

# **Factors influencing strategic development of Insurance Brokers market in the Czech Republic**

**Bachelor thesis**

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## Declaration

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## **Abstract**

Janoušek, L., Factors influencing strategic development of Insurance Brokers market in the Czech Republic. Bachelor thesis. Brno: Mendel University, 2017.

This Bachelor thesis is devoted to an identification of key factors, which influence segment of Insurance Brokers, from external environment. In theoretical part, there will be described the role of Insurance Brokers and the overall insurance market in CR. The practical part is devoted to analysis and assessment of macro environment with usage of PESTEL analysis and Regression analysis.

## **Keywords**

Insurance Broker, Insurance market, PESTEL analysis, econometric model, Regression analysis, macro environment, Czech Republic

## **Abstrakt**

Janoušek, L., Faktory ovlivňující strategický rozvoj trhu pojišťovacích makléřů v České republice. Bakalářská práce. Brno: Mendelova univerzita v Brně, 2017.

Tato bakalářská práce je věnována identifikaci klíčových faktorů vnějšího prostředí, které ovlivňují segment pojišťovacích makléřů. Teoretická část je věnována definování role pojišťovacího makléře v pojišťovnictví a pojistnému trhu obecně. Praktická část je věnována analýze a zhodnocení makrookolí za použití PESTEL analýzy a Regresní analýzy.

## **Klíčová slova**

Pojišťovací makléř, pojistný trh, PESTEL analýza, ekonometrický model, regresní analýza, makrookolí, Česká republika

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# 1 Introduction and Objectives

## 1.1 Introduction

Insurance and Insurance market play an important role in our society and in our lives. Life is always connected with certain level of risk. People do not have to try adrenalin sports in order to be in risk situation. The accident can happen also during driving our car, during way to work or to school. Furthermore, insurance market helps to keep economic stability of country and offers possibilities of investment.

Insurance is mainly used by people or economic subjects to solve some unpredictable situations which can suddenly happen. Negative consequences can be caused by natural phenomena (disease) or by human activity (accident). With growth and development of human society increases also risk and possibility of bad consequences. People are mostly aware of this fact and try to predict and decrease the level of risk and simultaneously negative consequences.

(Ducháčková, 2009)

The primitive insurance originated in 2500 BC in Egypt. The stonemasons concluded mutual agreements in case of their death. They regularly collected contributions that covered the costs for funeral. Naturally, we can speak about insurance market after the emergence of Czech Republic, but insurance began to form much earlier. The first institutions were established in Austria in 18<sup>th</sup> century. In 1827, there was established First Czech Mutual Insurance Company in Prague. It is a predecessor of Česká pojišťovna. This company insured against wildfire and later extended their offer to property and health insurance. 19<sup>th</sup> century is typical for establishing new insurance institutions.

In the second half of 20<sup>th</sup> century, insurance market was strongly influenced by political situations. The main change was the monopolization of this market. After Fall of Communism, the monopoly of state insurance company was cancelled and created competitive insurance market as we know. The Join of the Czech Republic to European Union in 2004 meant the integration to EU insurance market. (Karfíková, Přikryl 2010)

This transformation led to the change of approach to insurance. It is required new and more exact approach to specific problems. It can be extent of premium and its adjustability, the premium rate, analysis and assessment of factors and trends which influence this market etc. These steps lead to competitive advantage, to success on the market and acquisition of new clients. Although insurance companies provide certain security to their clients, sometimes, it is not for the welfare of their clients, but for welfare of themselves. And this is task for the Insurance brokers.

As mentioned above, the insurance market does not consist only of insurance companies but there are also insurance brokers. The role of broker is important for the people and also for insurance companies. The insurance broker helps natural and legal persons to understand the market and choose the best

possible option of insurance. They analyse the current situation of their clients and negotiate instead of them with insurance companies. In fact, they are certain type of counsellors in order to ensure you the best condition and security.

## **1.2 Objectives**

This Bachelor thesis is focused on segment of Insurance Brokers as the important part of the Insurance market in the Czech Republic. The strategic development is influenced by many factors which lead this segment from external environment. The objective of this thesis is to identify current key macro environmental factors and determine the possible recommendations that will help to prepare the segment of insurance brokers to upcoming situations on the market in the Czech Republic which can happen.

## 2 Materials and Methodology

This bachelor thesis is divided into two main parts – theoretical and practical. The first theoretical part is devoted to description of the role of insurance brokers in the market. There will be described the types of insurance intermediaries, differences between them and the tasks and duties of insurance broker. The second chapter of theoretical part is devoted to characteristics of insurance market in the Czech Republic. This part will represent the current overview of domestic insurance market, in which insurance brokers operate. There will be characterized the term premiums written, current conditions and development of this market.

The Practical part is composed of two parts. Each of them will begin with theory about used analysis. In the first part, there will be performed PESTEL analysis which analyse just the macro environment. PESTEL is divided into six parts. It assesses the political, economic, social, environmental, technological and legal factors. The secondary data for this analysis will come mainly from Czech Insurance Association, Czech Statistical Office and Czech National Bank.

In the second chapter of practical part, there will be performed the Regression Analysis. It will test the relationship among average gross nominal wage as one of the macroeconomic factor and the “premiums written “which is used for measurement of the overall insurance market level in the Czech Republic. The secondary data for this analysis come from Czech Statistical Office and Czech National Bank from the year 1996 to 2015. For the Regression analysis will be used Gretl.

According to all results from practical part, there will be determined the key factors and recommendations for prediction and reaction on upcoming situations on the market.

## 3 Insurance Broker

Insurance market in the Czech Republic consists of several subjects - insurance companies, their clients and insurance intermediaries. These intermediaries can be natural or legal person and they facilitate a communication among insurance company and client. Their main aim is to offer a contract of insurance, acceptance of this contract and an insurance compensation in case of insured event. Next task is to help clients to understand the insurance market and offer proper insurance product due to analysis of current situation of client and his needs. In fact, he finds the right insurer to right client. (Curland, 2004)

The reasons for usage of services offered by insurance intermediaries:

- Intermediary understands the market and he can offer to client a proper insurance product,
- Intermediary can easily analyse current insurance market and compare offers from more insurance companies,
- Intermediary can settle better conditions and also lower costs for insurance (Ducháčková, 2009)

### 3.1 Insurance Terminology

Before the explanation of insurance brokers work, there will be defined few insurance terms, which are necessary to explain, in order to understand the text of this thesis. The chosen insurance terms are defined according to Samaroo (2011):

- **Contract of insurance** – The contract where the insurer agrees to provide benefits or services to the insured,
- **Deductible** – a fraction of the insured loss that have to be paid by insured before the insurer will pay,
- **Insured** – Policy holder, person whose potential losses are covered by the insurer,
- **Insurer** – Company which agrees to indemnify (pay for) the losses of the insured,
- **Insurance Compensation** – It is equal to the amount paid by an insurance company to the insured in order to cover the damage, which occurred,
- **Insurance Conditions** – The actions that have to be completed to have the insurance policy remain valid and for claims to be paid,
- **Insurance Coverage** – The extent of the insurance benefit supplied by the insurance contract,
- **Insurance Event** – Any event which would cause an insurer to pay a claim to insured,
- **Insurance Market** – Specific part of financial market, its aim is the gathering and redistributing of money,

- **Insurance Offer** – The terms of contract proposed by insurer to insured,
- **Insurance Portfolio** – The amount of closed insurance contracts,
- **Insurance Risk** – The rate of probability of occurring any danger situation, according to this rate is set the amount of premium,
- **Limits of Indemnity** – The maximum amount of money which the insurer will pay to insured in case of insurance event,
- **Liquidation of Insurance Event** – The payoff of money by the insurer to insured,
- **Premium** – The amount of payment due for the insurance coverage that lasts for a certain time period, usually month or a year.

## 3.2 Types of Insurance Intermediaries

In the first paragraph, there was defined the term insurance intermediary. According to Act No. 38/2004 Coll., there are many types of insurance intermediaries pursuant to the type of their activities. The most common and important intermediaries are the insurance agents and insurance brokers. In the following part, there will be described the differences among them. (Kutina, 2010)

### 3.2.1 Insurance Agent

Insurance agent is the representative of insurance company. He usually works only for one insurer and offers its products. He may offer to clients some product of different insurance company only in case that his company do not provide certain type of insurance. Insurance agent has to be written in register and his qualification is middle level. (Ducháčková, 2009)

### 3.2.2 Insurance Broker

Insurance broker represents the highest level of insurance intermediary. The main difference among agent and broker is that insurance broker works for client on the basis of contract and he does not work only for one insurance company. Due to this condition, he can offer to client the best insurance product which is the most useful for his client and which is for reasonable price. He has to be written in register and he has to fulfil the highest level of qualification. In the following chapter, there will be described the insurance brokers work and their role in the insurance market. (Ducháčková, 2009)

## 3.3 Insurance Broker

The existence of insurance broker in the Czech Republic started after The Velvet Revolution with the beginning of competitive market. In Western countries, this profession originated much earlier and has a respected position in the insurance

market. In Europe, the Directive 2002/92/ES changed the conditions for insurance brokers. It enabled to carry on their business in all of EU countries. Nowadays, segment of insurance brokers has increasing trend and significant influence on insurance market in the world and also in the Czech Republic. (Kutina, 2010)

### 3.3.1 Tasks of Insurance Broker

According to Hrubošová (2009), insurance broker represents the highest level of intermediary. It can be natural or legal person. Two basic tasks of broker are risk analysis and offering of proper insurance product. Broker works for the client on the basis of contract and offers him a large quantity of services:

- Independent research and analysis of insurance market and offers of insurance companies,
- Calculation of insurance offers to clients and their comparison,
- Analysis of risks for clients and their appraisal which is important especially for big clients (companies),
- Thanks to analysis, broker can properly state e.g. limits of indemnity, deductible and insurance coverage.

The work of insurance brokers does not end with the signature of insurance contract. His role continues during whole duration of contract and if the client is satisfied with his services it can last much longer. Each broker creates his own insurance portfolio in which he has all insurance contracts and he has to continuously take care of them and pay attention to their actualizations.

Insurance broker offers to clients certain level of security. Client is sure that his contracts are in hands of educated and professional entity that will help in case of some problems. Small and medium clients are in weaker negotiating position than insurance brokers. They are not aware of all conditions and procedures and due to it they are often in disadvantage. On the other hand, broker can negotiate better conditions of insurance contracts and redemption of compensation. The insurance companies do not want to lose partnerships with their brokers because they bring besides small clients also contracts with national and international organizations. (Curland, 2004)

In case of accident, broker will deal with insurance company about the liquidation of insurance event instead of client. This is for each client big advantage because broker is aware of all possibilities in the procedure of liquidation of insurance event. If the client is insured with assistance of broker he usually does not have any problem with repayment of compensations. On the other hand, one of the most common problems is underinsurance. This arises especially to clients that do not use services of insurance broker. Clients always want as low cost as possible, so they often conclude contracts with insurance company which contains inadequate insurance coverage. Insurance company does not negotiate and explain the risks of this situation and later, client can be in really bad situation with certain amount of loss. (Hrubošová, 2009)

### 3.3.2 Work Conditions of Insurance Broker

The role of insurance intermediaries is in today's society usually disparaged and there is also the opinion that everybody can do this job. This is a common mistake. As the insurance intermediary and especially insurance broker, you have to reach certain qualification in order to work in this segment. According to law in the Czech Republic, person who wants to become insurance broker has two possibilities:

- Potential insurance broker has to study insurance course on university at least on bachelor degree,
- The second possibility is to pass Professional Exam created by Czech National Bank.

Through these conditions is secured that insurance broker is qualified person with proper education. This theoretical background in connection with 4 years of praxis creates a prerequisite for registration to register of Czech National Bank. (Kutina, 2010)

The insurance broker is, as an independent person, responsible for possible detriment which originated from its activities. Every broker is obliged to be insured for material responsibility with limit of indemnity of 1,2 million EUR in case of each insurance event. (Kutina, 2010)

One of the most important decisions of each insurance broker is, if he will work as natural or legal person. If insurance broker works as natural person, it is more risky especially for beginners. He is influenced by many factors on the market. He does not know properly possibilities of insurance companies, their products and he does not have relations with important persons on insurance market. The conditions and cooperation provided by insurance companies are often on average level, because they do not know the work of new insurance broker and his reliability. Every broker has to consider if he wants to undergo certain level of risk in connection with possibility of higher revenues. As a natural person, insurance broker creates his own insurance portfolio and all commissions from insurance companies belong to him. On the other hand, broker can work under some insurance broker company which is safer, has well-known name on the market but he has to count with lower revenues. (Janata, 2008)

### 3.3.3 Relation of Insurance Broker and Insurance company

In previous chapter, it was stated that insurance broker does not work for insurance company. Insurance broker and company have contractual relationship among them which is mutually beneficial. This contract is regulated by Commercial Code. In such contract is defined that insurance broker's work will lead to contract among insurance company and client. On the other hand, the insurance company has to pay to insurance broker a commission for such contract. This commission is

revenue for a broker and it is mostly paid monthly or yearly. We distinguish two types of them:

- Acquisition commission – It is paid for every new contract after payment of client to insurance company,
- Subsequent commission – This type of commission is paid at the end of duration of insurance contract. It is revenue for maintaining such a contract in particular insurance company.  
(Hrubošová, 2009)

A lot of people in the Czech Republic still think that cooperation with insurance broker will higher the price of insurance. It is not true, because as it was explained, the revenues for insurance brokers do not come from client but from insurance company. The amount of premium is at least the same but in almost all cases much lower than in situation when a client deals with insurance company on his own.

### **3.3.4 Ethical questions of Insurance Broker's work**

According to ethical code of CAP<sup>1</sup> (Czech Insurance Association), all subjects of insurance market in the Czech Republic are binded by certain conditions. These conditions are defined in this ethical code of CAP and all subjects have to behave in accordance with it. It is valid for insurance intermediaries, insurance companies and their employees. Ethical code of CAP is divided into 5 articles. The most important articles for insurance brokers are Article III and Article IV.

Article III deals with relationship among insurance company and insurance intermediaries. The most important points for brokers are:

- Brokers will not misuse information and materials of company,
- Broker has to properly represent his own company as well as the insurance company and overall insurance market,
- Broker must not do activities which can cause a conflicts among him and insurance companies,
- Broker has to follow ethical rules and he cannot abuse his position in terms of bribes.

Article IV deals with relationship among insurance broker and client. Insurance broker has to follow following rules:

- The interest of client is above interest of broker,
- Broker has to always follow rules and laws and cannot work for a client in ways that can lead to insurance fraud,
- Polite and nice behaviour to client,
- Insurance broker is binded by secrecy. Breach of secrecy can mean also fine of 1 000 000 CZK,

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<sup>1</sup> [http://www.cap.cz/images/o-nas/Etický-kodex\\_2016\\_04\\_07.pdf](http://www.cap.cz/images/o-nas/Etický-kodex_2016_04_07.pdf)



- Insurance broker has to provide to client all information and conditions about their cooperation.

There is a lot of information which broker has to provide to client. One of the most important is a definition of insurance, he offers to client. Then, he has to inform about duration of validity of the insurance contract, conditions of termination of insurance contract, amount of premium which has to be paid and explanation of cooperation among them.

Each client has the right to file a claim in situation when he feels that his insurance broker behaved in contrary to Ethical code. This claim will be properly investigated by committee of CAP. If the claim is justified, such an insurance broker can get a fine or can be excluded from this association. The exclusion from association is the worst penalty, because such person becomes for all insurance market untrustworthy.

## 4 Characteristics of Insurance Market in CR

Insurance market is one of the important parts of financial market. It is one branch of domestic economy which provides specific financial service which is called insurance. The insurance market is mainly focused on insurance protection and creation of reserves. (Hungelmann, 2001)

Surveillance function of this market is guided by Czech National Bank. According to statistics of CNB<sup>2</sup>, in the Czech republic, there currently operate 54 insurance companies, 881 foreign insurance companies which provide foreign services, 155 980 domestic insurance intermediaries, 6020 foreign insurance intermediaries and 263 liquidators of insurance event. (cnb.cz, 2017)

Each insurance market consists of several subjects. The most important institutions are:

- Insurance companies,
- Insurance intermediaries,
- Surveillance on insurance market – CNB,
- Czech Insurance Association – CAP,
- Czech Insurer’s Bureau. (Ducháčková, 2009)

### 4.1 Premiums Written

It is the premium paid on all of the policies an insurer has written during a given time period. The volume of premiums written is an indicator which indicates the amount of premiums on the market in certain year. It is influenced by the amount of insurance contracts, the sum of payment and types of risks which are insured. The premiums written is used for measurement of efficiency of the insurance market and each insurance company (Niehaus, 2008)

In 2011, CAP changed their method of reporting statistics of premiums written. Nowadays, CAP counts premiums written according to new standards. This is taken into consideration and the long term values of premiums written used in this thesis are in form of Gross Premiums Written. Gross Premiums Written is the premium which was prescribed on basis of all insurance contracts. Part of this premium can be revenue in following years. The usage of Gross Premiums Written is necessary especially in the regression analysis, which requires long term values for the proper creation of econometric model.

### 4.2 Insurance Companies in CR

According to Ducháčková (2009), there are four types of insurance companies:

- Universal insurance companies which offer both types of insurance - Life and Non-life insurance,

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<sup>2</sup> [https://apl.cnb.cz/apljerrsdad/JERRS.WEB24.SUBJECTS\\_COUNTS\\_2](https://apl.cnb.cz/apljerrsdad/JERRS.WEB24.SUBJECTS_COUNTS_2)

- Insurance companies which offer Life insurance,
- Insurance companies which offer Non-life insurance,
- Specialized insurance companies which deal with insurance in certain branch.

As it was already mentioned, in the Czech Republic, there are 54 insurance companies. In the following table, there are ordered the 7 most successful insurance companies in the Czech Republic according to current premiums written standards of CAP.

Tab. 1 Insurance Companies in the Czech Republic

<b>Insurance Company</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Česká pojišťovna, a.s.	28 849 765	27 483 276	26 840 561
Kooperativa, pojišťovna, a.s.	22 377 552	22 684 236	23 063 592
Allianz pojišťovna, a.s.	10 336 557	11 139 689	11 599 092
Generalli Pojišťovna, a.s.	7 894 950	8 322 512	8 685 232
ČSOB Pojišťovna, a.s.	7 406 107	7 410 557	7 894 809
ČPP, a.s.	5 964 904	6 552 136	7 036 503
Pojišťovna České spořitelny, a.s.	6 115 425	6 337 629	6 257 498

in ths. CZK

Source: CAP.cz

According to the data of insurance companies from the years 2013 – 2015, it can be stated that the insurance companies market in the Czech Republic is quite stable. In the last three years, there was no change in order of these companies. The first two places, according to premiums written, belong to Česká pojišťovna a.s. and Kooperativa, pojišťovna a.s. Following insurance companies which are not included in the table reach only 5% and less in portion of total premiums written.

Tab. 2 Index of Insurance Companies in 2015

<b>Insurance Company</b>	<b>Index</b>
Česká pojišťovna, a.s.	97.7
Kooperativa, pojišťovna, a.s.	101.7
Allianz pojišťovna, a.s.	104.1
Generalli Pojišťovna, a.s.	104.4
ČSOB Pojišťovna, a.s.	106.5
ČPP, a.s.	107.4
Pojišťovna České spořitelny, a.s.	98.7

Source: CAP.cz

The majority of the insurance companies recorded increasing trend. Decreasing trend recorded only Česká pojišťovna a.s. and Pojišťovna České spořitelny a.s., but the decrease was not so intense.

### **4.3 Czech Insurance Association**

The Czech Insurance Association (CAP) was established on 1<sup>st</sup> January 1994. It is a legal entity and professional association which organize and support mutual aid and cooperation of insurance companies. It unites procedures, rules and inform about current situation and development of insurance market in the Czech Republic. It also regulates legal norms, support adjustments in legislation and form ethical principles in insurance. (cap.cz, 2017)

Nowadays, CAP consists of 26 Full members and 2 Special-status members. Besides the insurance companies which was mentioned in previous chapter, to Full members belong also e.g. AEGON, AXA, ERGO, SLAVIA, UNIQA. 2 Special-status members are Czech Insurer's Bureau and EGAP a.s.. The premiums written of Czech Insurance Association members constitute a 98% proportion of all premiums in the Czech Republic. (cap.cz, 2017)

### **4.4 Types of Insurance**

In the Czech Republic, there are two types of insurance. The first type is called Social Insurance. The Social Insurance is divided into social and health. Its main purpose is to cover needs of people which ensue from social risks. They cover needs of people in case of work inability, diseases etc. Payment of Social Insurance is stated for all people in the same way and it is obligatory to pay. (Ducháčková, 2009)

This thesis is focused on commercial or private insurance which is the second type of insurance from perspective of financing.

### **4.5 Commercial Insurance**

The main difference of social and commercial insurance is that natural or legal entities negotiate commercial insurance in order to cover own risks. It is not obligatory to close a contract on commercial insurance. If natural or legal entity entered into such a contract, the amount of money that insured entity has to pay varies according to type of risk. The main aim of commercial insurance is the stabilization of economic subjects, coverage of their potential losses and creation of reserves of insurance companies on the market. (Dionne, 2012)

Commercial insurance is divided into two main branches. These two branches are called life and non-life insurance. The division comes from different types of risks, they cover and all insurance companies are obliged to divide them in this way in the framework of their economy. (Ducháčková, 2009)

### 4.5.1 Life Insurance

Life insurance is focused on risks connected with lives of people. Two main events which are covered by this insurance are death and survival. In the previous century, the main purpose of life insurance was coverage of costs of family which was dependent on revenues of breadwinners in case of his death. Nowadays, life insurance is understood more like alternative how to cover personal needs in senior age. This meant the change of orientation and offering of saving and investment instruments in order to create personal savings. There is used stipulated sum agreement which means that sum insured which will be paid in case of death is arranged in advance. (Šídlo, 2010)

According to Šídlo (2010), we can divide 4 categories of life insurance:

- **Term Life Insurance** – it covers a risk of death. If an insured person still lives at the end of insurance contract, there is no possibility of payment of sum insured,
- **Endowment Life Insurance** – this type of life insurance represents also saving instrument. There is no sum insured in case of survival but if insured entity lives at the end of insurance contract, he will get the amount saved for the whole period of such contract,
- **Investment Life Insurance** – investment life insurance is similar to endowment insurance but there is no guarantee of valorisation. Insurance companies offer to their clients possibility to invest into funds, bonds etc.,
- **Pension Insurance** – it covers financial needs in senior age of insured person. There is not covered the risk of death. The part of this insurance can be the insurance of invalidity pension. Pension insurance cannot be interfered with a state sponsored retirement pension. According to association of pension companies, profitability of such pension insurance is long term around 1% p.a.<sup>3</sup>.

### 4.5.2 Non-life Insurance

Non-life insurance covers whole range of risks. It is really varied and products of non-life insurance are divided according to many characteristics. Nowadays, these products are often combined in order to provide better coverage of potential risks. This type of insurance is much older than life insurance. The first area of non-life insurance, which was often insured, was the property insurance. According to Ducháčková (2009), there are 6 categories of non-life insurance:

- **Accident and Illness Insurance** - it provides a compensation in case of some accident or illness which leads to temporary or full disability of person,
- **Travel Insurance** – it is used to cover medical expenses, loss of luggage, trip cancellation etc.,

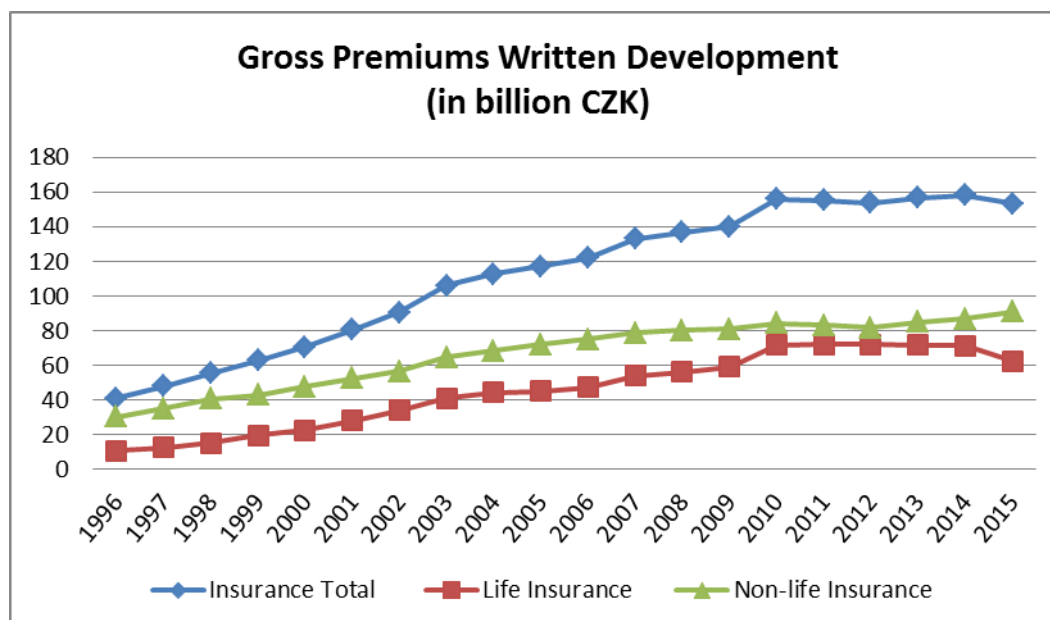
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<sup>3</sup> <http://www.apfcr.cz/ctvrtletni-vysledky-2015/>

- **Property Insurance** – it covers risks which can cause damage on our property. Property insurance includes household and building insurance, flood insurance, earthquake insurance, motor damage insurance etc.,
- **Fidelity Guarantee Insurance** – it covers a loss of money or property of employer in case of theft or dishonesty of any employee,
- **General Liability Insurance** – this type of insurance covers damage of property or a financial loss in case of inaccurate act of insured entity. Typical example can be damage caused by vehicle operation and use,
- **Legal Protection Insurance** – it covers the insured entities against expenses caused by some legal actions. It can be court costs, expenses for travel etc.

#### 4.5.3 Development of Life and Non-life Insurance in CR

The following graph shows, that the gross premiums written has long term increasing trend, which is nowadays more stable. Nevertheless, it still means a positive development of whole insurance market in the Czech Republic. Non-life insurance is a long term more popular in population of CR.



**Figure 1: Development of Life and Non-life Insurance in CR**

Source: CAP.cz, CNB.cz

In 1996, the portion of life insurance was only 26,6 % in comparison to non-life insurance which reached portion of 73,4 %. Nowadays, the portion of life insurance is much higher; it reached 40,7 % and it is approaching the trend of European Union.

In the years 2010-2014, life and non-life insurance were almost equal in volume of gross premiums written. This changed in 2015, because there were changes in regime of tax deductibility. Term life insurance registered a big decrease and the trend of transition from endowment insurance with guaranteed profit to investment insurance was also changed. In general, there is a decrease in life insurance.

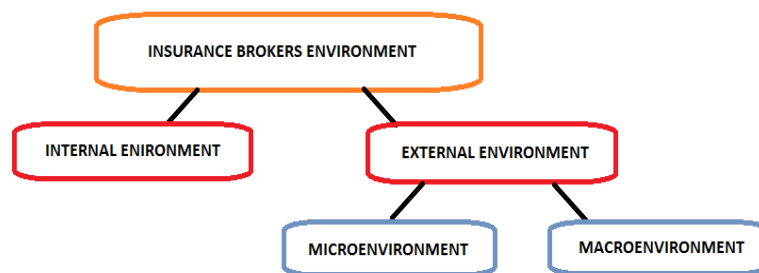
As it was already stated, non-life insurance is more popular in population of CR. There were two important events which significantly changed a development of non-life insurance. In 1997, there was significant increase thanks to flooding which forced people to close property insurance contracts. It meant increase 16,9% in non-life insurance. In 2003, there was another significant increase after 500-year flood and the growth was 14,5 %. In 2011 and 2012, non-life insurance registered decrease in volume of gross premiums written. This decrease was caused by decreasing trend of prices in car insurance. This trend was changed in 2013 and from this year, non-life insurance is growing again.

## 5 Practical Part

### 5.1 Characteristics of PESTEL Analysis

Insurance brokers segment operates in the environment in which it is necessary to find the competitive advantage in order to be successful. It requires a systematic approach to properly react on every situation that can happen in this market. For this purpose, each entity has to use strategic analysis which consists of several analytical techniques.

The objective of these analytical techniques is to identify, analyse and evaluate all key factors which influence the entities on the market.



**Figure 2: Division of Environment**

Source: elaborated by the author based on (Pošvář, Erbes 2002)

In the figure above, it is shown the division of the environment. Internal environment factors occur within an organization – management and cultural changes, employee behaviour etc.

External environment factors occur outside of the organization. Micro environment or branch environment is created by producers and also customers. Micro environment is more controllable for organisations than macro environment and they can partly influence it.

(Sedláčková, Buchta 2006)

This thesis is devoted to analysis of macro environment of Insurance brokers. According POŠVÁŘ and ERBES (2002), macro environment is formed by factors of international, national and regional environment.

#### 5.1.1 Division of macro environment

##### 1. International environment

Today's market becomes more global than in the last centuries thanks to globalization. There is a significant growth of international business. It is



not caused only by organizations – EU, OPEC etc., but also due to global conventions and international agreements.

## 2. National environment

National environment in the Czech Republic was significantly changed by two affairs. In 1990, the Fall of Communism enabled to open our domestic market and we began to trade with Western countries.

The second event happened in 2004 when the Czech Republic joined the European Union.

## 3. Regional environment

Regional environment arises within one country. It is important especially for small and medium size companies which operate in its surroundings.

Macro environment represents uncontrollable factors which influence companies in each segment. The companies cannot control these factors but they should be aware of certain opportunities and also threats which can arise from the changes in the environment. For the analysis and assessment of macro environment is used PESTEL analysis.

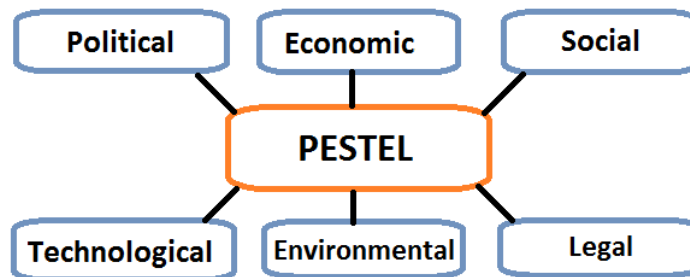
### 5.1.2 PESTEL Analysis

The key parts of macro environment are political, economic, social, technological, environmental and legal factors. PESTEL analysis is the analytical tool which identifies the most important factors which have the biggest impact on certain company. The term PESTEL is derived from the factors which are analysed. (Sedláčková, Buchta 2006)

Initially, there were analysed only four factors (PEST). In the original PEST analysis, legal factors were described in political part. Afterwards, legal and political factors were divided and added also environmental factors. This expansion meant the origin of PESTEL. Nowadays, there exist also STEEPLED analysis with addition of education and demographic part. (Dvořáček. 2012)

Each factor influences company in a different way. The objective of PESTEL is not to write a list of all factors but point out the most important and influential ones. PESTEL analysis has to be based on independent facts in order to be useful for company. This means the usage of statistical data, reports of Central Bank, international organizations and government. (Sedláčková, Buchta 2006)

The first step of PESTEL is to set the areas of analysis and the depth in which you want to go through. The second step is the analysis and pointing out the key factors which were analysed and we registered that they are important and they have big influence. (Magretta, 2012)



**Figure 3: PESTEL analysis**

Source: elaborated by the author based on (Košťan, Bělohávek, 2006)

According Košťan a Bělohávek (2006), there will be described the key parts of PESTEL analysis.

### **Political factors:**

The conditions of political environment are formed by government of each country. Although the political situation seems to be rather stable, some changes may instantly happen and they should have serious consequences for company. The change of conditions can be caused by variation of priorities of government. The most important changes can arise in:

- Taxation,
- Trade restrictions,
- Tariffs,
- Political stability and orientation,
- Employment and Unemployment policy,
- Bureaucracy.

### **Economic factors:**

The changes of economic factors should be continuously observed and assessed in order to be aware of current trends and conditions. It is necessary to use economic indicators such as Gross Domestic Product. The most important economic factors are:

- Inflation,
- Interest rates,
- Current state of business cycle,
- GDP,
- Wage patterns,

- Buying power of customers (Cost of living).
- Unemployment

**Social factors:**

Social factors play really important role on the market. We can divide them into demographic and cultural. We should take into consideration also health, life expectancy and welfare. The most examined factors are:

- Age,
- Population growth,
- Level of Education,
- Gender structure,
- Religion,
- Cultural thoughts and Beliefs.

**Technological factors:**

Nowadays, the development of technology is highly important. Each company should take care of technological equipment in company to increase labour productivity and decrease costs. The companies should invest tremendous amount of resources to research and development to get competitive advantage on the market. If not, there is a threat of new entrants to market and potential loss.

**Environmental factors:**

Environmental issues were underestimated in past. Nowadays, there exist a lot of regulations in order to improve environment in which we live. The ecological and environmental issues have big influence also on economic and social level. The most important factors are:

- Acquisition and Disposal of material,
- Weather,
- Energy cost and saving,
- Recyclation,
- Pollution,
- Sustainability.

**Legal factors:**

In recent years, there is a significant increase of regulations and legislation procedures which companies have to follow. In this part of analysis, we have to take into account all legislation and national laws which influence our industry and have an impact on certain segment.

## 5.2 PESTEL Analysis

### 5.2.1 Political Factors

Each natural or legal entity is obliged to follow state regulations and legislation. The insurance sector, in which each insurance broker operates, is not an exception. The aim of state is a control and protection of insured entities, providing of solid insurance products to customers and consumer protection. This role was provided by Ministry of Finance. In 2005, there was a draft of CNB and Ministry of Finance about unification of surveillance on financial markets. This draft was approved and since 2006, state surveillance role has been entrusted to Czech National Bank according to Act No. 57/2006 Coll. The reasons for this change were lowering of costs and higher effectiveness.

On 6<sup>th</sup> September 2016, in the Czech Republic, there were signed the amendment to Act No. 38/2004 Coll. The amendment to Act No. 38/2004 Coll. deals with insurance intermediaries to which belongs also insurance brokers. This amendment came into force on 1<sup>st</sup> December 2016 and adjusts the relations among insurance company and insurance intermediary. The changes concern only Life insurance (pension insurance, term life insurance etc.). There are no new rules for Nonlife insurance. The main changes of this new regulation are:

- Distribution of broker's commission into 5 years with an option of deposit which is equally refundable - the maximum amount of commission is not stated,
- Decomposition of initial costs to 5 years in order to provide clients non-zero amount of money in case of early termination of contract.

For the insurance broker, it means that if the life insurance contract, which was closed by him, will terminate earlier than after fifth year of duration of such contract from other reason than insurance event, such insurance broker has the right only for proportional part of reward (commission) for the first 5 years of duration of contract. In case of taken deposit, he has to pay back proportional part of reward for each not commenced month. If the duration is shorter than 5 years, proportional reward is stated as the actual duration of insurance to agreed insurance period.

- Insurance broker is obliged to submit each year to 31<sup>st</sup> March Annual Statement on Activities which includes the amount of closed contracts and the amount of premium.(opojisteni.cz, 2017)

Insurance broker has to be aware of fact that if CNB will find out some violation of rules, such broker can be punished by fine in amount of 5 000 000 CZK and a loss of license.

The second important event was the adoption of amendment to Act No. 277/2009 Coll., Insurance Act which brings the European Directive Solvency 2 into

Czech legal system. This Act has been in power since January 2017. Solvency 2 brings a lot of new features. These are the emphasis on:

- Risk management – new rules and methodology for determination of the level of risk,
- Significant expansion of published information – obligation to detection if the client is involved in political sphere,
- Protection against the legalization of performances from crime and terrorist financing.

### **Taxation:**

The income of insurance brokers consists of commissions and revenues for consulting. Insurance brokers often work as self-employed individuals. In the Czech Republic, there is more beneficial to use lump sum expenses. Such broker does not need to have detailed evidence with expenses. The lump sum expenses are calculated as a percentage of individual income according to type of business activity<sup>4</sup>:

- 80% of income from agricultural production
- 60% of income from a trade
- 40% of income from another business activity (doctor, consultant)
- 30% of the revenue from the lease of the property

It is highly important to properly differentiate the category of business activity, which we do, in order to avoid fines. If self-employed person works on basis of license from CNB, his lump sum category is 40%. On the other hand, if he works as insurance consultant who works on basis of Professional Certificate, his lump sum category is 60%.

### **5.2.2 Economic Factors**

Economic development and current situation of the Czech Republic is crucial for the insurance brokers sector and for the whole insurance market. This development is measured by macroeconomic indicators. The most important indicators for this market are GDP, inflation, unemployment and wages.

### **Gross Domestic Product:**

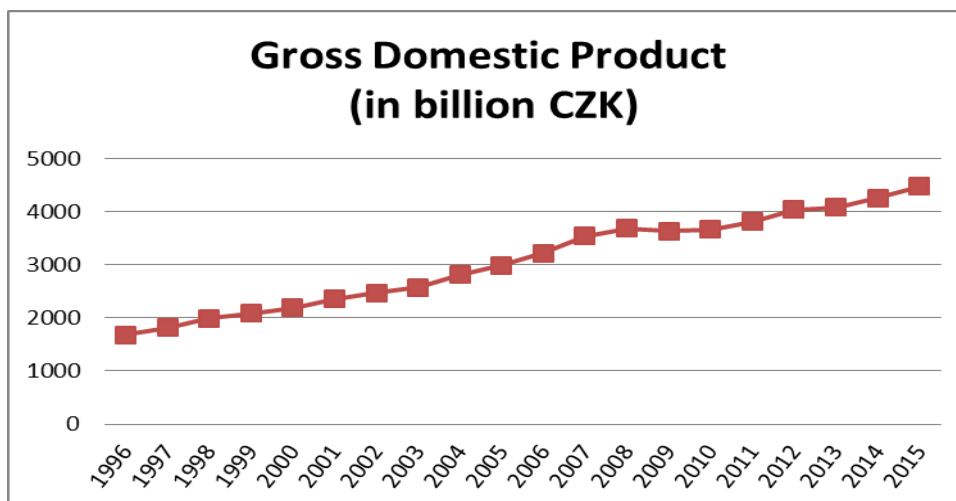
Gross Domestic Product provides us information about current situation and development of country's economy. According to development of this indicator, it can be predicted changes in behaviour of economic subjects. The higher economic growth means higher expected profits.

The graph on the following page shows that the trend of GDP in the Czech Republic is increasing. The increasing development is disrupted only in 2009 due to financial crisis. According to preliminary estimates of Czech Statistical

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<sup>4</sup> <http://www.jakpodnikat.cz/pausalni-vydaje-procentem.php>

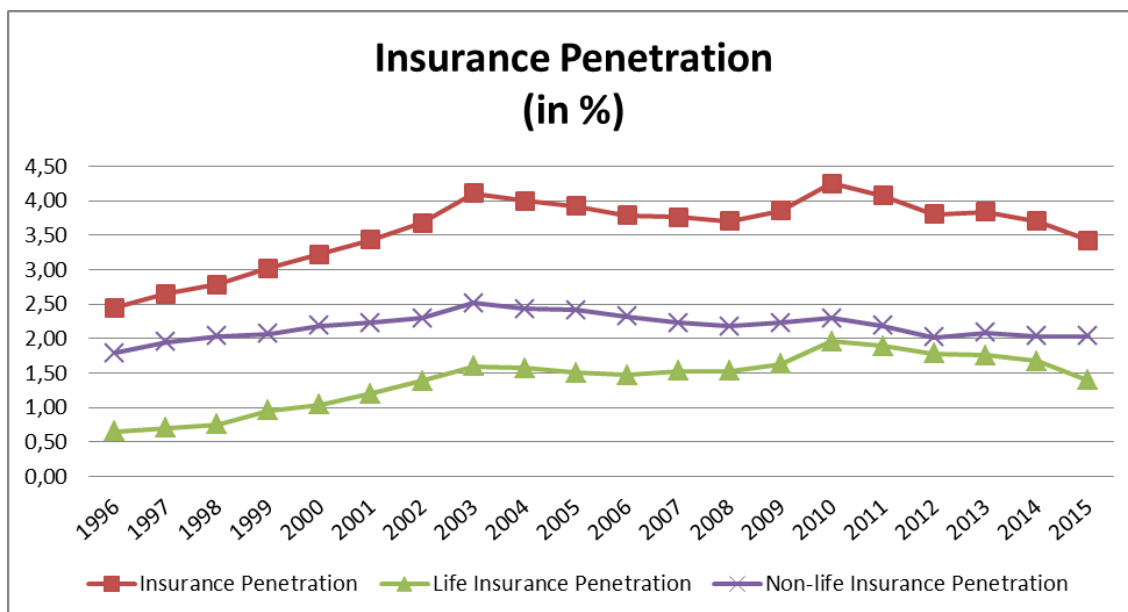
Office<sup>5</sup>, the gross domestic product was in 2016 by 2.3% higher than in previous year. The economic performance of the Czech Republic is still growing.



**Figure 4: Development of GDP in CR**

Source: CNB.cz

The Insurance Penetration, which is another indicator of development of each insurance market, is influenced by GDP. This indicator expresses the utilization rate of insurance in the country. The Insurance Penetration can be calculated as gross premiums written divided by GDP.



**Figure 5: Insurance Penetration in CR**

Source: CAP.cz, CNB.cz

<sup>5</sup> <https://www.czso.cz/csu/czso/cri/predbezny-odhad-hdp-4-ctvrtleti-2016>

Because of the fact that gross premiums written in 2015 decreased by 3% and GDP in CR increased by 5%, the overall insurance penetration decreased from 3.71% to 3.43 %. Life insurance penetration is equal to 1.39% and non-life insurance is equal to 2.03 %. The insurance penetration indicator is lower than in Western Europe and there is still the possibility of growth of insurance industry.

**Inflation:**

Inflation means general increase in the price level over time. It reduces a purchasing power of a given currency against the goods and services which the consumer buys. The following table shows an average inflation rate, year-on-year changes (%):

Tab. 3 Inflation Rate

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>Inflation rate</b>	6.3	1.0	1.5	1.9	3.3	1.4	0.4	0.3	0.7

Source: czso.cz

In 2008, there was really high inflation which continued by fast drop to 1%. In the last three years, year-on-year rate of inflation is well below inflation target of CNB which is 2%. It was caused by lower prices of industrial products and transport in connection with decrease of oil and fuel prices.

The inflation is an important indicator for insurance brokers as well as for their potential customers. It is important to count with inflation in order to offer proper products, especially in life insurance which can serve as long term investment possibility with certain level of yield.

**Unemployment:**

The following graph shows the development of unemployment in the Czech Republic in the years 2004-2016.

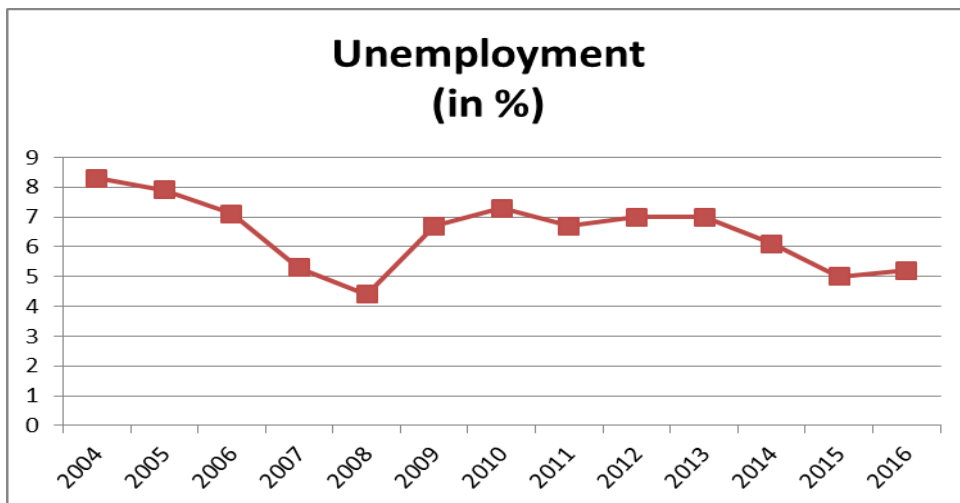
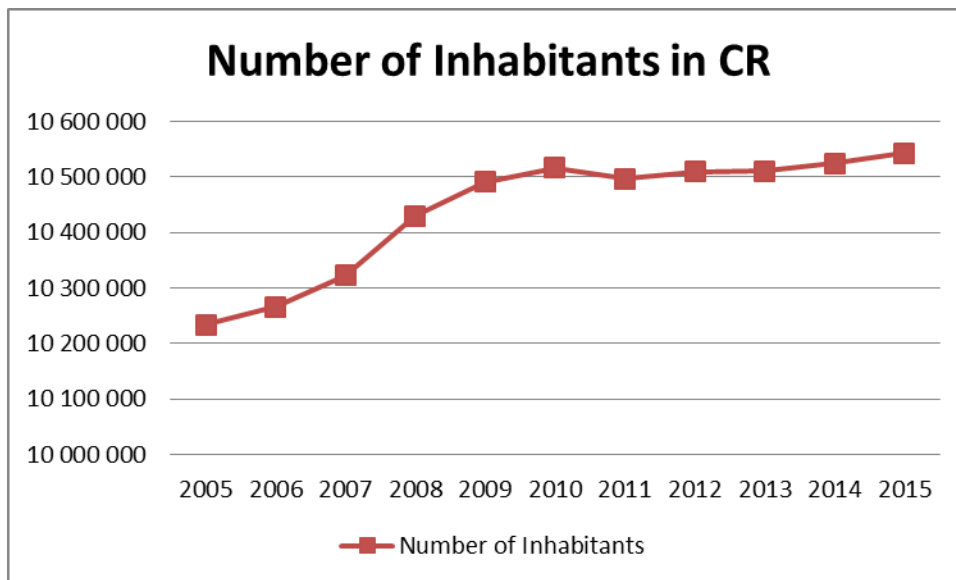


Figure 6: Unemployment in CR, Source: czso.cz

Unemployment in the Czech Republic is long term one of the lowest in the EU. Future predictions tell that the unemployment should be low and possibly decrease also in year 2017. With low unemployment came an increase in average wages. This enables people to more invest and buy property and this situation influences domestic insurance market in a positive way.

### 5.2.3 Social Factors

One of the most important factors, which influence the environment of insurance brokers, is the population growth. In the following graph, there is the development of number of inhabitants in the Czech Republic during 10 years.



**Figure 7: Number of Inhabitants in CR**

Source: czso.cz

The population of the Czech Republic is continuously increasing. In 2015, the population increased by 18 159 people to 10 542 942 of inhabitants. In the following table, there is the total increase of inhabitants in CR:

Tab. 4 Total Increase of Inhabitants in CR

Year	2010	2011	2012	2013	2014	2015
<b>Total Increase</b>	25 957	18 714	10 680	-3 706	25 856	15 568

Source: czso.cz

The total increase in CR is positive besides the year 2013. An important component which significantly contributes to this result is immigration. The number of net migration in 2015 was 15 977 in comparison to total live births which was 110 764. The number of Deaths was 111 173. If we subtract these two numbers, the result will show us the natural increase which is - 409. This number

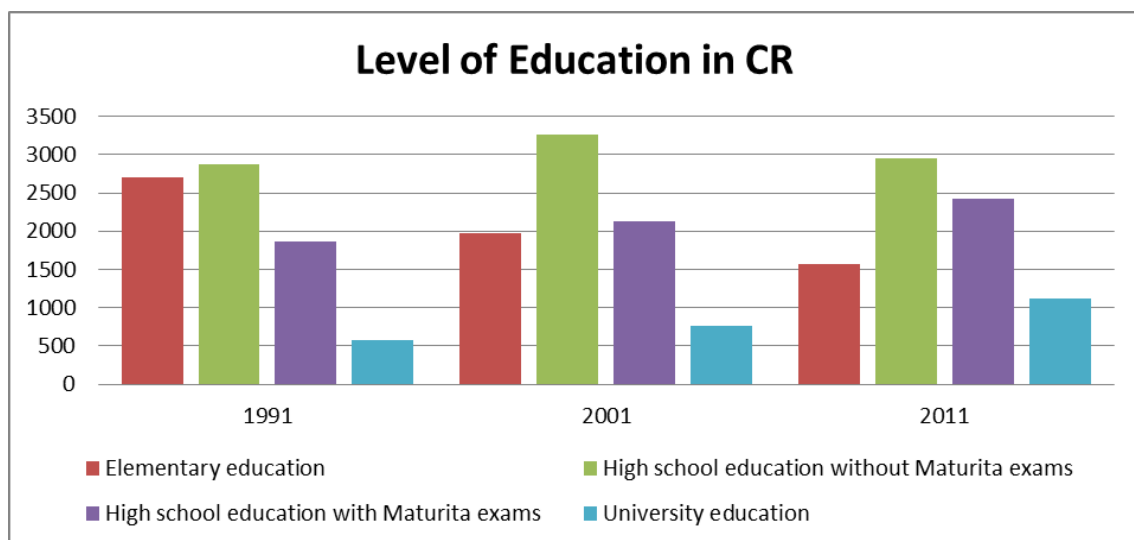


improves just the net migration which signifies the positive development of inhabitants in the Czech Republic.

This situation is currently favourable for the insurance brokers. The more people in CR is, the more potential customers. According to independent magazine about investment and financial planning<sup>6</sup>, the long term development is not so positive. In following years, the insurance market should stay on a good level. But, the problem should arise because the today's people use life insurance as an investing instrument for pension. It is related to unstable situation with the amount retirement and population ageing. Nowadays, the average age in CR is 41.9 years. The inhabitants in productive age form only 66.3 %. It is expected that among years 2020 and 2030, the so called baby boom generation will go to retirement and it will lead to significant decrease in investment and transformation to withdrawal of these instruments for consumption. This situation can significantly influence the overall insurance market in the future.

### Level of Education:

The next important factor, which influences this environment, is the level of education in the Czech Republic. The following graph depicts the development of highest level of education reached by population over 15 years. The values are in thousands of people.



**Figure 8: Level of Education in CR**

Source: czso.cz

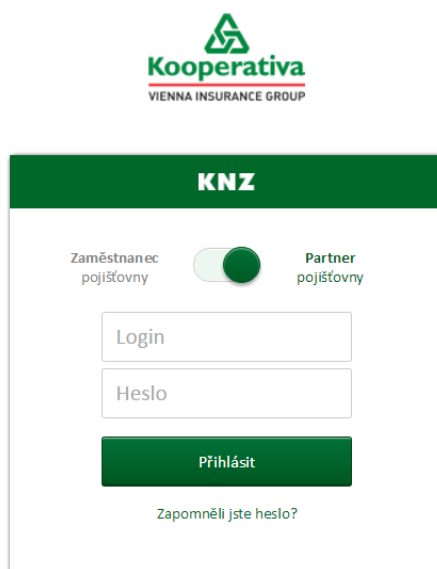
According to the graph, the development of education in CR is positive. The number of people with elementary education is continuously decreasing. This is really favourable trend, because with increasing literacy is connected the positive development of domestic economy and also insurance market. The portion of

<sup>6</sup> <http://www.fondshop.cz/>

people with high school education without Maturita exams is long term the highest although it is now decreasing. Today's trend is the highest education as possible and previous graph certainly confirms it. The number of people with Maturita exams and university degree is still increasing.

#### 5.2.4 Technological Factors

New technologies play very important role in insurance broker's work. The biggest influence has the development of IT technique. As the work of insurance broker is a service, there can be expected the changes especially in computers and internet technology. The biggest impact had these modern technologies on cooperation among insurance companies and brokers. Most of insurance companies developed their own insurance calculators which can use also insurance brokers that have a closed contract with them. As it was already stated, one of the biggest insurance companies in the Czech Republic is Kooperativa pojišťovna a.s. This company also owns this calculator which is called KNZ.



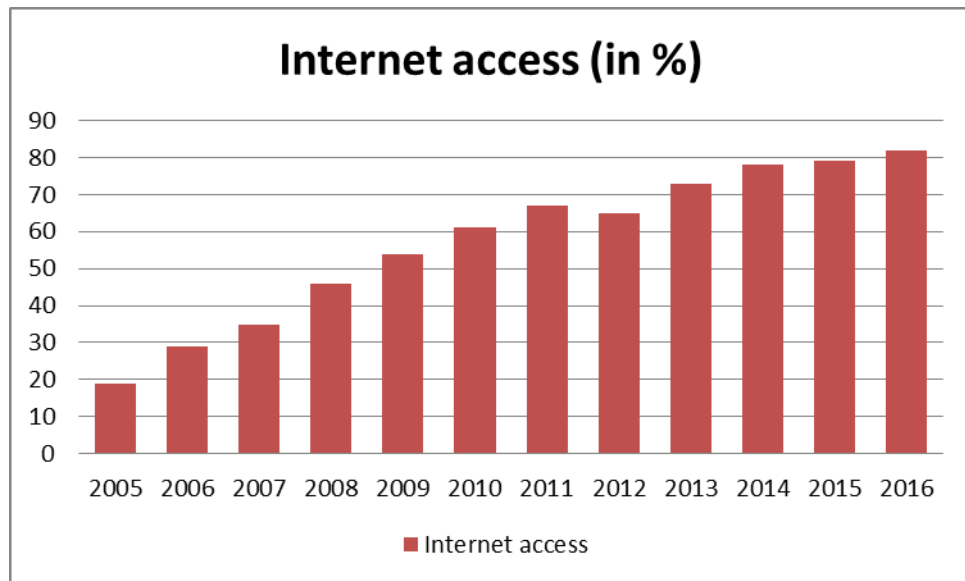
**Figure 9: KNZ calculator**

Source: [https://knz.koop.cz/KnzWEB/faces/page/public/auth/login\\_knz.xhtml](https://knz.koop.cz/KnzWEB/faces/page/public/auth/login_knz.xhtml)

Programs such as KNZ significantly simplify the work of insurance brokers. If a broker wants to insure e.g. car, he can easily fill in the technical details of such car into more of these calculators and get an offer from various types of insurance companies. After the selection of the best offer, he can close a contract of insurance via this calculator. The importance of technology is thus really necessary.

The development of modern technologies has not only a positive impact on work of insurance brokers. In the last few years, there is a significant increase in

the amount and usage of online comparators of insurance. This situation is connected with the rapid increase of share of households with internet access in the Czech Republic. The following graph depicts the development of share of households.



**Figure 10: Share of households with internet access**

Source: statista.com

These companies offer their service via internet and promise you that in a few minutes, you can choose the best insurance offer from big variety of insurance companies. The examples of such companies in the Czech Republic are ePojisteni.cz and klikpojisteni.cz. Insurance brokers have to be aware of this situation, they have to cooperate with as many insurance companies as possible and use the most modern technology in order to provide the best conditions for a potential client as possible.

### 5.2.5 Environmental Factors

Insurance broker is dedicated to provide a service. They cannot significantly influence or be influenced by natural environment. In fact, there is only one field which can influence insurance brokers. This is CSR – Corporate Social Responsibility. The state does not directly influence CSR in the Czech Republic, but it is favourable for each company to follow CSR rules in order to get higher credit between people and organizations. The environmental area of CSR for insurance brokers can deal with recycling, energy savings and support of renewable sources or usage of cars with lower emissions. All these things can lead to Appreciation for CSR, increase of prestige and getting of advantage thanks to good advertisement.

### 5.2.6 Legal Factors

Legislation of the Czech Republic effects insurance brokers market in many ways. There are a lot of acts and regulations which deal with the general conditions of insurance market as well as conditions for insurance brokers. These acts are often amended and it is highly important for each broker to check these changes and comply them. The changes concern mainly new risks and their coverage, bigger transparency and proper creation of technical reserves.

Activities of insurance brokers are regulated mainly by these legal rules:

- Act. No. 277/2009 Coll., Insurance Act – This act is divided into seven parts and deals with the most important topics in insurance industry. These are rules for insurance activities and their changes, surveillance in insurance, secrecy, common provisions etc.
- Act. No. 38/2004 Coll., on Insurance Intermediaries and on Independent Loss Adjusters – This is the most important act for Insurance brokers. The last amendment was done on 1<sup>st</sup> December 2016. It is divided into three parts. The first main part deals with definition of insurance intermediaries, their activities, conditions and duties. The second part deals with Change of Trade Act and the third part concerns efficiency.
- Decree No. 582/2004 Coll., on Implementing Certain Provisions of the Act on Insurance Intermediaries and on Independent Loss Adjusters – This decree of Ministry of Finance regulates mainly registration and conditions for passing the professional exams in order to work as an insurance intermediary.
- Act. No. 253/2008 Coll., on Measures against the legalization of performances from crime and terrorist financing,
- Act. No. 37/2004 Coll., on Insurance Contracts,
- Act. No. 137/2006 Coll., Public Procurement Act,
- Act. No. 168/1999 Coll., Motor Third Liability Insurance Act,
- Commercial, Civil and Labour Code. (cnb.cz, zakonyprolidi.cz, 2017)

The European Union plays very important role in the amendments of these acts. EU significantly influences the rules and conditions for the member countries and their directives have to be implemented into our law. Very good example can be the amendment of Act. No. 253/2008 Coll., where the EU obliges to member countries to create central registers about real owners of business entities and any legal person. (Mesršmíd, 2015)

### 5.3 Synthesis of the Individual Factors and their Influence

In this part, it will be summarized the most important factors from PESTEL analysis which influence the insurance brokers. There will be also determined the rate of influence. Individual factors will be evaluated by scale from 1 to 5. Number 1 means low influence, number 5 means high influence. The chosen value is highlighted by red colour.

Tab. 5 Rate of Influence of Factors from PESTEL

Factors		Rate of Influence				
Political	Legislation of CR - Insurance Market	1	2	3	4	5
	Legislation of EU	1	2	3	4	5
Economic	GDP	1	2	3	4	5
	Inflation	1	2	3	4	5
	Unemployment	1	2	3	4	5
	Average Wage	1	2	3	4	5
Social	Number of Inhabitants(Age)	1	2	3	4	5
	Level of Education	1	2	3	4	5
Technological	Computer Technology	1	2	3	4	5
Environmental	Protection of Nature	1	2	3	4	5
Legal	General Legislation of CR	1	2	3	4	5

Source: own elaboration

From the table, it can be stated that the most important factor for insurance brokers is the legislation of CR which regulates the work of insurance brokers. The next important factors are legislation of EU, GDP, number of inhabitants and their age and computer technology. The factors, which are in the middle, are inflation, unemployment, average wage and general legislation of CR. The factor, which does not have strong influence, is level of education. The least important factor is the environmental factor, which do not influence insurance brokers almost at all.

### 5.4 Characteristics of Regression Analysis

In this thesis, there will be used the Regression analysis to describe the relationship among Average Gross Nominal Wage and the Gross Premiums Written. For the proper execution of this analysis, there will be firstly

characterized the theoretical background of regression analysis, its conditions and regularities.

#### 5.4.1 Econometrics

Econometrics is the combination of three disciplines – Economy, Mathematics and Statistics. Its main purpose is the quantification and verification of economic reality and creation of predictions. The origin of econometrics is in 1930. (Adamec, 2013)

#### 5.4.2 Regression Analysis

Regression analysis is statistical method used for description of relationship between one dependent variable and one or more independent variables.

$$Y_i = f(x_{i1}, x_{i2}, \dots, x_{ik}; \beta_0, \beta_1, \dots, \beta_k) + \varepsilon_i \quad (1)$$

Y is called as dependent variable (explained by model). X is called as independent variable (explanatory variable). In the model, there is also Error term which represents wide array of factors which influence variable Y but they are not explained by variable X. If there is performed the regression analysis, it has to be followed three steps: Specification of econometric model, Quantification of econometric model and Verification of econometric model. (Hančlová, 2012)

#### Specification of econometric model

The aim of proper specification is to determine the most appropriate function form. The economic theory has to be in accordance empirical data. The specification contains of the following steps:

- Determination of all variables
- Determination of anticipated signs of coefficients  $\beta$
- Selection of proper function form

The common function forms are: linear, polynomial, reciprocal, semi-logarithmic and double logarithmic. (Adamec, 2013)

#### Quantification of econometric model

In this part, there are estimated the numerical values of coefficients. One of the best methods for this operation is OLS method (Ordinary Least Squares). It is applicable

in any linear model which is linear in coefficients. The advantages of usage are:

- Very simple to use
- Gives unique solution for  $\beta$

- Coefficients  $\beta$  have useful properties under fulfilment of classical assumptions – unbiasedness, maximum efficiency, consistency, normality (Adamec, 2013)

### Verification of econometric model

Verification is divided into three basic parts – economic, statistical and econometric verification.

- 1) Economic verification consists of verification of coefficients values and signs. The results have to follow economic theory.
- 2) Statistical verification is evaluated according to p-value which helps to determine the significance of the results. For the statistical verification are used – t-test, F-test,  $R^2$  – coefficient of determination and information criteria. For T-test and F-test, there will be used The Golden Rule for Use of P-value. If the p-value is lower than 0.05, it can be rejected  $H_0$  (null hypothesis, not significant) and thus confirmed  $H_1$  (statistical significance).
  - T-test will verify the significance of single  $\beta$ .
  - F-test verifies several coefficients at one time and significance of our model. For this purpose, it is used the ANOVA table which includes test statistics.
  - Coefficient of determination shows the quality of model specification. The quality of changes, we made is compared according to increase or decrease of adjusted coefficient of determination.
  - Information Criteria for comparison of alternative specifications. There are three criteria – AIC, BIC, HQC. The author of econometric model is always looking for the lowest information criteria.
- 3) Econometric verification verifies fulfilment of conditions which have to be fulfilled in order to perform successful application of econometric methods and tests. The tests for the model are evaluated according to p-value. If we have p-value  $> 0.05$ , then we successfully fulfilled the test.
  - RESET and LM test – they are used for verification of correct specification.
  - Ljung – Box test – this test is used for detection of serial correlation in our model.
  - White's test and Breusch-Pagan test – they are used for verification of homoscedasticity. If we have heteroskedasticity, then errors do not have constant variance.
  - Normality test – If this test is fulfilled, error term is normally distributed. (Adamec, 2013)

Classical linear regression model has to fulfil 7 Classical requirements:

- 1) Regression model is linear in parameters, it is correctly specified and it has additive error term.
- 2) Mean of the error term is 0. – This requirement is usually fulfilled and there should not have to deal with it.
- 3) Regressor variables are uncorrelated with the error term.
- 4) Error terms are uncorrelated with each other. – Correlated error terms are problem only in time series models.
- 5) Error term has constant variance. We have no heteroskedasticity.
- 6) A Regressor variable is not a perfect linear combination of other regressors.  
– Collinearity can arise only in the situation when there are more than one explanatory variable.
- 7) Error term has normal distribution.(Hušek, 2007)

If all seven classical assumptions are fulfilled, it can be stated that the OLS estimation of parameters is BUE (= Best Unbiased Estimator). This means that the OLS estimations of parameters are unbiased, consistent, they have minimum variance, normal distribution and the model is correct and useful. (Adamec, 2013)



## 5.5 Regression Analysis

In this part, there will be performed the regression analysis. With usage of Gretl, it will be tested the relationship among Gross Premiums Written and Average Gross Nominal Wage (Average Wage) in the Czech Republic. The secondary data for this analysis are in form of Time Series from years 1996 to 2015 and it is obtained from databases and annual reports of Czech National Bank and Czech Statistical Office. These data are attached in Appendix.

### 5.5.1 The Development of Gross Premiums Written in CR

In the following figure, there is shown the development of Gross Premiums Written in the CR from year 1996 to 2015. From the year 1996 to 2010, there is increasing trend. Since 2010, the trend is more constant.

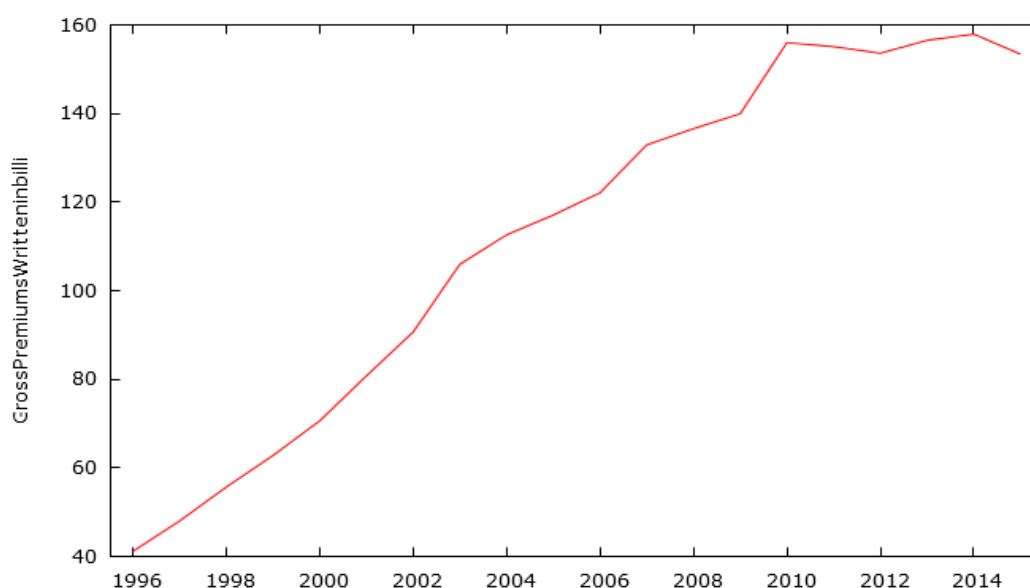


Figure 11: The Development of Gross Premiums Written in CR (Gretl)

### 5.5.2 Specification of Econometric Model

In this model, the Gross Premiums Written will be dependent variable (explained by model). The Average Gross Nominal Wage will represent independent variable (explanatory variable).

Tab. 6 Variables in Econometric Model

Variables	Denomination	Description	Unit
Dependent	Y	Gross Premiums Written	in billions of CZK
Independent	X	Average Gross Nom. Wage	in CZK

Source: Gretl, own elaboration

The Gross Premiums Written has been already explained in **4.1 Premiums Written**. The explanatory variable Average Gross Nominal Wage is one of the macroeconomic indicators which are necessary to use in the analysis of macro environment. It represents e.g. basic wages and salaries, bonuses, supplements, rewards, which are paid to employees in certain period of time. The Average Gross Nominal Wages are before the reduction of health and social insurance, taxes from revenues etc. (Landa, Polák, 2008)

The expected sign of coefficient  $\beta$  is positive. It is assumed that with increasing wage, people will spend more money for life insurance and as well as they will need more and better insurance for their property.

In the following table, there are compared the functions forms in order to choose the most suitable form for our model.

Tab. 7 Comparison of Function Forms

	Linear	Quadratic	Inverse	Lin-log	Log-lin	Log-log
R <sup>2</sup>	0.974690	0.990113	0.966273	0.988262	0.919780	0.971558
AIC	134.2601	117.4604	140.0023	118.8921	-24.13323	-44.87149
SIC	136.2516	120.4476	141.9937	120.8836	-22.14177	-42.88002
HQC	134.6489	118.0435	140.3910	119.2809	-23.74448	-44.48273

Source: Gretl, own elaboration

In the table, there were compared R<sup>2</sup> (coefficient of determination) and three Information Criteria. In Log-lin and Log-log form, the information Criteria is negative thanks to the logarithm of dependent variable. Nevertheless, it is obvious that Quadratic form has the highest R<sup>2</sup> and lowest Information Criteria.

It can be stated that the most suitable model is quadratic. The expected sign of  $\beta_1$  is still positive, but it is expected that parabolic model will growth into maximum of this function and then, it will decrease. Thus, the expected sign of  $\beta_2$  is negative.

### 5.5.3 Quantification of Econometric Model

For the estimation of coefficients values, there will be used the Ordinary Least Squares method. In the following table, there is the OLS estimation from Gretl.

Tab. 8 OLS Estimation of Parameters

	<b>Coefficient</b>	<b>P-value</b>
<b>const</b>	-90.1445	<0.0001
<b>AverageWage</b>	0.0151958	<0.0001
<b>sq_AverageWage</b>	-2.18192*10 <sup>-7</sup>	<0.0001

Source: Gretl, own elaboration

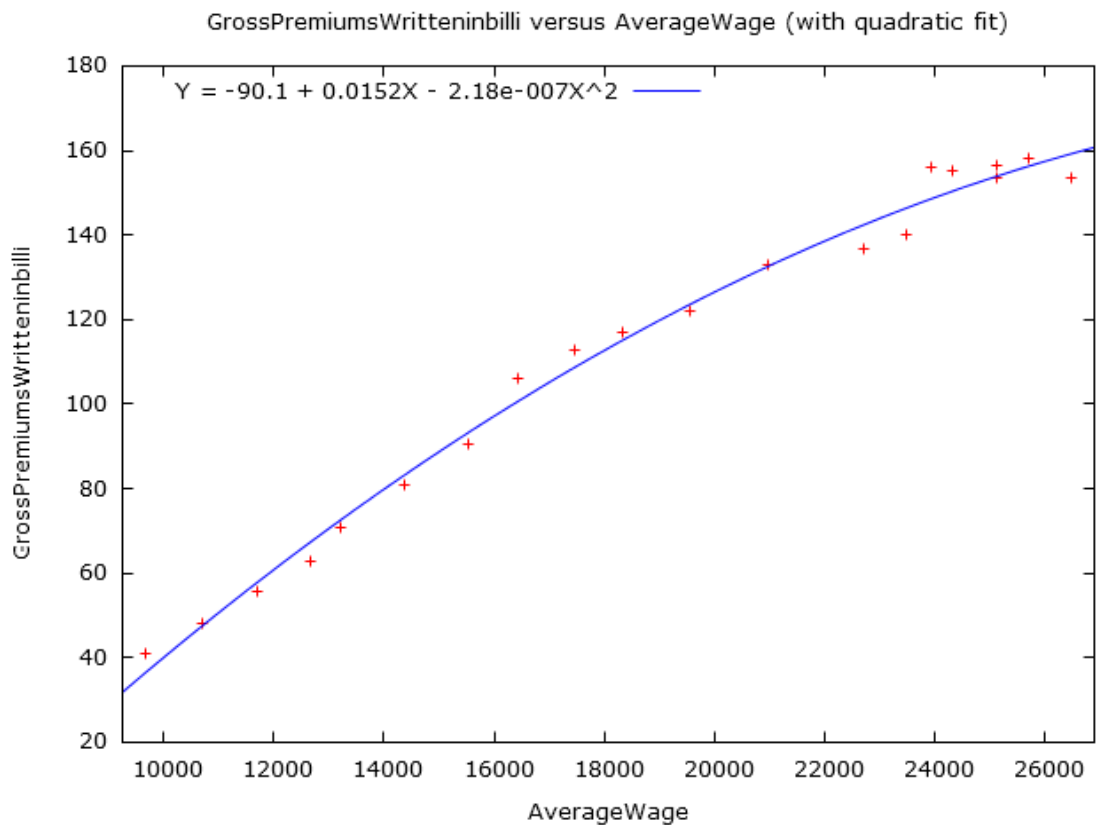


Figure 12: The Graph of Quadratic Form (Gretl)

In the Figure above, there is depicted the graph of quadratic form. The equation of our model is:

$$Y = -90.1 + 0.0152x - 2.18 \cdot 10^{-7} x^2 \quad (2)$$

### 5.5.4 Verification of Econometric Model

**1) Economic verification:** The sign of  $\beta_1$  in the equation is positive and the sign of  $\beta_2$  is negative, as it was expected.

**2) Statistical verification:**

- T-test – for the t-test, we will use the Golden Rule for use of P-value. Table 8 confirms that all p-values are  $<0.0001$ . It means that all p-values in this model are lower than 0.05, thus, there can be rejected  $H_0$ . The regression coefficients are statistically significant.
- F-test

Tab. 9 ANOVA Table

Analysis of Variance	Sum of Squares	df	Mean Square	Fstat	Fquantile	P-value
Regression	30868.4	2	15434.2	851.229	0.990113	$9.08 \cdot 10^{-18}$
Residual	308.239	17	18.1317	-	-	-
Total	31176.7	19	1640.88	-	-	-

Source: Gretl, own elaboration

For the F-test, there will be used the Golden Rule of P-value. The ANOVA table, which is depicted in table 9 determine, that the p-value is equal to  $9.08 \cdot 10^{-18}$ . Thus, there can be rejected  $H_0$ . It was verified that the model is statistically significant.

- Coefficient of determination and Information Criteria – these values have already been used in specification of econometric model in order to choose the best function form. The best option was the quadratic form with  $R^2 = 0.990113$ , it means that this model explained 99% and we have good quality.

**3) Econometric verification:**

- Classical Assumption 1 – There will be tested the correct specification of our model by RESET test and LM test. The hypothesis are:

$$H_0: \text{correct specification}$$

$$H_1: \text{incorrect specification}$$

Tab. 10 Tests of Classical Assumption 1

Test	P-value
RESET test	0.304
LM test (squares)	0.447742
LM test (logs)	0.137214

Source: Gretl, own elaboration

All p-values are higher than 0.05, thus,  $H_0$  about correct specification of our model is not rejected

- Classical Assumption 2 – This condition is automatically fulfilled due to usage of OLS.
- Classical Assumption 3 – According to correlation matrix, this model does not have problem with correlation of errors and regressors.
- Classical Assumption 4 – There will be tested the serial correlation with usage of Ljung - Box test. there will be used p-value and the hypotheses are as follows:

$H_0$ : no serial correlation

$H_1$ : serial correlation

P-value in Ljung – Box test is equal to 0.374 which is higher than 0.05. Thus,  $H_0$  is not rejected.

For the verification of autocorrelation, there is used also Residual Correlogram. The following figure depicts that none of the values crossed the blue lines, so it confirmed that the not rejection of  $H_0$ .

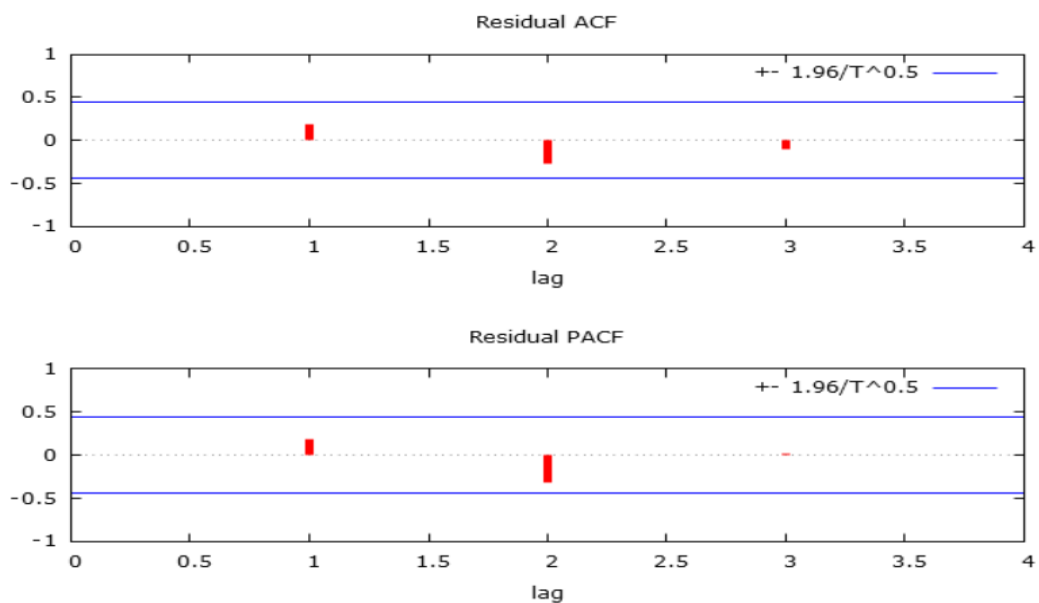


Figure 13: Residual Correlogram (Gretl)

- Classical Assumption 5 – There will be tested the heteroskedasticity of this model. The hypothesis are:

$H_0$ : Homoscedasticity

$H_1$ : Heteroskedasticity

Tab. 11 Tests of Heteroskedasticity

Tests	P-value
White's test	0.708267
Breusch – Pagan test	0.595956

Source: Gretl, own elaboration

The p-values of both tests are higher than 0.05.  $H_0$  is not rejected and there was fulfilled also the fifth classical assumption. This result can be confirmed by the following graph of residuals.

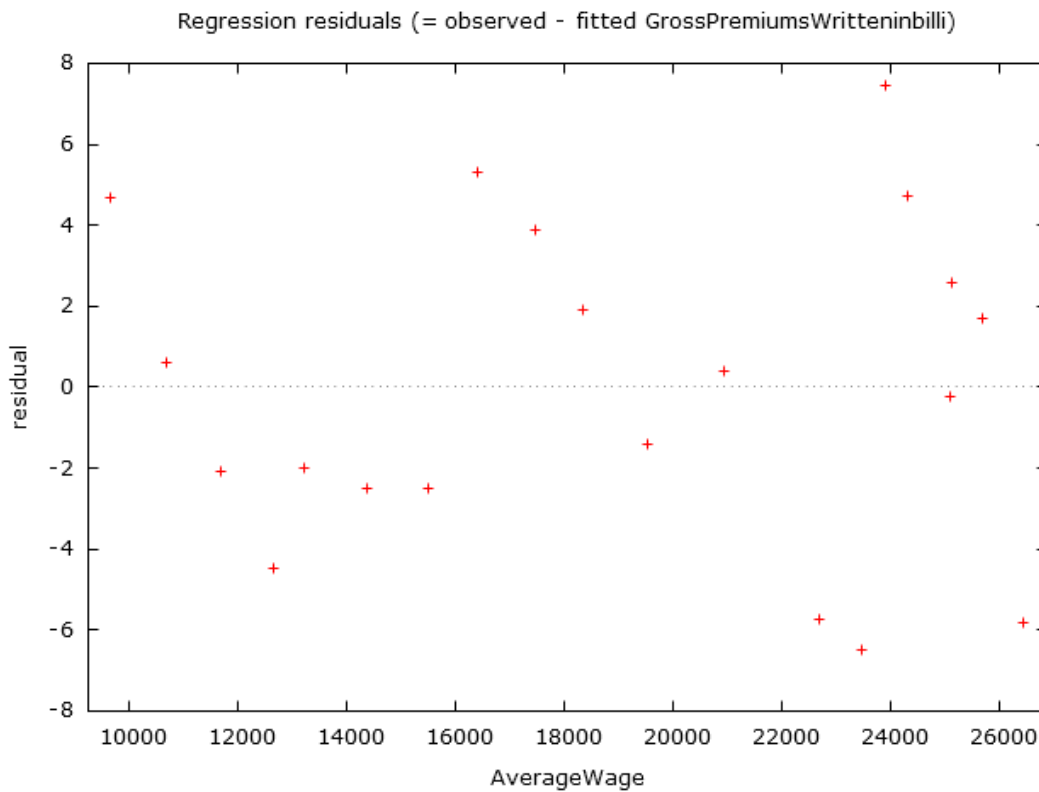


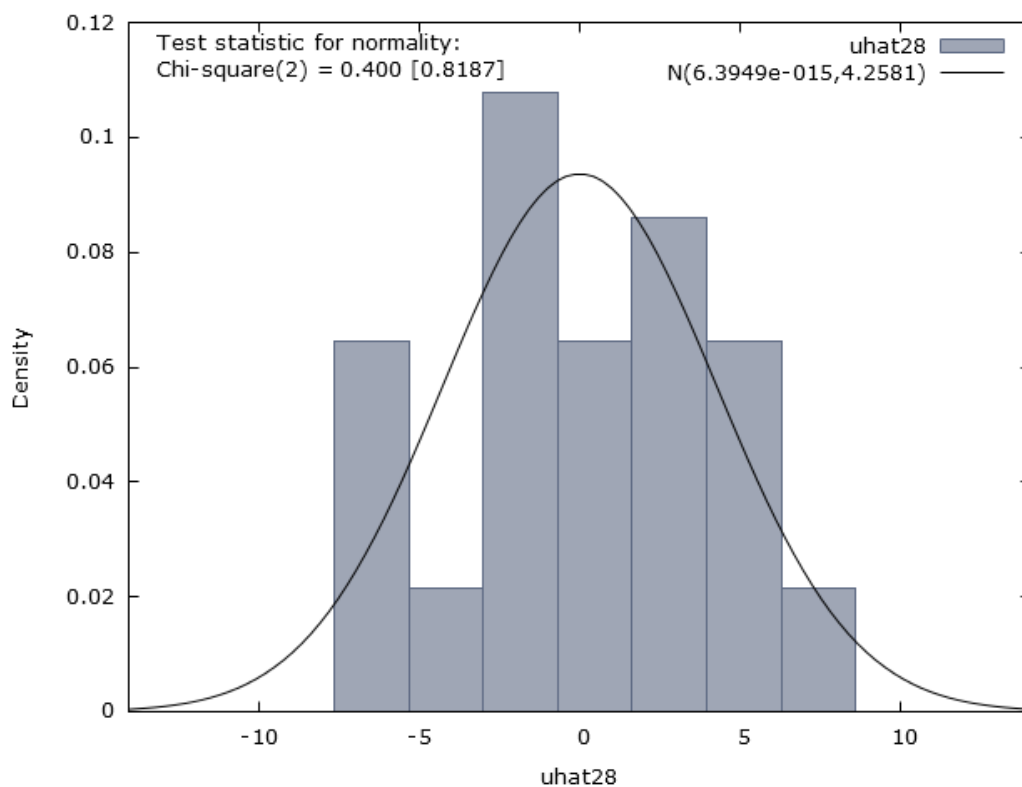
Figure 14: Graph of Residuals (Gretl)

The figure on the previous page showed that there is no curvature in the graph of regression of residuals. This confirms the test and the not rejection of  $H_0$ .

- Classical Assumption 6 – In this model, there is used only one explanatory variable, so this assumption cannot be broken. Thus, this assumption is automatically fulfilled.
- Classical Assumption 7 – There will be tested the normality of residuals. The hypothesis are:

$H_0$ : Error term has normal distribution

$H_1$ : Error term has not normal distribution



**Figure 15: Test of Normality (Gretl)**

The p-value of this test was equal to 0.81866. It is higher than 0.05, so  $H_0$  is not rejected. The normality of residuals confirms also the figure above. It can be stated, that the last classical assumption was also fulfilled.

## 5.6 Evaluation of Econometric Model

There was performed the economic, statistical and econometric verification of this model. It was ascertained that all tests were successfully fulfilled. None of the Classical Assumptions were broken, so it can be stated that our model is BLUE. The OLS estimations of parameters are unbiased, consistent, they have minimum variance and normal distribution. It was described the relationship among Average Gross Nominal Wage and Gross Premiums Written which is used for measurement of the overall insurance market level in the Czech Republic.

## 5.7 Summary and Recommendation

The PESTEL analysis, which was performed at the beginning of practical part, stated the most influential factors, which cannot be directly influenced but each insurance broker has to be prepared for them in order to be successful within his market. The synthesis of the individual factors, which was created from PESTEL analysis, shows a good overview on factors which are the most influential ones.

The most influential factor is the legislation of the Czech Republic which directly deals with insurance brokers segment. Nowadays, it is especially the amendment to Act No. 38/2004 Coll. and the 5 years commission in Life insurance. Insurance brokers who deal with life insurance should be prepared for higher risks thanks to this amendment. There is a high chance that some of the insured person terminates his contract sooner than in fifth year. This means that such insurance broker will get only proportional reward and not the whole amount and he has to take it into consideration. In case of taken deposit from an insurance company for such contract, he has to pay back this portion of reward. In this situation, insurance brokers should make higher regular reserves according to the amount of commission, they obtain from life insurance contracts, in order to cover such risk. Before the closing of life insurance contract, they should more detailed analyse of person which demands such a contract. Thanks to this measure, insurance broker can minimize the possibility of early termination.

The next important factor is the influence of legislation of EU, which came up with Solvency 2. There is the most important a new set of rules in order to protect against the legalization of performances from crime and terrorist financing, the duty for all companies to sign up into commercial register the data about real owner of the company and new risk management.

There was also discussed the GDP, which is the next important factor. The economy of the Czech Republic is still growing. The gross domestic product was in 2016 according to preliminary results by 2.3% higher than in previous year. This is the favourable situation for the segment of insurance brokers. Due to the data of GDP, it was calculated the insurance penetration of the Czech Republic. The current development of insurance penetration is negative, because the GDP increased by 5% while the gross premiums written in the year 2015 decreased by 3%. Nevertheless, it was ascertained that according to insurance penetration



values from recent years, the non-life insurance is currently stable and more popular in the Czech Republic. Thus, the orientation to non-life insurance is much safer for the insurance brokers. Life insurance is not so popular in CR, especially due to the political and legal changes and the current trend is decreasing. The decrease of life insurance in 2015 was by 0.28 p.p. while the decrease in non-life insurance was only by 0.01p.p. In comparison to other developed countries, the insurance penetration in these countries is two times higher. The limitation for this comparison is the fact that commercial insurers in these countries are involved in pension system and health insurance. But, there is still the significant possibility of growth of overall insurance industry due to relatively low insurance penetration in the Czech Republic. This means more potential customers for insurance brokers.

The situation in life insurance is connected also with the next factor – number of inhabitants and population ageing. The number of inhabitants in the Czech Republic is slightly growing, especially due to migration. This is currently favourable for insurance brokers segment. But from the long term perspective, there is very negative factor which is population ageing. In 10 – 20 years, there will be significantly more people in pension age and this will cause the turnover of life insurance from saving to withdrawing instrument. This will cause lower demand for life insurance and insurance brokers should count with it. Thus, the orientation to non-life insurance seems to be safer and more profitable from the long term perspective.

The last factor, which significantly influences the development of insurance brokers segment, is the new computer and IT technology. With development of the online insurance calculators, it is much easier for this segment to prepare suitable insurance offers to the clients. Each insurance broker should have as many connections to insurance companies and their calculators, as possible. It can cause a big competitive advantage that you can provide the best insurance offer on the market.

Inflation and unemployment are the factors, which are nowadays quite stable and there is no big influence on the insurance brokers segment. The same situation is in case of general legislation of the Czech Republic. There are no other big changes, besides the previous ones, which have been already discussed. Another factor, which belongs to this category, is the average wage.

In this thesis, there was tested the relationship among the gross premiums written and average gross nominal wage as one of the macroeconomic factors. According to regression analysis, it was ascertained, that the average gross nominal wage influences the gross premiums written and their relationship was described by quadratic function. According to CSU, the average gross nominal wage in 2016 was 27 589 CZK. It is increase of 4.2 % y/y. The estimation of gross premiums written for the year 2016 calculated by econometric model is 163.322 billion CZK. It signifies positive development of insurance market in the last year and the possibility of growth of insurance brokers segment.

The least important factors for the segment of insurance brokers are the level of education and environmental factors. The level of education in the Czech

Republic is increasing, but it has not direct effect on our segment. One of the problems in the future can be too many people with university degree and the certain inflation of education. The same situation is in case of environmental factors. Insurance brokers segment cannot directly influence the nature and be limited by some regulations.

## 6 Discussion

Insurance broker's segment occupies very important role in the insurance market of the Czech Republic. Each market is influenced by many factors and the insurance brokers are not the exception. According to Kutina (2010), the insurance brokers segment is really important part of insurance market, which is in accordance with the opinion of author of this thesis. They serve as a certain type of mediators among insurance companies and clients.

In this thesis, there were stated the most important factors, their influence and possible recommendations to them. Ducháčková (2009) states, that the most important factors, which influence the overall insurance market are the general economic conditions, legislation, situation on financial market of the Czech Republic and in the other countries. It was stated that for the insurance brokers segment, the most influential factor is the legislation of the Czech Republic which directly deals with insurance brokers segment. The last biggest change was the amendment to Act No. 38/2004 Coll., and especially the changes in life insurance. It is recommended to make the higher reserves in order to cover potential risk.

The CNB (2015) informs about the Solvency 2, which the author ascertained as another influential factor that influences the insurance brokers segment. The main changes have been already described in previous chapters and it is important to accommodate to these changes.

Vaughan (2008) claims that the insurance penetration is one of the basic indicators of insurance industry. It was stated that it is connected with GDP and gross premiums written. According to insurance penetration, it was described the development of life and non-life insurance. Nowadays, the non-life insurance is supposed to be more stable and profitable. The insurance penetration in the Czech Republic is relatively low, so there is a big potential to gain new customers and insurance brokers should use this favourable situation.

Technological progress and new IT technologies play significant role in success of insurance brokers. (Hrubošová, 2009) This confirms also the author of the thesis. The usage of calculators, in order to find out the best insurance offer from the big range of insurance companies, is a key factor how to be successful on the market.

Janata (2008) and Ducháčková (2009) claim that the GDP, inflation, wages and other economic conditions influence the insurance industry and also insurance brokers. In this thesis, it was described the relationship among gross premiums written and average wage. It was ascertained that there is the relationship and there was proved the influence of average wage on insurance industry development.

## 7 Conclusion

The purpose of this bachelor thesis was to analyse and assess the main macro environment factors which affect the segment of insurance brokers in the Czech Republic and suggest possible recommendations in order to be successful on this market. This aim was fulfilled by few subsequent steps, which create the content of my thesis.

At first, there was described the work of insurance brokers and their role on the insurance market. It can be stated, that the role of insurance brokers is really important in terms of negotiating and maintaining balance among customers and insurance companies. For the proper understanding of the topic of my thesis, there was also described the current situation on the insurance market in the Czech Republic. There were also defined the basic insurance terms and the types of insurance.

With usage of PESTEL analysis and synthesis of the individual factors, there were stated the most important factors, which influences segment of insurance brokers at most. There were highlighted the areas, to which, they have to pay attention and suggested the recommendations. Through the regression analysis, it was ascertained, that there is the relationship among average gross nominal wage and gross premiums written. It is supposed that with increasing wages, the gross premiums written and the overall insurance market will grow too.

The current situation on the market of insurance brokers is quite stable. It is obvious, that there will be still some predicted and unpredicted changes. The proper observation of above mentioned factors and following of stated recommendations can significantly influence the success on the market.

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# Appendix

## A Data for Regression Analysis

The following table contains the data which were used for the purpose of regression analysis.

<b>Year</b>	<b>Gross Premiums Written in billions CZK</b>	<b>Average Wage</b>
1996	41,125	9676
1997	47,985	10691
1998	55,637	11693
1999	62,784	12658
2000	70,589	13219
2001	80,744	14378
2002	90,660	15524
2003	105,946	16430
2004	112,578	17466
2005	117,075	18344
2006	122,090	19546
2007	132,901	20957
2008	136,574	22691
2009	139,916	23488
2010	155,998	23932
2011	155,093	24319
2012	153,610	25109
2013	156,522	25128
2014	157,922	25686
2015	153,396	26467

## B Data for the Graphs

The second part of Appendix contains the data which were used for creation of the graphs in this thesis. The following table shows the data of insurance penetration (in %), gross premiums written (in billions CZK) and GDP (in billions CZK).

Year	Gross Premiums Written	GDP	Insurance Penetration	Life Insurance (GPW)	Life Insurance Penetration	Non-life Insurance (GPW)	Non-life Insurance Penetration
1996	41,125	1683,3	2,44	10,937	0,65	30,187	1,79
1997	47,985	1811,1	2,65	12,692	0,70	35,292	1,95
1998	55,637	1996,5	2,79	15,089	0,76	40,548	2,03
1999	62,784	2080,8	3,02	19,793	0,95	42,991	2,07
2000	70,589	2189,2	3,22	22,770	1,04	47,819	2,18
2001	80,744	2352,2	3,43	28,282	1,20	52,462	2,23
2002	90,660	2464,4	3,68	34,036	1,38	56,624	2,30
2003	105,946	2577,1	4,11	41,129	1,60	64,817	2,52
2004	112,578	2814,8	4,00	44,201	1,57	68,377	2,43
2005	117,075	2983,9	3,92	44,954	1,51	72,121	2,42
2006	122,090	3222,4	3,79	47,233	1,47	74,857	2,32
2007	132,901	3535,5	3,76	54,141	1,53	78,760	2,23
2008	136,574	3689,0	3,70	56,285	1,53	80,289	2,18
2009	139,916	3628,1	3,86	59,154	1,63	80,762	2,23
2010	155,998	3667,6	4,25	71,765	1,96	84,233	2,30
2011	155,093	3807,2	4,07	72,010	1,89	83,083	2,18
2012	153,610	4041,9	3,80	72,056	1,78	81,554	2,02
2013	156,522	4077,3	3,84	71,575	1,76	84,947	2,08
2014	157,922	4261,1	3,71	71,186	1,67	86,736	2,04
2015	153,396	4477,0	3,43	62,416	1,39	90,980	2,03

The next tables show the data of unemployment, number of inhabitants, level of education (in ths. CZK) and internet access which were used for creations of graphs.

Year	Unemployment (%)
2004	8,3
2005	7,9
2006	7,1
2007	5,3
2008	4,4
2009	6,7
2010	7,3
2011	6,7
2012	7
2013	7
2014	6,1
2015	5
2016	5,2

Year	Number of Inhabitants
2005	10 234 092
2006	10 266 646
2007	10 322 689
2008	10 429 692
2009	10 491 492
2010	10 517 247
2011	10 496 672
2012	10 509 286
2013	10 510 719
2014	10 524 783
2015	10 542 942

Year	1991	2001	2011
Elementary education	2696,1	1975,1	1571,6
High school education without Maturita exams	2878,6	3255,4	2952,1
High school education with Maturita exams	1857,8	2134,9	2425,1
University education	583	762,5	1114,7

Year	Internet access (%)
2005	19
2006	29
2007	35
2008	46
2009	54
2010	61
2011	67
2012	65
2013	73
2014	78
2015	79
2016	82