-74

3.1.7 **Macroeconomic data**

Tourism is an important economic activity in most countries around the world. As well as its direct economic impact, the sector has significant indirect and induced impacts. Most of the statistics and accounting methodologies quantifies only the direct contribution of Tourism. World Travel and Tourism Council recognises that tourism's total contribution is much greater however, and aims to capture its indirect and induced impacts through its annual research.

Direct contribution

The direct contribution of tourism to GDP reflects the 'internal' spending on tourism (total spending within a country on tourism by residents and non-residents for business and leisure purposes) as well as government 'individual' spending - spending by government on tourism services directly linked to visitors, such as cultural (e.g. museums) or recreational (e.g. national parks). The direct contribution of tourism to GDP is calculated to be consistent with the output, as expressed in National Accounting, of tourism-characteristic sectors such as hotels, airlines, airports, travel agents and leisure and recreation services that deal directly with tourists. The direct contribution of tourism to GDP is calculated from total internal spending by 'netting out' the purchases made by the different tourism industries.[27]

Total contribution

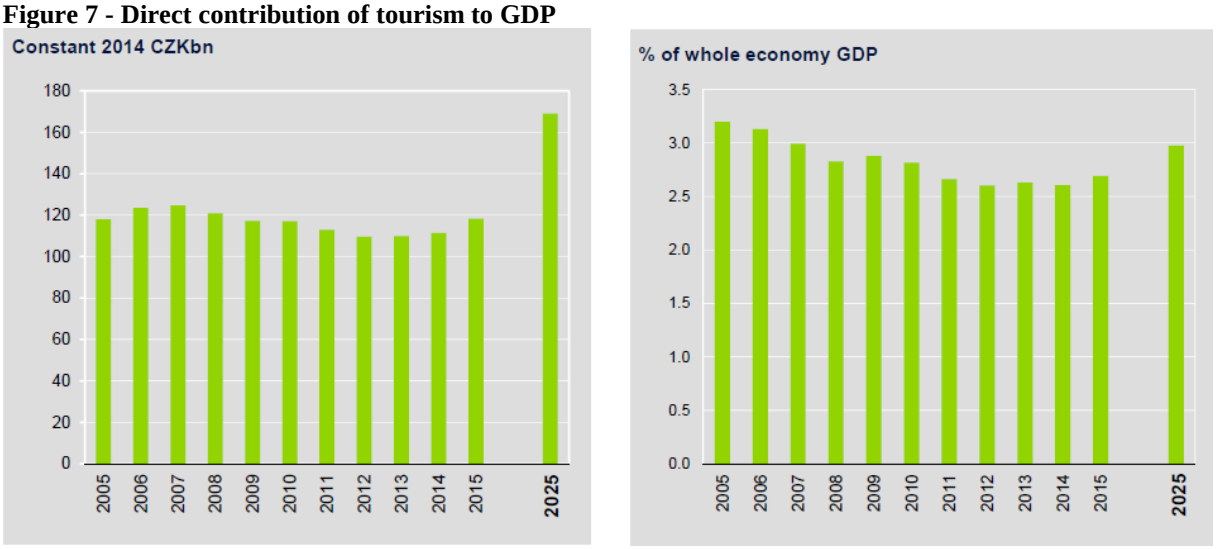
- The total contribution of tourism includes its 'wider impacts' (i.e. the indirect and induced impacts) on the economy. The 'indirect' contribution includes the GDP and jobs supported by:
- Tourism investment spending – an important aspect of both current and future activity that includes investment activity such as the purchase of new aircraft and construction of new hotels.[27]

[27] WORLD TRAVEL & TOURISM COUNCIL (WTTC), Travel and Tourism Economic Impact 2015 – Czech Republic, 2015, London, p. 2

- Government 'collective' spending, which helps tourism activity in many different ways – e.g. tourism marketing and promotion, aviation, administration, security services, resort area security services, resort area sanitation services, etc.
- Domestic purchases of goods and services by the sectors dealing directly with tourists - including, for example, purchases of food and cleaning services by hotels, of fuel and catering services by airlines, and IT services by travel agents.
- The 'induced' contribution measures the GDP and jobs supported by the spending of those who are directly or indirectly employed by the tourism sector.[28]

The Czech direct contribution of tourism to GDP in 2014 was CZK111.4bn (2.6% of GDP). And it raised by 6.1% to CZK118.2bn in 2015. This primarily reflects the economic activity generated by industries such as hotels, travel agents, airlines and other passenger transportation services (excluding commuter services). But it also includes, for example, the activities of the restaurant and leisure industries. The direct contribution of tourism to GDP is expected to grow by 3.6% pa to CZK169.0bn (3.0% of GDP) by 2025.[29]

Figure 7 - Direct contribution of tourism to GDP

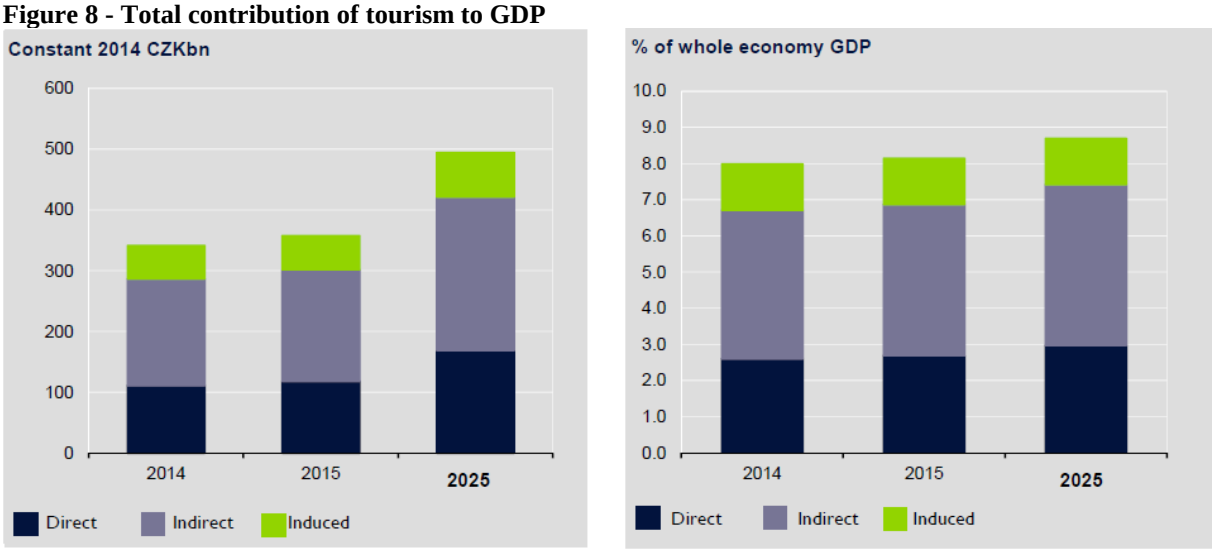


Source: WORLD TRAVEL & TOURISM COUNCIL (WTTC), Travel and Tourism Economic Impact 2015 – Czech Republic, 2015, London, p. 3

[28] WORLD TRAVEL & TOURISM COUNCIL (WTTC), Travel and Tourism Economic Impact 2015 – Czech Republic, 2015, London, p. 2
[29] WORLD TRAVEL & TOURISM COUNCIL (WTTC), Travel and Tourism Economic Impact 2015 – Czech Republic, 2015, London, p. 3

The total contribution of tourism to GDP (including wider effects from investment, the supply chain and induced income impacts) was CZK341.4bn in 2014 (8.0% of GDP) and raised by 4.8% to CZK357.9bn (8.1% of GDP) in 2015. It is forecast to rise by 3.3% pa to CZK494.2bn by 2025 (8.7% of GDP).[30]

Figure 8 - Total contribution of tourism to GDP

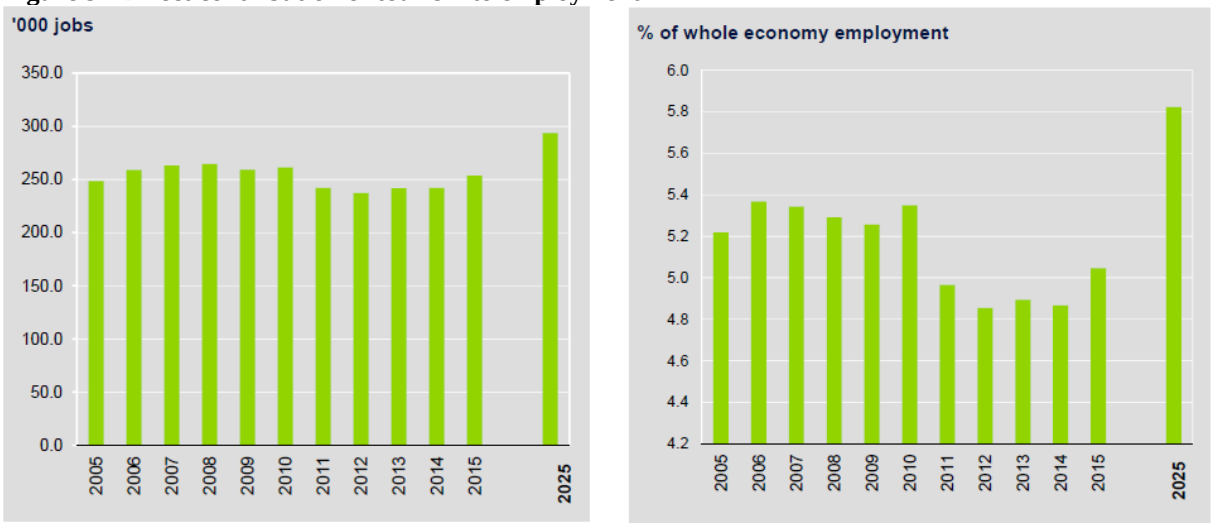


Source: WORLD TRAVEL & TOURISM COUNCIL (WTTC), Travel and Tourism Economic Impact 2015 – Czech Republic, 2015, London, p. 3

Tourism generated 242,000 jobs directly in 2014 (4.9% of total employment) and raised up by 4.8% in 2015 to 253,500 (5.0% of total employment). This includes employment by hotels, travel agents, airlines and other passenger transportation services (excluding commuter services). It also includes, for example, the activities of the restaurant and leisure industries directly supported by tourists. By 2025, Tourism will account for 294,000 jobs directly, an increase of 1.5% pa over the next ten years.[31]

[30] WORLD TRAVEL & TOURISM COUNCIL (WTTC), Travel and Tourism Economic Impact 2015 – Czech Republic, 2015, London, p. 3
[31] WORLD TRAVEL & TOURISM COUNCIL (WTTC), Travel and Tourism Economic Impact 2015 – Czech Republic, 2015, London, p. 4

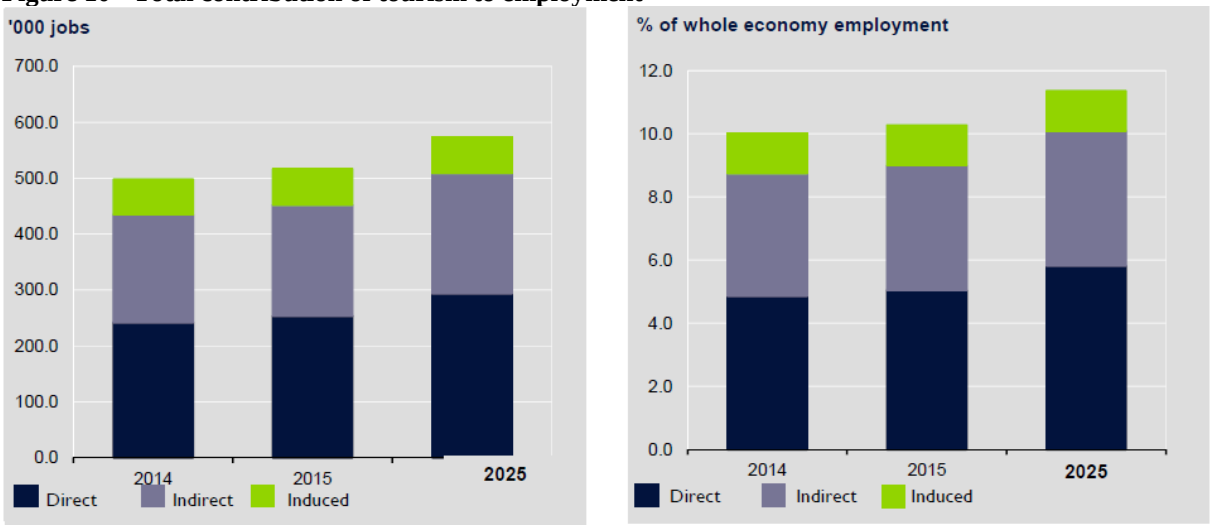
Figure 9 - Direct contribution of tourism to employment



Source: WORLD TRAVEL & TOURISM COUNCIL (WTTC), Travel and Tourism Economic Impact 2015 – Czech Republic, 2015, London, p. 4

The total contribution of tourism to employment (including wider effects from investment, the supply chain and induced income impacts,) was 498,500 jobs in 2014 (10.0% of total employment). It raised up by 3.7% in 2015 to 516,500 jobs (10.3% of total employment).[32]

Figure 10 - Total contribution of tourism to employment

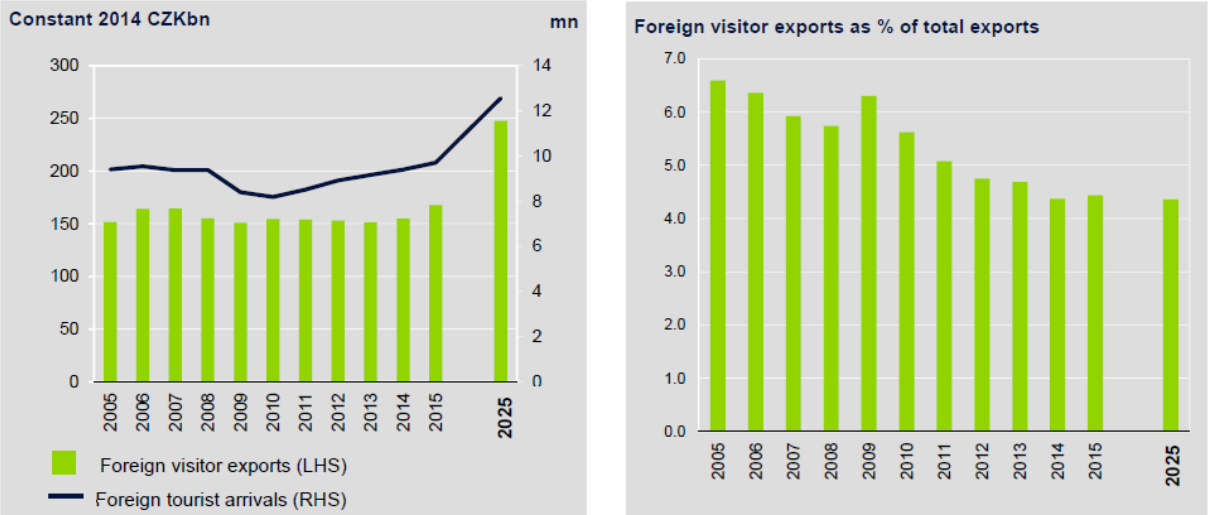


Source: WORLD TRAVEL & TOURISM COUNCIL (WTTC), Travel and Tourism Economic Impact 2015 – Czech Republic, 2015, London, p. 4

[32] WORLD TRAVEL & TOURISM COUNCIL (WTTC), Travel and Tourism Economic Impact 2015 – Czech Republic, 2015, London, p. 4

Money spent by foreign visitors to a country (or visitor exports) is a key component of the direct contribution of tourism. In 2014, Czech Republic generated CZK154.6bn in visitor exports. In 2015, visitor exports raised by 8.4%. By 2025, international tourist arrivals are forecast to total 12,562,000, generating expenditure of CZK247.4bn, an increase of 4.0% pa.[33]

Figure 11 - Visitor exports and international tourist arrivals



Source: WORLD TRAVEL & TOURISM COUNCIL (WTTC), Travel and Tourism Economic Impact 2015 – Czech Republic, 2015, London, p. 4

Leisure travel spending (inbound and domestic) generated 81.0% of direct Travel & Tourism GDP in 2014 (CZK206.9bn) compared with 19.0% for business travel spending (CZK48.5bn). Leisure travel spending raised by 5.4% in 2015 to CZK218.1bn, and it is expected to rise by 3.3% pa to CZK303.0bn in 2025. Business travel spending raised by 8.4% in 2015 to CZK52.5bn, and it is expected to rise by 5.3% pa to CZK87.9bn in 2025.[34]

Domestic travel spending generated 39.4% of direct tourism GDP in 2014 compared with 60.6% for visitor exports (i.e. foreign visitor spending or international tourism receipts). Domestic travel spending raised by 2.3% in 2015 to CZK103.0bn, and is expected to rise by 3.4% pa to CZK143.5bn in 2025. Visitor exports raised by 8.4% in 2015 to CZK167.6bn, and are expected to rise by 4.0% pa to CZK247.4bn in 2025. [34]

[33] WORLD TRAVEL & TOURISM COUNCIL (WTTC), Travel and Tourism Economic Impact 2015 – Czech Republic, 2015, London, p. 5
[34] WORLD TRAVEL & TOURISM COUNCIL (WTTC), Travel and Tourism Economic Impact 2015 – Czech Republic, 2015, London, p. 6

3.1.8 **Influences of European tourism on the Czech Republic**

The European attractive region is highly competitive location. Tourism market of the Czech Republic is highly affected by its political and geographical surroundings. The key factors influencing profitability of Czech tourism are described as follows:

- Approximately 75% of European trips are happening only within the domestic tourism. Among the countries with strong domestic tourism belong countries with high population such as France, Germany, Great Britain, Italy, and Spain.
- The Czech Republic is located in very competitive region. It shares the national borders or is very close from countries which belong to the world leaders of tourism.
- The Czech Republic has to react on the changes of consumer preferences. New products must be based on extraordinary and long-term enjoyments. The destinations and suppliers of services has to target on its segments individually.
- The preferences of customers are nowadays more and more oriented on "green products". The tourism is not an exception. Accommodation facilities, carriers, travel agencies and tourist destination are trying to create and supply their products with respect to environment. There is even new branch called "sustainable tourism".
- The change of consumer behavior is also affected by demographic trends, especially by population aging of Europe. The tourism segment for seniors is going to grow in following years. However, the development of this segment Is not so clear because is dependent on the value of retirement pension.
- In European region is changing the behavior of young population as well. The desire for new enjoyments is much stronger in case of young generation than the rest of population. The globalization also contributes to this segments, because young people, especially students, visits each other within all Europe.[35]

[35] MINISTERSTVO PRO MÍSTNÍ ROZVOJ ČR (MMR). Koncepce státní politiky cestovního ruchu v České republice na období 2014 – 2020, Prague, 2014, p. 7

3.1.9 **Competitiveness of the Czech Republic**

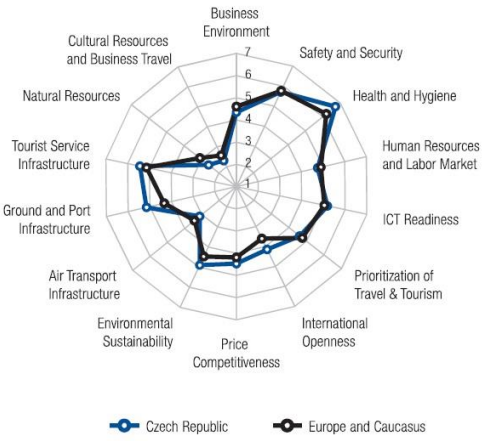
The competitiveness of tourism destination can be estimated not only by incomes and number of tourists but also from assumptions of internal factors and perspectives of sustainability of tourist destination. This analysis is made by World Economic Forum (WEF) and presented in the publication "The Travel & Tourism Competitiveness Report 2015". The part focused on the Czech Republic is attached bellow in the Figure 12. From this document, we can find out that the Czech Republic occupies the 37th position in the ranking of 141 countries of the world. Among the European countries is the Czech Republic on the 21st position similarly like Estonia, Slovenia and Malta. The detailed analysis of individual factors shows that from all of the 14 observed aspects of competitiveness (group of indicators) the Czech Republic succeeded in area of Health and Hygiene, International Openness, Environmental Sustainability and Ground and Port Infrastructure. On the other hand, the worst indicators affecting Czech competitiveness are Business Environment, Prioritization of Travel & Tourism, Price Competitiveness and Natural Resources.[36]

Figure 12 - Travel and Tourism Competitiveness Index of Czech Republic

Czech Republic

The Travel & Tourism Competitiveness Index

	Rank (out of 141)	Score (1–7)
Travel & Tourism Competitiveness Index	**37**	**4.22**
Enabling Environment	**31**	**5.34**
Business Environment	75	4.35
Safety and Security	46	5.71
Health and Hygiene	4	6.73
Human Resources and Labour Market	44	4.75
ICT Readiness	34	5.19
T&T Policy and Enabling Conditions	**14**	**4.53**
Prioritization of Travel & Tourism	66	4.61
International Openness	17	4.15
Price Competitiveness	87	4.47
Environmental Sustainability	13	4.90
Infrastructure	**35**	**4.57**
Air Transport Infrastructure	51	3.13
Ground and Port Infrastructure	18	5.15
Tourist Service Infrastructure	30	5.44
Natural and Cultural Resources	**63**	**2.45**
Natural Resources	89	2.59
Cultural Resources and Business Travel	42	2.30



Source: WORLD ECONOMIC FORUM (WEF), Global Travel & Tourism Report, Geneva, 2015, p. 132

[36] VOŠTA, M., ABRHÁM, J.: Globální cestovní ruch a implikace pro Českou republiku, VŠE, 2015, p. 74

3.2 Exchange rate

3.2.1 General information about exchange rate

The exchange rate plays a key role in a country's trade performance. Whether determined by exogenous shocks or by policy, the relative valuations of currencies and their volatility often have important repercussions on international trade, the balance of payments and overall economic performance. [37] According to a list maintained by the scientific International Organization for Standardization (ISO), as of January 1, 2014, there were approximately 250 currencies in the world being traded for goods and services and financial transactions. These currencies are all exchanged - that is, traded with each other - in the huge, global, decentralized foreign exchange market. [38]

Generally, the exchange rate is the price of one national currency, such as the Czech crown, expressed in terms of another currency, for example, the U.S. dollar, or a basket of currencies. For a very open, trade-dependent economy the external value of the currency is particularly relevant as it affects, among other things, the prices and the volume of goods and services we export and import. Specifically, a depreciation (fall) or appreciation (rise) in the external value of the Czech crown will make Czech goods and services less or more expensive for foreign buyers, and this will tend to boost or restrain their demand for our products. Movements up or down in the Czech crown relative to other currencies will also make imported goods more or less affordable, thus increasing or reducing the volume of our imports.[39]

In a world where there are many national and regional currencies, exchange rates define the rate or ratio of which one of these currencies can be exchanged for any other at any given point in time. For example, a quotation of the exchange rate of the Euro to the U.S. [40]

[37] NICITA, A., Exchange Rates, International Trade and Trade Policies, United Nations Conference on Trade and Development, Geneva, 2013, p. 4
[38] EVANS, R. G., Exchange Rates, Pomona College, Claremont, 2014, p.1
[39] BANK OF CANADA, Exchange rate, [online] available at < http://www.bankofcanada.ca/wp-content/uploads/2010/11/exchange_rate.pdf> [cit. 2017-03-01] Ottawa, 2012
[40] EVANS, R. G., Exchange Rates, Pomona College, Claremont, 2014, p.2

Dollar might tell us that the exchange rate is 1.35, which implies that a single Euro can be exchanged for $1.35. But this ratio is only temporary, at least for major currencies. because these rates are market-determined in what is the largest financial market in the world, as measured by the value of daily transactions.[41]

The world's seven most actively traded currencies are called majors. The value of the six relative to the Dollar is shown in the table 1.

Table 1 - World most actively traded currencies

Currency	Abbrevation	Exchange rate
EU Euro	EUR	1.076
British Pound	GBP	1.241
Australian Dollar	AUD	0.772
Canadian Dollar	CND	0.749
Japanese Yen	JPY	0.008864
Swiss Franc	CHF	1.002

Source: http://www.kurzy.cz/

The data represents exchange rates to USD dated to March 2017. As can be seen, the currencies are typically quoted in three decimal points, although the Japanese Yen is quoted in six decimal points, as shown (because a single Yen is worth so little in Dollars). That is why Yen exchange rate is usually stated in opposite way USD/JPY (112.740 dated to March 2017).

3.2.2 **History**

In today's global economy nearly all exchange rates for major currencies are floating exchange rates, which implies that the ratio is fluid and determined by supply and demand forces in the huge global market for currencies. This has not always been true. Floating exchange rates are a relatively modern phenomenon. Prior to World War II governments used a chaotic system to determine exchange rates.[42]

[41] EVANS, R. G., Exchange Rates, Pomona College, Claremont, 2014, p.2
[42] EVANS, R. G., Exchange Rates, Pomona College, Claremont, 2014, p.3

Each major country would define the relative value of their currency in the price of gold. For example, when Sir Isaac Newton was master of the mint of the United Kingdom in 1717, he set the price of gold at 77sh (shillings) 10½d (pence) per troy ounce, a value that effectively held for four centuries. All other countries set their price of gold accordingly, which then effectively linked their exchange rates to the British Pound. By 1925 this gold-pricing arrangement had effectively linked the Pound to the Dollar at an exchange rate of 1£ = $4.86. At that time the Dollar price of gold equaled $20.67 per troy ounce. During the Great Depression President Roosevelt raised this value by proclamation to $35 per ounce, where it remained until 1972. [43]

This gold-based system could not survive the strains of the Great Depression and World War II, so in July 1944 the allies during World War II agreed to the Bretton Woods System of currency exchange and they were joined by their former enemies not long after. That system ultimately consisted of two components:

- gold was priced in terms of the U.S. Dollar at $35 per ounce
- all other currencies were convertible to U.S. Dollars at a fixed exchange rate, also referred to then as a pegged exchange rate. The "peg" was not fixed at an exact ratio – central banks were required to attempt to maintain the exchange rate within a 1% range. For example, this system initially linked the Pound to the Dollar at an exchange rate of 1£ = $4.03.[43]

This system was almost doomed from its inception because fluctuations in trade and financial flows plus the relentless aggressive assault of speculators made it difficult for central banks to intervene on a scale large enough to maintain stable exchange rates. Fixing the Dollar and hence everything else to gold didn't help either. Gold is an industrial commodity with fluctuations in production, inventory, and non-monetary usage (like jewelry and electronics), so with a fixed price there were bound to be chronic surpluses and shortages of this precious commodity, which insures the presence of a robust black market, which in turn always undermines the "official" price of anything.[44]

[43] EVANS, R. G., Exchange Rates, Pomona College, Claremont, 2014, p.2
[44] EVANS, R. G., Exchange Rates, Pomona College, Claremont, 2014, p.3

By 1971 the world's leaders concluded that the regime of fixed exchange rates was done, and in August of that year the United States suspended convertibility of the Dollar to gold, then devalued the Dollar to gold at $38 an ounce in May, 1972, then again to $42.22 in 1973. Finally, on New Year's Day 1975 all restrictions on gold trading were lifted and all world currencies were delinked from gold and effectively from each other, clearly the way for the modern era of floating exchange rates. [45]

But not all exchange rates today are freely floating. Many of the currencies of small countries are linked to a major currency, typically the Dollar. And there is still one currency for a major trading country, the People's Republic of China, that uses a managed exchange rate. The Chinese government does not let the Chinese Yuan, float free. Instead the government sets and resets the exchange rate formally, basically a fixed exchange rate that is refixed frequently. [45]

3.2.3 **Institutions dealing with exchange rate**

Czech National Bank (CNB)

The CNB describes itself on its official pages as the central bank of the Czech Republic, the supervisor of the Czech financial market and the Czech resolution authority. It was established under the Constitution of the Czech Republic in 1993. It is a legal entity under public law having its registered address in Prague. It has seven regional offices in Prague, Ústí nad Labem, Plzeň, České Budějovice, Hradec Králové, Brno and Ostrava. It manages its assets, including the international reserves, with due diligence. Interventions in its activities are only permissible on the basis of a law. The CNB is a part of the European System of Central Banks and contributes to the fulfilment of its objectives and tasks. It is also a part of the European System of Financial Supervision and cooperates with the European Systemic Risk Board and with European Supervisory Authorities.[46]

The supreme governing body of the CNB is the Bank Board, consisting of the CNB Governor, two Vice-Governors and four other Bank Board members. All Bank Board members are appointed by the President of the Czech Republic for a maximum of two six-year terms.[46]

[45] EVANS, R. G., Exchange Rates, Pomona College, Claremont, 2014, p.3
[46] ČNB: About the CNB [online], available from. < https://www.cnb.cz/en/about_cnb/> [cit. 2017-02-17]

The primary objective of the CNB is to maintain price stability. Achieving and maintaining price stability, i.e. creating a low-inflation environment in the economy, is the central bank's ongoing contribution to the creation of conditions for sustainable economic growth. Central bank independence is a prerequisite for effective monetary instruments conducive to price stability. In addition, the CNB fosters financial stability and sees to the sound operation of the financial system in the Czech Republic. To this end, the CNB sets macroprudential policy by identifying risks jeopardising the stability of the financial system and contributing to its resilience. Without prejudice to its primary objective, the CNB also supports the general economic policies of the Government and the general economic policies in the European Union.[47]

In accordance with its primary objective, the CNB sets monetary policy. It also issues banknotes and coins and manages and oversees the circulation of currency, the payment system and settlement between banks. It also performs supervision of the banking sector, the capital market, the insurance industry, pension funds, credit unions, electronic money institutions and bureaux de change. In order to undertake its tasks, the CNB processes and generates statistical information. As a central bank the CNB provides banking services to the state and the public sector. It maintains the accounts of persons and organisations connected to the state budget. By agreement with the Ministry of Finance pursuant to the budgetary rules, the CNB conducts transactions relating to government bond issues and financial market investments.[47]

European Central Bank (ECB)

The European Central Bank is the central bank of the 19 European Union countries which have adopted the euro. The main task is to maintain price stability in the euro area and so preserve the purchasing power of the single currency. The European Central Bank and the national central banks together constitute the Eurosystem, the central banking system of the euro area. The main objective of the Eurosystem is to maintain price stability: safeguarding the value of the euro.[48]

[47] ČNB: About the CNB [online], available from. < https://www.cnb.cz/en/about_cnb/> [cit. 2017-02-17]
[48] ECB: About European Central Bank [online], available from.
<https://www.ecb.europa.eu/ecb/html/index.en.html> [cit. 2017-02-17]

The European Central Bank is responsible for the prudential supervision of credit institutions located in the euro area and participating non-euro area Member States, within the Single Supervisory Mechanism, which also comprises the national competent authorities. It thereby contributes to the safety and soundness of the banking system and the stability of the financial system within the EU and each participating Member State.[49]

The Eurosystem is responsible for:

- defining and implementing monetary policy
- conducting foreign exchange operations
- holding and managing the euro area's foreign currency reserves
- promoting the smooth operation of payment systems

The ECB carries out specific tasks in the areas of banking supervision, banknotes, statistics, macroprudential policy and financial stability as well as international and European cooperation.[49]

International Monetary Fund (IMF)

The IMF, also known as the Fund, was conceived at a UN conference in Bretton Woods, New Hampshire, United States, in July 1944. The 44 countries at that conference sought to build a framework for economic cooperation to avoid a repetition of the competitive devaluations that had contributed to the Great Depression of the 1930s.[50]

The IMF's responsibilities: The IMF's primary purpose is to ensure the stability of the international monetary system—the system of exchange rates and international payments that enables countries (and their citizens) to transact with each other. The Fund's mandate was updated in 2012 to include all macroeconomic and financial sector issues that bear on global stability. It includes 189 countries with headquarter in Washington, D. C.[50]

[49] ECB: About European Central Bank [online], available from. <https://www.ecb.europa.eu/ecb/html/index.en.html> [cit. 2017-02-17]
[50] IMF: About the IMF [online], available from. <http://www.imf.org/external/about.htm/> [cit. 2017-02-17]

The IMF original objectives are:

- to promote international monetary cooperation
- to facilitate the expansion and balanced growth of international trade
- to promote exchange stability
- assist in the establishment of a multilateral system of payments
- make resources available (with adequate safeguards) to members experiencing balance of payments difficulties.[51]

3.2.4 **Determinants of exchange rate fluctuation**

There is a variety of factors contributing to the fluctuation of an exchange rate, e.g., the openness of an economy, the domestic and foreign money supplies, the exchange rate regime, interest rates, central bank independence, levels of output, income, inflation, and unpredictable circumstances. The degree of the impact of each of these factors varies and depends on a particular country's economic condition.[52]

According to Stančík (2007) there 3 most important factors

- Openness of an economy

  This factor was elaborated by Hau (2002). The author analyzes the openness of an economy and its impact on real exchange rate movements. He claims that trade integration and real exchange rate volatility are structurally linked and that there is a negative correlation between them. He uses a small open economy model with a tradable and a non-tradable sector. The solution of this model indicates that economies which are more open have a more flexible aggregate price level. It further results in lower real exchange rate volatility for countries with greater openness of the economy.[53]

[51] IMF: About the IMF [online], available from. <http://www.imf.org/external/about.htm/> [cit. 2017-02-17]
[52] STANČÍK. J., Determinants of Exchange-Rate Volatility: The Case of the New EU Members, Czech Journal of Economics and Finance, no. 9-10, Prague, 2007, p. 2
[53] HAU. H., Real Exchange Rate Volatility and Economic Openness: Theory and Evidence, Journal of Money, 2002

- Unpredictable circumstances

  This affects many economic varibales. In stock markets simple information might cause huge movements of stock prices. The behaviour of exchange rates is very similar, and the consequences of events like government crises, market crises, industrial shocks and terrorist attacks are undisputed.

- Exchange rate regime

  The last important factor is the exchange rate regime. It is known fact that nominal exchange rate variability is lower in the case of fixed exchange rates than for floating ones.[54]

In the report of Bank of Canada (adjusted to the Czech case) are mentioned other factors:

- World prices for commodities:

  The status the of Czech Republic as an exporter of commodities compared with other country which is an importer of commodities. This being the case, rising commodity prices tend to make exporter currency appreciate against the importer currency.

- Relative economic performance:

  Stronger demand for products of the Czech Rebpublic (from domestic and external sources) tends to support its currency.

- Relative inflation rates:

  If the inflation of the Czech Republic is significantly higher than the other country the expectation would be that the Czech currency would tend to depreciate.

- Relative interest rates:

  Higher interest rates in the Czech Republic would attract investors to CZK assets, boosting the value of our currency. But if inflation here is higher than elsewhere, investors might be less keen about such assets, fearing that inflation would erode their value.[55]

[54] STANČÍK. J., Determinants of Exchange-Rate Volatility: The Case of the New EU Members, Czech Journal of Economics and Finance, no. 9-10, Prague, 2007, p. 3

[55] BANK OF CANADA, Exchange rate, [online] available at < http://www.bankofcanada.ca/wp-content/uploads/2010/11/exchange_rate.pdf> [cit. 2017-03-01] Ottawa, 2012

- Trade and current account balances:

  A surplus in Czech balance of international payments means that foreigners are buying more goods and services from us than we are buying from them. To settle their purchases, they have to buy CZK, thus boosting the value of our currency.
- Short-term capital flows:

  International money flowing into Czech Republic raises the value of the CZK; domestic money flowing out has the opposite effect.
- Domestic political turmoil:

  It can have a dampening effect on the external value of a currency.[56]

The next important factor which highly affect are central bank interventions. This factor is described in the following chapter.

3.2.5 **Central bank interventions**

It is very clear that exchange rate movements can have a profound impact upon a domestic economy. One would expect, therefore, for governments to sometimes get directly involved in manipulating exchange rates, which they do. Central banks have the authority and ability to control the domestic money supply and can have a tremendous impact upon the general level of interest rates. Additionally, they have the ability to buy and sell foreign currencies.[57]

Foreign exchange interventions of exchange rate are among the tools available to an open economy for ending deflation and escaping the zero lower bound (ZLB). The use as an extraordinary monetary policy instrument was mentioned by McCallum (2000) and Svensson (2001) related to Japan's experience with deflation and the difficulties it had in dealing with it. These authors found out many advantages of using the exchange rate as an unconventional monetary policy tool.

[56] BANK OF CANADA, Exchange rate, [online] available at
< http://www.bankofcanada.ca/wp-content/uploads/2010/11/exchange_rate.pdf> [cit. 2017-03-01] Ottawa, 2012
[57] EVANS, R. G., Exchange Rates, Pomona College, Claremont, 2014, p.1

McCallum (2000) showed in his small macroeconomic model that at the ZLB a central bank in an economy open to foreign trade to successfully apply a policy rule that adjusts the depreciation of domestic currency and stabilise inflation and the real economy. In his model, the exchange rate is an operating target of monetary policy and the exchange rate path corresponding to the policy rule is secured by central bank interventions in the foreign exchange market. This this instrument can be very effective in achieving monetary policy obejctives.[58]

Svensson (2001) proposed a "foolproof" way to avoid from a liquidity trap for an open economy. His proposal consists of a price-level target path, a devaluation of the currency and a temporary exchange rate peg, followed by a return to floating exchange rate and a switch to standard price-level or inflation targeting. This, he concludes, "will jump-start the economy and escape deflation by a real depreciation of the domestic currency, a lower long real interest rate, and increased inflation expectations".[59]

The standard effect of exchange rate weakening of the domestic currency runs at first via growth in prices of imported consumer goods, which, in a small open economy, naturally very quickly increases overall inflation. In the longer run, the domestic goods prices also go up because the imported inputs are used to produce them. A weakening of the nominal exchange rate also leads to a temporary depreciation of the real exchange rate, thereby strengthening the price competitiveness of domestic producers. This supports growth in exports and also in a partial redirection of household to prefer consumption of domestic goods rather than imported goods. The result is an improvement in net exports, which usually overbalance the negative income effect of the higher import prices. This leads to an increase in economic activity, employment and wage growth, and growth in inflation pressures from the domestic economy.[60]

One of the pretty actual example of interventions can be case of the Czech Republic which is in the process of intervention right now (March 2017).

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[58] MCCALLUM, B.T., Theoretical Analysis Regarding a Zero Lower Bound on Nominal Interest Rates, Journal of Money, Credit and Banking 32, 2000

[59] SVENSSON, L.E.O., The Zero Bound in an Open Economy: A Foolproof Way of Escaping from a Liquidity Trap, Monetary and Economic Studies 19, 2001

[60] FRANTA, M., HOLUB, T., KRÁL, P., KUBICOVÁ, I., ŠMÍDKOVÁ, K., VAŠÍČEK, B.: The Exchange Rate as an Instrument at Zero Interest Rates: The Case of the Czech Republic, Czech National Bank, Prague, 2014, p. 17

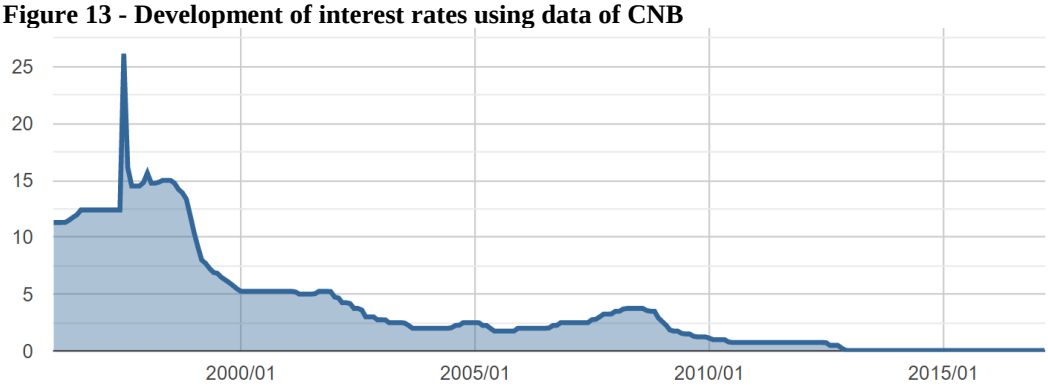
Interventions of Czech National Bank

The world financial and economic crisis and the following economic contraction and decrease in inflation forced many central banks to use extraordinary non-standard monetary policy instruments. The Federal Reserve, the Bank of England (BoE) and the European Central Bank (ECB) purchased securities and invested massive amounts of liquidity into the economy in 2007–2013. In September 2011, the Swiss National Bank (SNB) announced a minimal exchange rate of Swiss franc against the euro supported by interventions in the foreign exchange market.[61]

After the financial crisis the Czech Republic lagged significantly behind its important trading partners from 2012, as the decrease in the Czech economy was due not only to slower external demand due to the European debt crisis, but also to very weak domestic demand. The weak demand reflected highly restrictive fiscal policy in 2010–2013 and low consumer and business confidence. As a result, the estimated negative output gap widened to 2%–4% in the first half of 2013. An estimate based on the production function, for example, reached the most negative output gap since the start of inflation targeting in the Czech Republic, i.e. since 1998. Moreover, the CNB's November 2013 prediction indicated that the output gap would not close before the end of 2015 even under the unrealistic assumption of negative interest rates. These economic developments naturally gave increase of unemployment rate and cuts in average working hours. Wage growth in the business sector also slowed sharply, culminating in a year-on-year decline in wages at the end of 2013 (even when adjusted for extraordinary effects). Combined with fiscal restriction, this led to a decline in household income and consumption. Corporate profits and investment also fell dramatically.[61]

[61] FRANTA, M., HOLUB, T., KRÁL, P., KUBICOVÁ, I., ŠMÍDKOVÁ, K., VAŠÍČEK, B.: The Exchange Rate as an Instrument at Zero Interest Rates: The Case of the Czech Republic, Czech National Bank, Prague, 2014, pp. 2-60

Figure 13 - Development of interest rates using data of CNB



Source: http://www.kurzy.cz/

Figure 13 shows the development of interest rates. It is visible that there is long-term decline since 2008. The value of interest rate in February 2017 was 0,05.

On 7th November 2013, the Czech National Bank started to use the exchange rate as an instrument within its inflation targeting regime in the form of a publicly declared, one-sided Exchange rate commitment. The CNB took this step because its monetary policy rates hit the ZLB at the end of 2012 and it was necessary to ease the monetary conditions further, with observed and forecasted inflation level heading much below the central bank's two per cent target and the Czech economy experiencing the longest recession in its independent history. The CNB's analyses were pointing that inflation would turn negative at the beginning of 2014 and there was a possible danger that this would turn into long-term deflation with all its unfavourable impacts on the economy.[62]

From a terminological perspective, the use of foreign exchange interventions can be defined as an approach where the size of foreign currency purchases in the market is specified but the impact on the exchange rate is not certain and is dependent on market conditions. The use of the exchange rate as an instrument at the ZLB can be also defined as an approach where the central bank chooses the specific exchange rate level to attain and is prepared to intervene in the foreign exchange market in unspecified and unlimited amounts. The CNB's choice in the form of the declaration of an asymmetric exchange rate commitment falls into the latter category and therefore differs fundamentally from the use of standard foreign exchange interventions. [62]

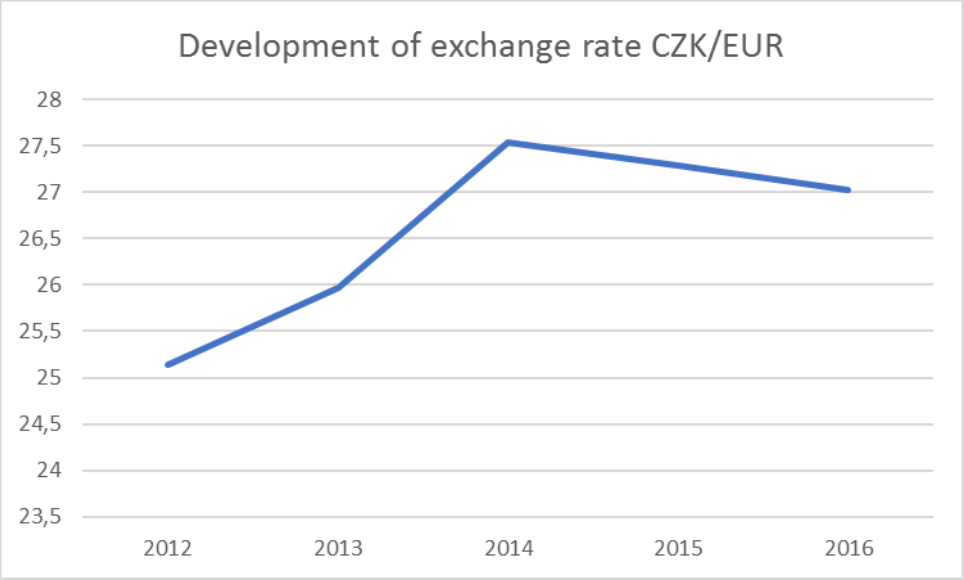
[62] FRANTA, M., HOLUB, T., KRÁL, P., KUBICOVÁ, I., ŠMÍDKOVÁ, K., VAŠÍČEK, B.: The Exchange Rate as an Instrument at Zero Interest Rates: The Case of the Czech Republic, Czech National Bank, Prague, 2014, pp. 2-60

In line with the CNB's expectations, the weakening of the Czech crown fostered a brisker and more robust economic recovery. High nominal export growth (over 15% year on year on average in the first two quarters of 2014) confirms that the weaker exchange rate is having the expected positive impact on Czech exporters' cash flows through both growth in export prices (of 4.5% year on year in the same period) and stimulation of real export growth (10.5% year on year). Real exports are being supported by a recovery in the euro area, but their growth rate is several percentage points higher than the level consistent with the dynamics of external demand alone. This can be attributed largely to the weakening of the CZK. At the same time, growth in household consumption and fixed investment was already visible at the end of 2013, due partly to expectations of rising prices following the weakening of the CZK. Consumption and fixed investment continued to grow in the first two quarters of 2014, showing that the concerns that the weaker exchange rate would have a negative income effect on domestic demand are not being confirmed. On the contrary, the effect of lower real interest rates (intertemporal substitution) and the increase in the confidence of firms and households in future economic developments are dominant, as predicted by the CNB. The observed recovery in domestic demand should therefore be sustained in nature, helping to return inflation to levels close to the CNB's target.[63]

Czech National Bank confirmed that the probable end of interventions is dated to the half of 2017. It will continue to intervene at least till the beginning of second quarter despite the fact that the inflation target 2% was already achieved in December 2016. In February 2017 soared even to 2,5%. According to CNB prognosis the inflation should raise to 2,7% during the third quarter of 2017 and at the beginning of 2018 should stabilize at 2%.[63]

[63] FRANTA, M., HOLUB, T., KRÁL, P., KUBICOVÁ, I., ŠMÍDKOVÁ, K., VAŠÍČEK, B.: The Exchange Rate as an Instrument at Zero Interest Rates: The Case of the Czech Republic, Czech National Bank, Prague, 2014, pp. 2-60

Figure 14 - Development of exchange rate CZK/EUR



Source: http://www.kurzy.cz/, own calculation

From Figure 14 is visible the rapid increase of exchange rate EUR/CZK. After the beginning of intervention was stabilize around the level of 27 CZK per Euro.

3.3 The impact of exchange rate on tourism

International travel and tourism encompasses all kinds of travelling – business, leisure, educational, medical, and visiting friends and family. It is important to understand international tourism as an export industry even if no product leaves the original country. Sometimes tourism is considered as reverse export, because travellers come to the country and spend money there, rather than goods leaving the original country for foreign markets. [64]

Tourism receipts, as an alternative form of exports, can be contributed to balance of payment, through foreign exchange earning and proceeds generated from tourism expansion (Balaguer and Cantavella 2002). From perspective of Theobald (2001), Tourism industry, chiefly a labour-intensive sector, is in the section of international services. This is because that tourism receipts can be said to have an export effect since the nature of tourism receipts are of foreign exchange nature and hence tourism is regarded as an intangible export item.[64]

[64] HSU, W., LU, Y., ZHOU, Y., Exchange Rates and Export Structure, Singapore Management University, Singapore, 2014

Exchange rates have been an important tool of trade policies and development strategies. In particular, a weaker currency is widely believed by politicians and government officials to stifle import competition, helping to relieve domestic political pressures from high unemployment rates and boosting the performance of export sectors, subsequently leading to economic growth. By this rationale, many countries (including Czech Republic) purposely undervalue their currencies by a fixed-exchange-rate regime or constant interventions to pursue a long-run export-led growth strategy.[65]

Brida et al. (2009) conduct an empirical research on a relationship between the exchange rate and international tourist expenditure in Chile. They utilized the Johansen cointegration test and found confirmation for cointegration relationship between the exchange rate and tourist expenditure. Their findings support the tourism-led economic growth hypothesis. [66]Furthermore, Ghartey (2010) conducted empirical research on the relationship between the exchange rate and international tourist arrivals in Jamaica. He utilized the Johansen cointegration test as well and the autoregressive distributed lag. He found that there is no long-run cointegration relationship between international tourist arrivals and the exchange rate. In addition, he did not find any evidence showing exchange rate promote tourist arrivals. [67]

The New Zealand ministry of tourism shows in its report (2007) that tourism in New Zealand is exposed to movements in the value of the New Zealand dollar but less so than many of New Zealand's other export industries. While many of New Zealand's export industries experience large absolute reductions in returns when the New Zealand dollar appreciates, this is not necessarily so for tourism. The reason the tourism industry as a whole is less exposed to the adverse impacts of an appreciating NZ dollar is that underlying trend growth in visitor numbers and average visitor expenditure is very strong.[68]

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[65] HSU, W., LU, Y., ZHOU, Y., Exchange Rates and Export Structure, Singapore Management University, Singapore, 2014
[66] BRIDA, J., RISSO, W. A. BONAPACE, The contribution of tourism to economic growth: an empirical analysis for the case of Chile, European Journal of Tourism Research, Chile, 2009
[67] GHARTLEY, E., Tourism, Economic Growth and Monetary Policy in Jamaica, paper presented in the SALISES 2010 Conference in Port of Spain, Trinidad-Tobago, 2010
[68] MINISTRY OF TOURISM IN NEW ZEALAND, Exchange Rates and Tourism Relationships in New Zealand, 2007

The ministry also found that the income abroad has a greater influence than exchange rates. Tourism is linked to income growth around the world by a greater than 1 to 1 relationship. They find that a 1% growth in world incomes typically helps drive growth in visitor numbers by 1.7% and increases expenditure per visitor by 1.3%. At an aggregate level, changes in the exchange rate have very little influence on visitor arrivals. A 1% increase in the value of the New Zealand dollar is estimated to reduce the number of visitors by 0.02%.[69]

According to the report, the exchange rates have a profound impact on expenditure. While they find that visitor numbers aren't especially responsive to exchange rates at an aggregate level, the exchange rate changes have short run profound impacts on visitor expenditure that dwarf considerations around the exchange rate impacts on visitor numbers. The expenditure per visitor to New Zealand goes down by around 0.8% for every 1% increase in the value of the New Zealand dollar. That means that growth in returns to the tourism industry is likely to be dampened considerably when the New Zealand dollar appreciates and, conversely, improve considerably when the New Zealand dollar depreciates. In some markets that figure is much higher with, for example, visitors from the United States reducing their expenditure by 0.96% for every 1% increase in the value of the New Zealand dollar.[69]

Rather in some cases they find no evidence that the value of the New Zealand dollar affects average expenditure at all. For example, in the case of German visitors the Ministry of tourism find no evidence that they adjust the amounts they spend, on average, in response to changes in the exchange rate. They believe that finding reflects the fact that some visitors, not just German visitors, come to New Zealand with a fixed agenda rather than a fixed budget. If that agenda is unaffordable, then they don't come. This may be an important reason why German visitor numbers are highly responsive to the value of the New Zealand dollar.[69]

[69] MINISTRY OF TOURISM IN NEW ZEALAND, Exchange Rates and Tourism Relationships in New Zealand, 2007

An analysis on exchange rates by Tourism Australia and Tourism Research Australia indicates that, while important, exchange rates are not as influential in determining travel behaviour. As well as the case study of New Zealand, the Australian research findings show the fundamental driver of tourism demand for Australia is the economic growth of source countries and the subsequent income, wealth and consumer confidence of their people. Exchange rates have some influence on destination choice and travel purchases, but that influence is modest and only one part of the consumer's decision-making process. Exchange rates have more bearing on tourism expenditure than visitation. [70]

Key findings of Australian research:

- Travel decisions are impacted by a complex and interrelated set of variables, which differ by market, travel type and age.
- While exchange rates are one factor in explaining the travel choices of both Australian and international travellers, their impacts are relatively modest and short-term. Over the long term, income growth has the greatest influence on demand for international travel.
- Other influences include airfares and costs associated with the trip purchase such as accommodation and visitor attractions.
- Exchange rates have some impact on international visitor demand, varying by market. For example, travellers from Singapore, Korea and Hong Kong are more responsive to movements in exchange rates, while travellers from Canada are less responsive.
- A high Australian dollar has more impact on visitors' spending once they arrive in Australia and less impact on international visitor numbers and nights. [70]

[70] AUSTRALIAN GOVERNMENT – DEPARTMENT OF RESOURCES, ENERGY AND TOURISM, Exchange rates: challenges and opportunities for Australian tourism, Australia, 2010

- Different travel segments respond in different ways to exchange rates when it comes to their travel decision-making. International holiday travellers are more influenced than business travellers and those visiting friends and relatives. Seniors (50+ years) are the most responsive age group, though income still has a larger impact on their travel decision making. Youth travellers (15 to 29 years) are least affected by exchange rates when considering a visit to Australia. Exchange rates influence Middle Aged travellers (30-49 years) least in terms of tourism expenditure once they visit.
- In choosing Australia as a tourism destination, the bilateral exchange rate (the exchange rate between the source country and Australia) was found to play a greater role in the purchasing decision than the country's overall exchange rate performance.
- Current exchange rates in the US, UK and Euro-zone partly reflect the current weakness in their respective economies. When these economies recover – even if the Australian dollar stays at current levels against these currencies – inbound tourism from these markets is expected to grow.
- The impact of exchange rates is greater on domestic tourism than international tourism, although income is still the biggest driver. Increasing incomes, exchange rate movements and aviation capacity growth are contributing to a greater propensity among Australians to travel, however this is translating into more outbound trips than trips at home.[71]

A study by Wang et al. (2008, November) used the Copula-based measures of dependence structure between international tourism demand and exchange rates in Asia countries constructed from available monthly data and found a negative relationship between international tourists visiting Asia and exchange rate, i.e., a stronger destination currency would reduce the number of international visitors to this destination and vice versa. The study also found an asymmetrical effect of exchange rate on international visitors, with the effect of appreciation of the destination currency stronger than the currency depreciation.[72]

[71] AUSTRALIAN GOVERNMENT – DEPARTMENT OF RESOURCES, ENERGY AND TOURISM, Exchange rates: challenges and opportunities for Australian tourism, Australia, 2010

[72] WANG, H., CHEN, N., LU, C., HWANG, T., TSENG, S. Tourism demand and exchange rate in Asian countires: New evidence from Copulas approach.Convergence and Hybrid Information Technology 2

4 Practical part

4.1 Introduction

In the practical part is observed the relationship of exchange rate and tourism using one-equation econometric model. There are 4 econometric models and each is focused on different country. The countries were selected according to number of accommodated tourists in the Czech Republic during the observed period which is 2000-2015. The 4 four countries with the highest number of accommodated tourists and with different currency were selected. The data from the Czech Statistical Office which are presented in the table 2 were utilized for the selection of countries and creation of econometric model.

Table 2 - Number of accommodated tourists in the Czech Republic

Year	Total	Residents	Germany	United Kingdom	Russia	Poland	Italy	United States of America	Slovak Republic	France	Netherlands	Spain
2000	10 863 772	6 090 978	1 508 068	236 517	103 077	332 933	233 179	215 832	145 100	161 782	314 153	132 007
2001	11 283 185	5 877 946	1 651 671	302 793	117 149	382 436	317 320	238 101	237 790	188 445	241 926	156 475
2002	10 415 255	5 672 482	1 451 325	305 676	112 850	349 374	250 586	190 357	225 799	194 616	190 369	143 292
2003	11 346 482	6 270 726	1 439 124	412 402	124 655	291 344	281 420	221 311	252 763	193 215	238 564	153 331
2004	12 219 689	6 158 464	1 569 369	650 622	164 036	253 916	391 192	292 588	266 917	256 429	273 757	201 110
2005	12 361 793	6 025 665	1 606 947	657 110	185 705	261 576	405 079	303 641	260 212	257 683	295 856	224 327
2006	12 724 926	6 289 452	1 617 431	566 225	239 632	273 659	399 023	322 026	281 854	240 280	284 499	220 050
2007	12 960 921	6 281 217	1 549 441	565 470	321 520	298 621	413 085	322 214	309 255	236 790	247 861	256 722
2008	12 835 886	6 186 476	1 475 858	484 279	418 184	376 592	374 632	305 057	299 278	235 654	236 193	247 240
2009	11 985 909	5 953 539	1 393 112	371 346	326 895	341 136	357 492	274 311	287 810	223 901	203 764	194 406
2010	12 211 878	5 877 882	1 348 482	368 643	414 671	350 637	332 551	312 883	307 192	251 468	194 138	196 011
2011	12 898 712	6 183 645	1 386 976	327 951	559 021	371 127	337 645	314 950	344 101	283 480	197 975	225 778
2012	13 646 913	6 482 337	1 420 698	346 527	694 138	370 910	353 165	366 910	382 595	275 449	198 687	201 537
2013	13 868 336	6 558 480	1 385 398	353 973	759 138	386 739	333 828	386 591	395 352	270 798	185 464	176 875
2014	14 028 368	6 517 336	1 449 294	373 585	653 182	414 183	348 220	414 970	432 459	253 565	192 773	185 159
2015	15 475 995	7 385 114	1 648 181	416 155	410 935	447 261	351 581	478 414	507 674	250 056	192 509	198 306
Total	201 128 020	99 811 739	23 901 375	6 739 274	5 604 788	5 502 444	5 479 997	4 960 156	4 936 151	3 773 610	3 688 488	3 112 627

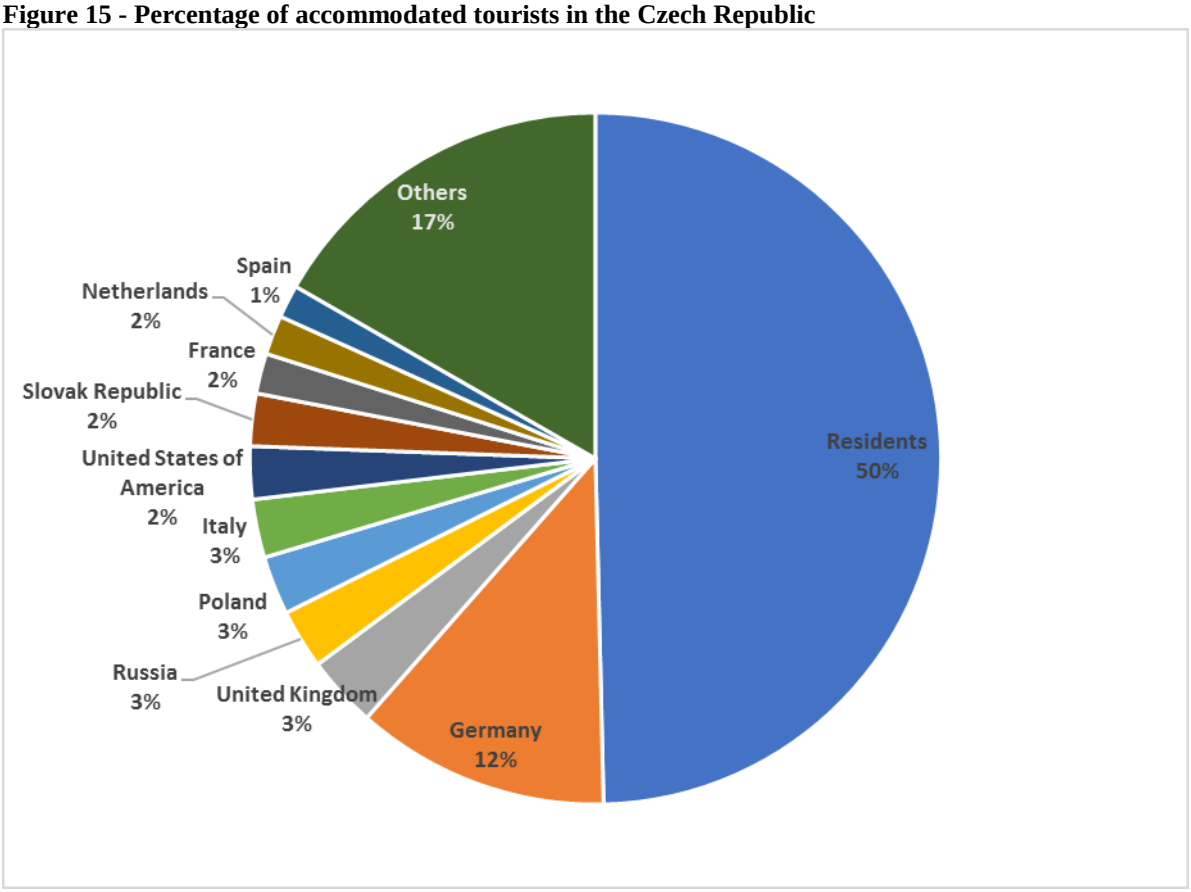
Source: ČSÚ, own computation

Table 2 presents the number of accommodated tourists in the Czech Republic of top 10 countries during the time period 2000-2015. The data of years 2014 and 2015 had to be recomputed because of the change in gathering of data after 2013. CSZO stated in its official statement that the system of computation was changed. The old system was utilized from 2000 till 2013. The data from new system are presented from 2012 till 2015. Because years 2012 and 2013 were computed in both systems it is possible to find out the ratio of the change. For example: The value of the total number of tourists in 2012 is 13 646 913 with utilization of the old system. The new system shows the value of the same year as 15 098 817. The percentage of change is computed as follows: $1 - (13\,646\,913/15\,098\,817) = 0{,}1 \rightarrow 10\%$.

The result says that the new system of CSZO increases the value by 10% and because the values of 2014 and 2015 were presented only by the new system and all the values of previous years by the old one, it was necessary to decrease their value by 10% (e.g. from 15 587 076 to 14 028 368 in 2014). This step was necessary because of the econometric model. Each country had different percentage change so all the values were recomputed individually.

In the first column is presented the total sum of accommodated tourist and in the second one is number of the Czech tourists. In the following columns are the aforementioned 10 countries with the highest numbers: Germany, United Kingdom, Russia, Poland, Italy, USA, Slovakia, France, Netherlands and Spain.

Figure 15 - Percentage of accommodated tourists in the Czech Republic



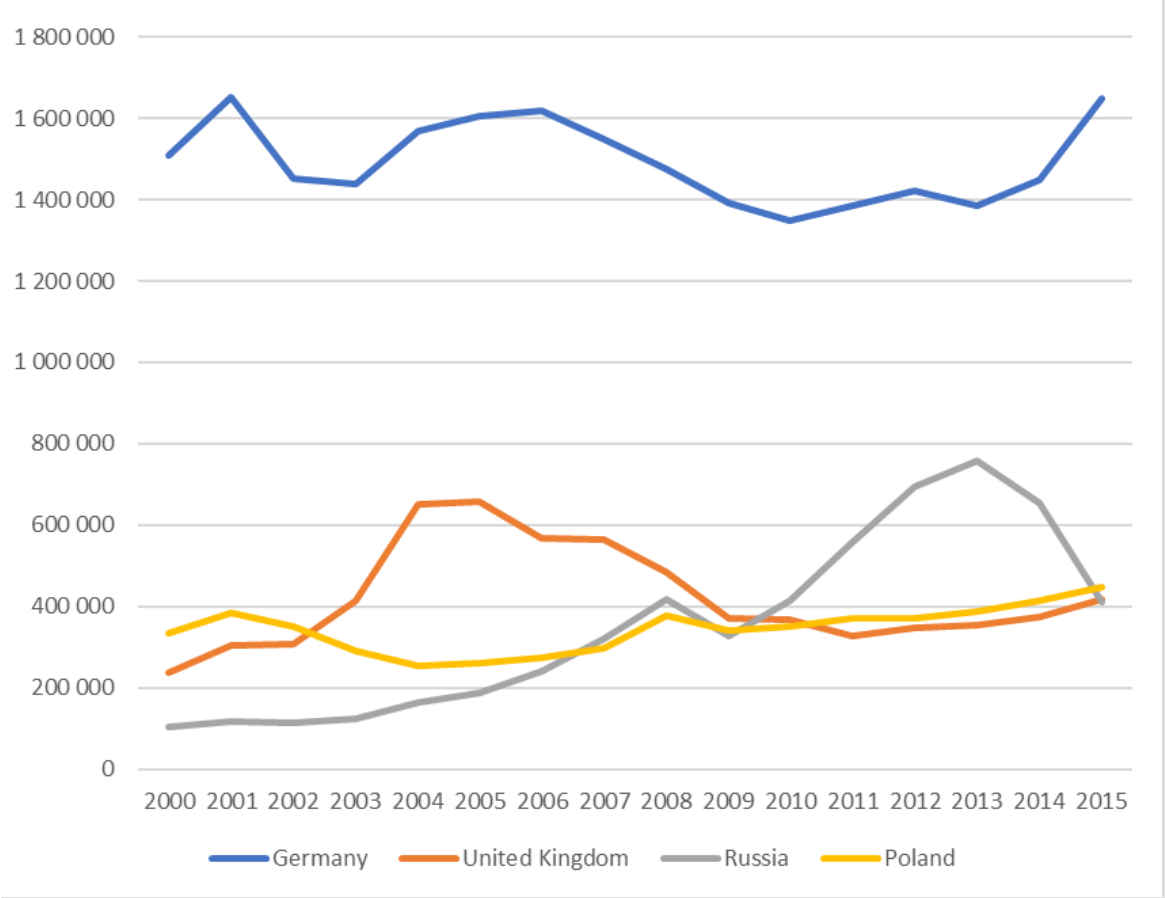
Source: ČSÚ, own computation

Figure 15 shows the percentage of the total sum of accommodated tourists in the Czech Republic by country. Almost exact half creates the domestic tourists from the Czech Republic. The leader of inbound tourists is Germany with 12%. 3% are created by

United Kingdom, Russia, Poland and Italy followed by 2% USA, Slovakia, France, Netherlands and 1% of tourists from Spain. 17% is created by other countries.

As was stated before, the countries selected for creation of econometric model are the 4 countries with the highest number of tourists with different currency. According to the results the observed countries will be Germany, United Kingdom, Russia and Poland. This selection will show the influence of EU Euro, British Pound, Russian Rouble and Polish Zloty.

Figure 16 - Development of inbound tourism of top 4 countries



Source: ČSÚ, own computation

Figure 16 shows the development of arrivals of selected countries from 2000 till 2015. The number of German tourists is long-term leader of inbound tourism of the Czech Republic. Germany retained on the first position during the entire observed time period with big difference.

The Czech Republic experienced the big boom of tourists from United Kingdom 2004 and 2005 after this peak the value were decreasing until 2011. After this year, the numbers started to increase again but not so rapidly.

The biggest changes are visible on the line of Russia. At the beginning of the observed period the inbound tourism from Russia played not so important role but it was increasing since the beginning until 2008 after short decrease the number started to grow again till its very peak in 2013. After this year are the numbers rapidly decreasing.

The Polish tourists play the stable role of Czech inbound tourism. It is visible that the fluctuations are much smaller than in case of Russia.

All the countries experienced decrease after world financial crisis in 2008. It is also visible that an important factor is distance. Poland and Germany shares the borders with the Czech Republic and we can say that these markets are more stable because its fluctuations are lower.

4.2 Creation of econometric model

Although the topic of thesis is focused especially on the influence of exchange rate on tourism it is necessary to include other variables which are expected to play an important role in the development of number of tourists of selected countries. The variables are set as follows:

Table 3 - Definition of variables

Variable	Definition of variable
y1	Number of accommodated tourists from selected country
x1	Unit vector
x2	Unemployment rate of selected country in %
x3	Value of foreign country currency in CZK (exchange rate)
x4	Average wage of selected country in its currency
x5	Inflation in %

Source: own preparation

After the variables were set it is possible to assume the influence of exogenous variables on endogenous variable.

Table 4 - Prediction of influence of variables

Variable	Influence
x2	Negative
x3	Positive
x4	Positive
x5	Positive/Negative

Source: own preparation

- x2 – Increase of unemployment rate decreases the number of tourists. People without job are expected to not travel because they rather tend to save money for their basic needs. Travelling is not affordable for them.
- x3 – Increase in the value of currency of the selected country in comparison with CZK makes the visit in the Czech Republic cheaper. When the exchange rate increases from 25 CZK/EUR to 27 the inbound tourist e.g. from Germany can buy more by 2 CZK for each EUR. The relationship is positive from both sides. For example the hoteliers which are pricing their rooms in EUR currency, receives more CZK from each EUR. Therefore, we can say that tourism behaves as the export industry despite the fact that no products are exported abroad.
- x4 – The growth of wage in selected country is expected to increase the number of inbound tourists from that country. People with higher income are willing to spend money for travelling than just to meet their basic needs.
- x5 – Increase of inflation pushes the prices up and the real value of money is decreasing. In that case people don’t want to save money and rather spend it. We can expect that during higher inflation people tend to change their money for another currency with lower inflation (e.g. CZK) and spend them on another market (e. g. Czech Republic). This can support tourism. On the other side the real value of their wages is decreasing so it depends if tourism is affordable for them. The positive influence is expectable to a certain extent. If there is a country experiencing galloping or even hyperinflation (10% or more), money loses value so fast that business and employee income can't keep up with costs and prices. That is

why we can say that inflation has positive influence to certain level. After that starts to negatively affect its outbound tourism.

It was also considered to include the GDP exogenous variable in to the econometric models. After the application, it caused high multicollinearity in every selected model so we can say it is useless. Its influence is explained by other variables. GDP measures the welfare of the economy and it is probable that this influence is explained by all already mentioned exogenous variables.

Next consideration was to include the dummy variable which would explain the entry of the Czech Republic to Schengen area. We can expect that this would increase the number of tourist because the open borders make the travelling easier. The problem is that this fact only influence 2 of selected countries. The dummy variable of United Kingdom and Russia would be unchanged during entire observed period. The next problem is that the Czech Republic became a member of Schengen area in 2008 when also started financial crisis. From the aspect of tourism, it is expected that entry to Schengen area has positive influence but at the same time the financial crisis brought huge negative influence which overshadowed the membership.

The model with high multicollinearity is considered when the correlation matrix shows higher values than 0,9. For the computation were utilized econometric software Gretl.

In the following chapters are econometric models of selected countries.

4.3 Germany

The variables are set as follows:

Endogenous variable:

y1t – Number of accommodated tourists from Germany

Exogenous variables:

x1t – Unit vector

x2t – Unemployment rate in Germany (%)

x3t – Exchange rate (CZK/EUR)

x4t – Average annual wage in Germany (EUR)

x5t – Inflation in Germany (%)

The equation of the economic model is following:

$$y1t = \gamma 11 + \gamma 12\ x2t + \gamma 13\ x3t + \gamma 14\ x4t + \gamma 15\ x5t$$

The economic model determines the theoretical relationship between given variables. To create econometric model is necessary to add stochastic variable (u1t).

$$y1t = \gamma 11 + \gamma 12\ x2t + \gamma 13\ x3t + \gamma 14\ x4t + \gamma 15\ x5t + u1t$$

Data set:

Table 5 - Data set of German case study

n	y1	x1	x2	x3	x4	x5
2000	1508068	1	9,6	35,61	27990	2,07
2001	1651671	1	9,4	34,083	28762	4,05
2002	1451325	1	9,8	30,812	29283	5,41
2003	1439124	1	10,5	31,844	29766	6,37
2004	1569369	1	10,5	31,904	30062	7,92
2005	1606947	1	11,7	29,784	30470	5,72
2006	1617431	1	10,8	28,343	30820	5,41
2007	1549441	1	9	27,762	31269	3,69
2008	1475858	1	7,8	24,942	31997	3,41
2009	1393112	1	8,1	26,445	31992	2,54
2010	1348482	1	7,7	25,29	32754	5,4
2011	1386976	1	7,1	24,586	34006	5,54
2012	1420698	1	6,8	25,143	34916	6,69
2013	1385398	1	6,9	25,974	35703	4,55
2014	1449294	1	6,7	27,533	36556	2,71
2015	1648181	1	6,4	27,283	37613	1,95

Source: ČSÚ, Eurostat, German Statistical Office, own preparation, www.kurzy.cz

Correlation matrix:

Correlation coefficients, using the observations 2000 - 2015
5% critical value (two-tailed) = 0.4973 for n = 16

y1	x2	x3	x4	x5	
1.0000	0.4628	0.4985	-0.2535	-0.1079	y1
	1.0000	0.6656	-0.8368	0.4052	x2
		1.0000	-0.7354	0.0046	x3
			1.0000	-0.2319	x4
				1.0000	x5

There is no higher value than 0,9 so the model is without multicollinearity.

Estimation of model using OLSM:

OLS, using observations 2000-2015 (T = 16)
Dependent variable: y1

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	−247918	759055	−0.3266	0.7501	
x2	58245.3	25954.7	2.2441	0.0464	**
x3	13570.9	9914.04	1.3689	0.1983	
x4	28.996	15.0156	1.9311	0.0796	*
x5	−18052.8	14454.4	−1.2490	0.2376	

Mean dependent var	1493836	S.D. dependent var	100899.8
Sum squared resid	7.55e+10	S.E. of regression	82822.65
R-squared	0.505896	Adjusted R-squared	0.326221
F(4, 11)	2.815626	P-value(F)	0.078302
Log-likelihood	−200.8968	Akaike criterion	411.7936
Schwarz criterion	415.6565	Hannan-Quinn	411.9914
rho	−0.208307	Durbin-Watson	2.188828

From the Gretl output is visible that some of the variables are not statistically significant because their p-values are higher than 0,10. It is necessary to omit insignificant variables. This step is processed using sequential elimination. After this step Gretl generated following output:

OLS, using observations 2000-2015 (T = 16)
Dependent variable: y1

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	−290969	775760	−0.3751	0.7141	
x2	43689.6	23725.8	1.8414	0.0904	*
x3	17728.1	9553.93	1.8556	0.0882	*
x4	27.9887	15.3397	1.8246	0.0930	*

Mean dependent var	1493836	S.D. dependent var	100899.8
Sum squared resid	8.62e+10	S.E. of regression	84732.74
R-squared	0.435828	Adjusted R-squared	0.294785
F(3, 12)	3.090036	P-value(F)	0.067811
Log-likelihood	−201.9577	Akaike criterion	411.9154
Schwarz criterion	415.0057	Hannan-Quinn	412.0736
rho	0.119645	Durbin-Watson	1.612574

The sequential elimination omitted inflation (x5), all the other variables remained in the model as statistically significant. Using coefficients of variables is possible to create equation of econometric model:

y1t = −290969 + 43689.6 x2t + 17728.1 x3t + 27.9887 x4t + u1t

Econometric verification:

Normality test

H0: normal distribution of random variables

Ha: no normal distribution

According to GRETL, by using of test "Normality of residual" was obtained result for P-value 0.61546. This p-value is in that case bigger in comparison with level of significance $\alpha = 0.05$, it means that H0 is accepted.

Heteroskedasticity

H0: no heteroskedasticity

Ha: heteroskedasticity

According to Gretl, by using of test "Heteroskedasticity; Breusch-Pagan" was obtained result for P-value 0.775855. This p-value is in this case bigger in comparison with level of significance $\alpha = 0.05$, it means that H0 is accepted, there is no heteroskedasticity.

Statistical verification:

Statistical signification of individual variables was already tested before and the insignificant variables were omitted.

The value of R^2 is 0.435828 which is low but acceptable.

Economic interpretation:

From the function is possible to find out:

- If the unemployment rate in Germany increases by 1 percentage point the number of German tourists in the Czech Republic increases by 43689.6. This relationship was not expected. The possible explanation of this positive relationship could be that German tourists have enough money for travelling despite the fact they have no job because of their unemployment compensation. They tend to travel to cheap

country in small distance which is the Czech Republic rather than to go for example to France, or Scandinavian countries.

- If the exchange rate of CZK/EUR increases by 1 the number of German tourists in the Czech Republic increases by 17728.1. This positive relationship is as was expected and it supports the hypothesis of the thesis. Higher value of euro makes the visit of the Czech Republic cheaper.
- If the average annual wage in Germany increases by 1 euro the number of German tourists in the Czech Republic increases by 27.9887. This positive relationship is as was expected. People with higher income tends to travel more.

4.4 United Kingdom

The variables are set as follows:

Endogenous variable:

y1t – Number of accommodated tourists from United Kingdom

Exogenous variables:

x1t – Unit vector

x2t – Unemployment rate in United Kingdom (%)

x3t – Exchange rate (CZK/GBP)

x4t – Average weekly wage in United Kingdom (GBP)

x5t – Inflation in United Kingdom (%)

The equation of the economic model is following:

$$y1t = \gamma 11 + \gamma 12\ x2t + \gamma 13\ x3t + \gamma 14\ x4t + \gamma 15\ x5t$$

The economic model determines the theoretical relationship between given variables. To create econometric model is necessary to add stochastic variable (u1t).

$$y1t = \gamma 11 + \gamma 12\ x2t + \gamma 13\ x3t + \gamma 14\ x4t + \gamma 15\ x5t + u1t$$

Data set:

Table 6 - Data set of United Kingdom case study

N	y1	x1	x2	x3	x4	x5
2000	236 517	1	5,4	58,425	318	0,8
2001	302 793	1	5,1	54,774	334	1,2
2002	305 676	1	5,2	49,039	345	1,3
2003	412 402	1	5	46,048	356	1,4
2004	650 622	1	4,8	47,051	371	1,3
2005	657 110	1	4,8	43,552	388	2,1
2006	566 225	1	5,4	41,579	407	2,3
2007	565 470	1	5,3	40,617	427	2,3
2008	484 279	1	5,7	31,422	442	3,6
2009	371 346	1	7,6	29,697	441	2,2
2010	368 643	1	7,9	29,485	452	3,3
2011	327 951	1	8,1	28,348	462	4,5
2012	346 527	1	8	31,015	468	2,8
2013	353 973	1	7,6	30,595	474	2,6
2014	373 585	1	6,2	34,164	480	1,5
2015	416 155	1	5,4	37,595	492	0

Source: ČSÚ, Eurostat, United Kingdom Statistical Office, own preparation, www.kurzy.cz

Correlation matrix:

Correlation coefficients, using the observations 2000 - 2015
5% critical value (two-tailed) = 0.4973 for n = 16

y1	x2	x3	x4	x5	
1.0000	-0.4502	-0.0149	0.0266	0.0350	y1
	1.0000	-0.7828	0.6437	0.6517	x2
		1.0000	-0.9066	-0.6816	x3
			1.0000	0.4117	x4
				1.0000	x5

The correlation matrix shows that there is strong relationship between x3 and x4. For the elimination of multicollinearity is necessary to rewrite the data of x3 in form of 1st differences. The new data set is following:

Table 7 - Data set after application of 1st differences

N	y1	x1	x2	x3	x4	x5
2001	302 793	1	5,1	-3,651	334	1,2
2002	305 676	1	5,2	-5,735	345	1,3
2003	412 402	1	5	-2,991	356	1,4
2004	650 622	1	4,8	1,003	371	1,3
2005	657 110	1	4,8	-3,499	388	2,1
2006	566 225	1	5,4	-1,973	407	2,3
2007	565 470	1	5,3	-0,962	427	2,3
2008	484 279	1	5,7	-9,195	442	3,6
2009	371 346	1	7,6	-1,725	441	2,2
2010	368 643	1	7,9	-0,212	452	3,3
2011	327 951	1	8,1	-1,137	462	4,5
2012	346 527	1	8	2,667	468	2,8
2013	353 973	1	7,6	-0,42	474	2,6
2014	373 585	1	6,2	3,569	480	1,5
2015	416 155	1	5,4	3,431	492	0

Source: ČSÚ, Eurostat, United Kingdom Statistical Office, own preparation, www.kurzy.cz

Correlation matrix:

Correlation coefficients, using the observations 2001 - 2015
5% critical value (two-tailed) = 0.5140 for n = 15

y1	x2	x3	x4	x5	
1.0000	-0.5559	-0.0648	-0.1849	-0.0924	y1
	1.0000	0.3076	0.6561	0.6441	x2
		1.0000	0.5345	-0.2750	x3
			1.0000	0.3234	x4
				1.0000	x5

New correlation matrix is without multicollinearity. There is no higher value than 0,9 anymore.

Estimation of model using OLSM:

OLS, using observations 2001-2015 (T = 15)
Dependent variable: y1

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	900632	259787	3.4668	0.0061	***
x2	−132393	32475.2	−4.0767	0.0022	***
x3	18911.5	10524.6	1.7969	0.1026	
x4	374.783	671.09	0.5585	0.5888	
x5	98914.9	36079	2.7416	0.0208	**

Mean dependent var	433517.1	S.D. dependent var	121188.2
Sum squared resid	7.45e+10	S.E. of regression	86288.64
R-squared	0.637875	Adjusted R-squared	0.493025
F(4, 10)	4.403688	P-value(F)	0.026088
Log-likelihood	−188.7249	Akaike criterion	387.4498
Schwarz criterion	390.9900	Hannan-Quinn	387.4121
Rho	0.213556	Durbin-Watson	1.442578

From the Gretl output is visible that some of the variables are not statistically significant because their p-values are higher than 0,10. It is necessary to omit insignificant variables. This step is processed using sequential elimination. After this step Gretl generated following output:

OLS, using observations 2001-2015 (T = 15)
Dependent variable: y1

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	1.02054e+06	141594	7.2075	<0.0001	***
x2	−126864	29946.5	−4.2364	0.0014	***
x3	21672.3	8996.09	2.4091	0.0347	**
x5	102785	34281.9	2.9982	0.0121	**

Mean dependent var	433517.1	S.D. dependent var	121188.2
Sum squared resid	7.68e+10	S.E. of regression	83546.14
R-squared	0.626580	Adjusted R-squared	0.524739
F(3, 11)	6.152494	P-value(F)	0.010349
Log-likelihood	−188.9552	Akaike criterion	385.9105
Schwarz criterion	388.7427	Hannan-Quinn	385.8803
Rho	0.230995	Durbin-Watson	1.365604

The sequential elimination omitted average wage (x4), all the other variables remained in the model as statistically significant. Using coefficients of variables is possible to create equation of econometric model:

y1t = 1020540 − 126864x2t + 21672.3x3t + 102785x5t + u1t

Econometric verification:

Normality test

H0: normal distribution of random variables

Ha: no normal distribution

According to GRETL, by using of test "Normality of residual" was obtained result for P-value 0.96623. This p-value is in that case bigger in comparison with level of significance $\alpha = 0.05$, it means that H0 is accepted.

Heteroskedasticity

H0: no heteroskedasticity

Ha: heteroskedasticity

According to Gretl, by using of test "Heteroskedasticity; Breusch-Pagan" was obtained result for P-value 0.966352. This p-value is in this case bigger in comparison with level of significance $\alpha = 0.05$, it means that H0 is accepted, there is no heteroskedasticity.

Statistical verification:

Statistical signification of individual variables was already tested before and the insignificant variables were omitted.

The value of R^2 is 0.626580 which is acceptable.

Economic interpretation:

- If the unemployment rate in United Kingdom increases by 1 percentage point the number of tourists from United Kingdom decreases by 126864. This relationship is negative as was expected. People without job do not spend money for travelling.
- If the exchange rate of CZK/GBP increases by 1 the number of tourists from United Kingdom increases by 21672,3. This positive relationship is as was expected and it support the hypothesis of the thesis again. Higher value of GBP makes the visit of the Czech Republic cheaper
- If the inflation increases by 1 percentage point the number of tourists from United Kingdom increases by 102785. This is as was expected because during higher inflation people tend to spend money rather than to save them. During the entire observed period the value did not attack the level of galloping inflation so the outbound tourism wasn't negatively affected.

4.5 Russia

The variables are set as follows:

Endogenous variable:

y1t – Number of accommodated tourists from Russia

Exogenous variables:

x1t – Unit vector

x2t – Unemployment rate in Russia (%)

x3t – Exchange rate (CZK/100RUB)

x4t – Average monthly wage in Russia (RUB)

x5t – Inflation in Russia (%)

The equation of the economic model is following:

$$y1t = \gamma 11 + \gamma 12\ x2t + \gamma 13\ x3t + \gamma 14\ x4t + \gamma 15\ x5t$$

The economic model determines the theoretical relationship between given variables. To create econometric model is necessary to add stochastic variable (u1t).

$$y1t = \gamma 11 + \gamma 12\ x2t + \gamma 13\ x3t + \gamma 14\ x4t + \gamma 15\ x5t + u1t$$

Data set:

Table 8 - Data set of Russian case study

n	y1	x1	x2	x3	x4	x5
2000	103 077	1	10,49	137,418	2223	20,13
2001	117 149	1	9,03	130,73	3240	18,69
2002	112 850	1	8	105,438	4360	15,02
2003	124 655	1	8,63	91,91	5499	11,98
2004	164 036	1	8,16	89,187	6740	11,72
2005	185 705	1	7,56	84,635	8555	10,92
2006	239 632	1	7,17	83,12	10634	9,02
2007	321 520	1	6,13	79,33	13593	11,88
2008	418 184	1	6,36	68,527	17290	13,28
2009	326 895	1	8,38	59,938	18638	8,81
2010	414 671	1	7,48	62,928	20952	8,77
2011	559 021	1	6,5	60,177	23369	6,11
2012	694 138	1	5,46	62,999	26629	6,54
2013	759 138	1	5,49	61,449	29792	6,48
2014	653 182	1	5,16	54,858	32495	11,36
2015	410 935	1	5,57	40,561	34030	12,91

Source: ČSÚ, Russian Statistical Office, www.kurzy.cz

Correlation matrix:

Correlation coefficients, using the observations 2000 - 2015
5% critical value (two-tailed) = 0.4973 for n = 16

y1	x2	x3	x4	x5	
1.0000	-0.8331	-0.7482	0.9025	-0.6935	y1
	1.0000	0.8227	-0.8469	0.6350	x2
		1.0000	-0.8831	0.7749	x3
			1.0000	-0.6081	x4
				1.0000	x5

There is no higher value than 0,9 so the model is without multicollinearity (the relationship between y1 and x4 is not considered because y1 is not exogenous variable).

Estimation of model using OLSM

Model 1: OLS, using observations 2000-2015 (T = 16)
Dependent variable: y1

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	4844.98	203837	0.0238	0.9815	
x2	−37109.4	20242	−1.8333	0.0939	*
x3	6997.66	1614.09	4.3354	0.0012	***
x4	23.0757	3.5505	6.4993	<0.0001	***
x5	−27491	6316.66	−4.3521	0.0012	***

Mean dependent var	350299.3	S.D. dependent var	220800.0
Sum squared resid	3.93e+10	S.E. of regression	59808.76
R-squared	0.946194	Adjusted R-squared	0.926628
F(4, 11)	48.35928	P-value(F)	6.49e-07
Log-likelihood	−195.6880	Akaike criterion	401.3760
Schwarz criterion	405.2389	Hannan-Quinn	401.5738
Rho	0.152844	Durbin-Watson	1.492953

Because all the variables are statistically significant it is not necessary to implicate sequential elimination. The equation of econometric model is stated as follows:

y1t = 4844.98 – 37109.4x2t + 6997.66x3t + 23.0757x4t - 27491x5t + u1t

Econometric verification:

Normality test

H0: normal distribution of random variables

Ha: no normal distribution

According to GRETL, by using of test “Normality of residual” was obtained result for P-value 0.00296788. This p-value is in that case lower in comparison with level of significance $\alpha = 0.05$, it means that Ha is accepted.

Heteroskedasticity

H0: no heteroskedasticity

Ha: heteroskedasticity

According to Gretl, by using of test "Heteroskedasticity; Breusch-Pagan" was obtained result for P-value 0.008407. This p-value is in this case lower in comparison with level of significance $\alpha = 0.05$, it means that Ha is accepted, there is a heteroskedasticity.

Because the model failed both tests in econometric verification it is necessary to reorganize the model using exponential (logarithmical) equation. New output of Gretl after omitting the insignificant variables is following.

OLS, using observations 2000-2015 (T = 16)
Dependent variable: l_y1

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
l_x3	0.717119	0.0596396	12.0242	<0.0001	***
l_x4	1.00613	0.0274216	36.6913	<0.0001	***

Mean dependent var	12.55659	S.D. dependent var	0.694460
Sum squared resid	0.380143	S.E. of regression	0.164782
Uncentered R-squared	0.999850	Centered R-squared	0.947451
F(2, 14)	46579.21	P-value(F)	1.73e-27
Log-likelihood	7.215346	Akaike criterion	−10.43069
Schwarz criterion	−8.885515	Hannan-Quinn	−10.35157
Rho	0.458759	Durbin-Watson	0.894801

Breusch-Pagan test for heteroskedasticity -
Null hypothesis: heteroskedasticity not present
Test statistic: LM = 0.314265
with p-value = P(Chi-square(2) > 0.314265) = 0.854591

Test for normality of residual -
Null hypothesis: error is normally distributed
Test statistic: Chi-square(2) = 2.81005
with p-value = 0.245361

After the transformation of variables to logarithmical form the values of both tests are higher than 0,05. Now the statistical verification is successful. New equation looks as follows:

l_y1t = 0,717119 l_x3t + 1,00613 l_x4t + u1t

This logarithmical equation shows that the significant variables are x3 and x4. Both of these variables shows positive influence in y1. It means that increase of exchange rate and increase of average wage in Russia cause increase of number of Russian tourists in the Czech Republic

4.6 **Poland**

Endogenous variable:

y1t – Number of accommodated tourists from Poland

Exogenous variables:

x1t – Unit vector

x2t – Unemployment rate in Poland (%)

x3t – Exchange rate (CZK/PLN)

x4t – Average annual wage in Poland (PLN)

x5t – Inflation in Poland (%)

The equation of the economic model is following:

$$y1t = \gamma 11 + \gamma 12\, x2t + \gamma 13\, x3t + \gamma 14\, x4t + \gamma 15\, x5t$$

The economic model determines the theoretical relationship between given variables. To create econometric model is necessary to add stochastic variable (u1t).

$$y1t = \gamma 11 + \gamma 12\, x2t + \gamma 13\, x3t + \gamma 14\, x4t + \gamma 15\, x5t + u1t$$

Data set:

Table 9 - Data set of Polish case study

N	y1	x1	x2	x3	x4	x5
2000	332933	1	16,087	8,881	26557	8,44
2001	382436	1	18,242	9,287	29123	3,6
2002	349374	1	19,934	8,02	29966	0,75
2003	291344	1	19,643	7,253	30479	1,58
2004	253916	1	18,974	7,051	30964	4,22
2005	261576	1	17,745	7,404	31510	0,88
2006	273659	1	13,843	7,279	32229	1,4
2007	298621	1	9,604	7,336	33767	3,88
2008	376592	1	7,119	7,123	37164	3,16
2009	341136	1	8,169	6,113	38081	3,72
2010	350637	1	9,635	6,334	40644	3,14
2011	371127	1	9,632	5,982	42650	4,6
2012	370910	1	10,088	6,01	43675	2,33
2013	386739	1	10,328	6,189	44351	0,73
2014	414183	1	8,99	6,582	45139	-0,89
2015	447261	1	7,5	6,525	46203	-0,65

Source: ČSÚ, Eurostat, Polish Statistical Office, own preparation, www.kurzy.cz

Correlation matrix

Correlation coefficients, using the observations 2000 - 2015
5% critical value (two-tailed) = 0.4973 for n = 16

y1	x2	x3	x4	x5	
1.0000	-0.5815	-0.2184	0.6893	-0.2878	y1
	1.0000	0.6641	-0.8085	0.1213	x2
		1.0000	-0.8247	0.3564	x3
			1.0000	-0.4699	x4
				1.0000	x5

There is no higher value than 0,9 so the model is without multicollinearity

Estimation of model using OLSM

OLS, using observations 2000-2015 (T = 16)
Dependent variable: y1

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
Const	−612037	174021	−3.5170	0.0048	***
x2	101.51	2532.04	0.0401	0.9687	
x3	62517.4	11141.5	5.6112	0.0002	***
x4	13.8969	2.53286	5.4866	0.0002	***
x5	2241.94	3487.72	0.6428	0.5335	

Mean dependent var	343902.8	S.D. dependent var	55561.84
Sum squared resid	6.27e+09	S.E. of regression	23866.32
R-squared	0.864693	Adjusted R-squared	0.815491
F(4, 11)	17.57420	P-value(F)	0.000096
Log-likelihood	−180.9890	Akaike criterion	371.9781
Schwarz criterion	375.8410	Hannan-Quinn	372.1759
Rho	0.337941	Durbin-Watson	1.318951

From the Gretl output is visible that some of the variables are not statistically significant because their p-values are higher than 0,10. It is necessary to omit insignificant variables. This step is processed using sequential elimination. After this step Gretl generated following output:

OLS, using observations 2000-2015 (T = 16)
Dependent variable: y1

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
Const	−583387	125049	−4.6653	0.0004	***
x3	61997.7	10456.2	5.9293	<0.0001	***
x4	13.4043	1.55426	8.6242	<0.0001	***

Mean dependent var	343902.8	S.D. dependent var	55561.84
Sum squared resid	6.56e+09	S.E. of regression	22465.09
R-squared	0.858318	Adjusted R-squared	0.836521
F(2, 13)	39.37731	P-value(F)	3.04e-06
Log-likelihood	−181.3574	Akaike criterion	368.7148
Schwarz criterion	371.0325	Hannan-Quinn	368.8335
Rho	0.384130	Durbin-Watson	1.215646

The sequential elimination omitted unemployment rate (x2), and inflation (x5), all the other variables remained in the model as statistically significant. Using coefficients of variables is possible to create equation of econometric model:

y1t = -583387 + 61997.7x3t + 13.4043x4t + u1t

Econometric verification

Normality test

H0: normal distribution of random variables

Ha: no normal distribution

According to GRETL, by using of test “Normality of residual” was obtained result for P-value 0.98963. This p-value is in that case bigger in comparison with level of significance $\alpha = 0.05$, it means that H0 is accepted.

Heteroskedasticity

H0: no heteroskedasticity

Ha: heteroskedasticity

According to Gretl, by using of test "Heteroskedasticity; Breusch-Pagan" was obtained result for P-value 0.275841. This p-value is in this case bigger in comparison with level of significance $\alpha = 0.05$, it means that H0 is accepted, there is no heteroskedasticity.

Statistical verification:

Statistical signification of individual variables was already tested before and the insignificant variables were omitted.

The value of R^2 is 0.858318 which is acceptable.

Economic interpretation

From the function is possible to find out:

- If the exchange rate CZK/PLN increases by 1 the number of Polish tourists in the Czech Republic increases by 61997.7. This positive relationship is as was expected and it again support the hypothesis if the thesis.
- If the average annual wage increases by 1 PLN the number of Polish tourists in the Czech Republic increases by 13.4043. This positive relationship is as was expected. People with higher income tends to travel more.

4.7 Summary of results in practical part and recommendation for geographical segmentation

Table 10 - Results of variables influence

	x2	x3	x4	x5
Germany	+	+	+	not significant
UK	-	+	not significant	+
Russia	not significant	+	+	not significant
Poland	not significant	+	+	not significant

Source: own computation

From the table 10 is visible that after the econometric analysis were being processed using ordinary least square method and omitting of insignificant variables it is possible to evaluate that in all case studies was the exchange rate positively influencing the number of inbound tourists in the Czech Republic. The least significant variable is inflation – it is possible to say that inflation is not affecting outbound tourism of selected country (only in United Kingdom). Unemployment rate is supposed as significant variable in two cases. It

is positively affecting number of German tourists in the Czech Republic which can be considered as the only surprising result. Conversely, the UK case study confirmed the expectation. The variable of average wage is significant in 3 of 4 cases. As was expected all the relationships are positive. The last and most important variable is exchange rate and we can say that positive and significant result support the hypothesis statement. This statement can be also supported by important milestones in development of number of tourists in the Czech Republic from certain countries during observation period. As good example can be interventions of CNB when the exchange rate suddenly and rapidly increased in ratio CZK/EUR. After the start of these interventions (2013) the number of German tourists rapidly increased as can be seen in figure 16. The next example can be rapid devaluation of Russian Rouble after the Russian-Ukrainian conflict (2013). This caused rapid decrease of Russian tourists in the Czech Republic.

In all case studies was possible to utilize linear model except the case of Russia were had to be processed the logarithmical transformation of equation. Multicollinearity elimination was necessary only in case of United Kingdom.

According to results the tourism market segmentation should be focused on those countries in which can be predicted the stable exchange rate and its strong development of currency in relationship to CZK. Nowadays, is the orientation on Germany and other countries in Eurozone a good choice. But we cannot say that this exchange rate is stable because the end of interventions and following appreciation of CZK can be predicted. We can say that as good long-term market segment is Poland because there are not high fluctuations in the exchange rate CZK/PLN. Next positive factor is of course the close distance. Russian market was a good segment to be focused on in recent years but as was already mentioned the political and following economic crisis decreased the value of Rouble and the willingness of Russian tourists to travel to the Czech Republic.

5 Conclusion

This diploma thesis is focused on relationship of tourism and selected economic variables especially the exchange rate. The thesis is divided in two main parts – theoretical part and practical part. The first subchapter of theoretical part deals with tourism industry as more and more significant part of global economy. The next subchapter is focused on exchange rate. The exchange rate is one of variables which are expected to influence inbound tourism of the Czech Republic. This eventual relationship is described in third subchapter of theoretical part. For the theoretical part was utilized many literature resources. In all cases the quotation is presented.

The second part of the thesis is called practical part and it provides results of own case study which observes the relationship of the number of inbound tourists in the Czech Republic and exchange rate. There were chosen 4 countries with highest number of tourists in the Czech Republic and different currency – Germany, United Kingdom, Russia and Poland. For each of these countries was created individual econometric model with 4 exogenous variables – unemployment rate, exchange rate, average wage and inflation. The data for creation of model was sourced from CSZO, statistical offices of selected countries and Eurostat. The time period was 16 years – 2000-2015. It was also planned to verify the mentioned relationship on real data of selected hotel in Prague. This intention wasn't possible to realize because of the sudden change of owner of this hotel. The necessary data wasn't available.

The results of all case studies confirmed the predicted significant influence of exchange rate on tourism. From other selected variables the certain influence was confirmed in case average wage. The significance of other variables wasn't so important.

The hypothesis formulated for this work was proven.

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