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**THE IMPACT OF EU COMPETITION AND REGULATIONS ON THE  
CROATIAN INSURANCE MARKET: AN ANALYSIS OF KEY  
PERFORMANCE INDICATORS**

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## **ABBREVIATIONS**

1. CROF - Chief Risk Officer Forum
2. CZ - Czech Republic
3. DE - Denmark
4. EESC - The European Economic and Social Committee
5. EIOPA - The European Insurance and Occupational Pensions Authority
6. ESRB - The European Systemic Risk Board
7. EU - European Union
8. FOE - Freedom of Establishment
9. FOS - Freedom of Services
10. FR - France
11. GDP - Gross domestic product
12. GWP - Gross written premium
13. HANFA - The Croatian Financial Services Supervisory Agency
14. HR – Croatia
15. HUO - The Croatian Insurance Bureau
16. KPI - Key performance indicators
17. PL - Poland
18. SE - Sweden
19. SK - Slovakia



## INTRODUCTION

The financial sector is considered crucial for a smoother operation of the economy. Due to an accelerated lifestyle that brings huge risks and frequent damage, it is important for companies and individuals alike to hedge their life and tangible assets.

The Croatian insurance industry has seen various changes in the last couple of decades, and this was largely influenced by the unstable economy and questionable political leadership. Through this research I find that some of those changes were driven by global market conditions, for example, the global financial crisis that was impacted by specific market trends. An important factor in Croatia's market development was triggered by joining the European Union (hereinafter: EU), which affected the entire market and certainly the insurance industry in many ways – primarily due to the expansion of competition and new regulations.

Competitive advantages are achieved by ensuring greater specialization offers, creating new and improving existing insurance services, providing greater choice in selecting the range of the insurance cover, using new sales channels, conducting consistent business policies, as well as creating a positive self-image by using certain promotional activities (Hussels, 2005, p. 6; Junker, Gerssen & Jutte, 2014). In general, the insurance industry is considered to be procyclical, therefore, it is expected that the performance of insurance companies will go hand in hand with the overall development of a country. The subdued economic growth in the last few years has had a direct impact on the disposable income of individuals, which translated as less money flowing towards the insurance sector, among others. Macroeconomic imbalances have an effect on all economic aspects in general, but in the last couple of years, the market has stabilized (Čepelakova, 2015, p. 5).

Clearly, there was a need for strong changes within the legal regulations of the insurance market. Solvency II is a new regulatory framework for insurance and reinsurance companies in the EU, whose requirements are more risk-sensitive and sophisticated than those in the past. Alongside Solvency II, as well as other regulations derived from EU membership policies, and like in every other transition economy, these adjustments had their own share of effects on domestic insurance markets. The Republic of Croatia is also one of the transition countries that had its share of difficulties adjusting to a new set of regulations and policies derived from the EU.

In this thesis I analyze the insurance market in Croatia, its main challenges and the benefits it brings to the Croatian economy. I also emphasize a critical review of the deficiencies that exist in the Croatian insurance market. Following the previously indicated, in this thesis I also analyze the business regulations of Croatian insurance companies in the EU accession process. Furthermore, I compare the state members according to basic development key

performance indicators (hereinafter: KPI), such as density, penetration and share of life insurance in regard to total premiums and opportunities that Croatian insurance companies face after joining the EU. I base my main observations within the domain of the most important impacts that follow after joining the EU. The Solvency II Directive affected the previously mentioned key basic development indicators (penetration, density and share of life premiums within total premiums) in Croatia. Its focus revolves around higher transparency toward regulatory institutions and other interest groups (competitors, shareholders, etc.), demanding from insurance companies to implement a new risk assessment system, one more effective than that during the outdated Solvency I era.

The methodology I use in this thesis covers various research parts. Firstly, I gather relevant and significant scientific literature through scientific databases such as: Ideas, Google Scholar, Emerald, etc. However, since the topic is related to Croatia and the origins of the topic are related to the EU, I use mixed literature (domestic and foreign). I use secondary data to show and measure quantitative impacts collected through various scientific articles and certain reachable databases, such as Eurostat. The statistics I use in the methodological approach are also mixed, descriptive and inferential, with an emphasis on line and column graphs, as well as some graphical trend analyses.

I based my research on secondary data. The theoretical part is focused strictly on the Solvency II implementation on the Croatian insurance market, as well as issues regarding Croatia's attempts to regulatory adjustments after EU accession. I integrate these challenges through KPIs which I analyze throughout the third and fourth chapter of this thesis. I express these KPIs through density (total premiums per inhabitant), penetration (as a proportion of the country's Gross domestic product, hereinafter: GDP) and economic growth of the country (the GDP of the country). In this thesis I examine and describe the above mentioned indicators over the range 13 years, from 2004–2016.

In regard to the previously described problems, the challenges on the Croatian insurance market and the described methodology, I identify certain key objectives. Firstly, by joining the EU, the Republic of Croatia gave up its full autonomy and agreed to an existence under an established set of rules, guidelines, regulations and laws. Croatia, like all the countries of former Yugoslavia, and most of the countries of the Eastern Bloc, had to embark on its transition from a planned economy to a market economy. Even though Croatia's acclimatization process is ongoing, Croatia managed to fulfill all the necessary requirements to become a full member of the EU. Croatia's EU membership meant that it would be required to adjust to certain laws and policies within the insurance market's domain (Kozarević, Regan & Gibbons, 2008). Therefore, in this thesis I address the following objectives:

1. *Identifying the most important influences on the Croatian insurance market after joining the European Union*

Secondly, every partnership has its positive and negative aspects. For example, strategic alliances help joint partners to scale up a business and reach new markets and customer segments. However, these partnerships also disable each of those partners to engage in any form of autonomy oriented business activities or flexibility in doing business while under the alliance agreement (Tipurić & Markulin, 2002). Similar principals apply with Croatia and its conduction of business under EU legislation. With an exception of the free flow of money, workforce and capital, it is necessary to investigate the advantages and disadvantages of its full EU membership. How would, for example, the free flow of capital investments in the insurance market affect domestic companies, or how would they protect them from foreign capital? How would potential market segments react? What would the potential impacts on the insurance market be? Thus, I address the following, second objective:

2. *Making a distinction between the positive and negative side effects which gaining more competition from EU countries has on Croatia's insurance market*

The previously mentioned adjustments indicated by Croatia's EU accession forced domestic insurance companies to adjust strategies and compete for a larger market share, but also against a larger number of competitors and under a larger number of regulated laws and policies dictated by the EU. Out of many KPIs it is important to identify those that are significant and that every insurance company should track, however, three are more significant. For the previously mentioned purpose, I emphasize the following objective:

3. *Identifying those KPIs (density, penetration and share of life insurance in total premiums) that were mostly affected by competition and regulations of the European Union*

Following the key objectives, I address certain key aims to explain how I assessed the previously mentioned objectives. The first research question I aim to quantitatively explain is the volume of impact of the new set of regulations and liberal market movement. Hence, the first research question is:

1. *How much did the European Union's regulations and market liberalization affect insurance companies in Croatia, with an emphasis on the share of foreign capital?*

To pragmatically address the changes after joining the EU, I analyze the most important key performance indicators and compare through time. So, the question for addressing this aim follows:

2. *How did the basic KPIs – insurance market density, penetration and share of life insurance in total premiums – change after Croatia's accession to the EU?*

In my third research question I seek to explain whether there are statistically significant relations between the Croatian insurance market's growth and the country's overall economic growth, answering the research question that follows:

3. *Are there significantly statistically differences between Croatian and EU insurance market and if yes, quantify the previously expressed correlation?*

Proceeding, I explain the structure of the thesis in the following sections. I begin the thesis with an introduction, in which I present the main problem, and from that problem I derive objectives and research questions which are the focal point of the thesis' research.

Following the introduction, in the first chapter I address the functions and importance of insurance companies and the insurance industry for the country. Lastly, in the first chapter I cover types of insurance and risks covered by insurances.

Further on in chapter two of the thesis, I explain regulations of the insurance market in Croatia and within these regulations I cover key institutions and legal framework. Also, in chapter two I address one of the most important issues – the Solvency II regulation and its effects on the Croatian insurance market.

In chapter three I describe the Croatian insurance market and its trends. There, I focus on the three aforementioned key basic indicators (market density, market penetration and share of life insurance in total premiums). After that, I explain the impacts of market liberalization, presenting certain cases of similar transition countries as Croatia, such as Romania and Bulgaria. Later in the third chapter, I analyze the Croatian insurance market, while I cover life insurance and non-life insurance in separate subchapters.

In the fourth chapter I present the core structure of the thesis, since it provides answers to all of the raised objectives and research questions. I begin the chapter with an introduction to the methodology and further compare the Croatian insurance market's indicators with a number of transition and developed countries in the EU. I dedicate the last subchapters to profitability indicators in the Croatian insurance market and discuss results.

## **1 DEFINITION AND CHARACTERISTICS OF INSURANCE**

For a better understanding of the insurance market in general, I find it is essential to define and understand the insurance business. Since the insurance market has a significant effect on a country's GDP, thus playing an important role in a country's financial structure, it is important to explain all the characteristics, functions, types and possible risks. All the observed aspects affect key indicators (density, penetration and share of life insurance in total premiums) on the Croatian insurance market.

Dorofti and Jakubik (2015, p. 1) state that the insurance sector plays a very important role within the financial services industry, contributing to economic growth, economical resource allocation, reduction of transaction costs, creation of liquidity, facilitation of economics of scale in investment and spread of financial losses.

Akinlo and Apanisile (2014, p. 1) also researched the insurance market's impact on economic growth. With the help of panel-data analysis they discovered that insurance has a positive and significant impact on economic growth in Sub-Saharan Africa. This shows that premiums contribute to economic growth in Sub-Saharan Africa, which means that a well-developed insurance sector is necessary for economic development, as it provides long-term investments for economic growth and simultaneously strengthen risk-taking abilities.

Peleckiene, Peleckis, Dudzeviciute, and Lapinskiene (2017, p. 1) investigated the correlation between GDP and insurance market growth with the help of descriptive statistical and certain econometric methods. The previously mentioned authors indicate that there were some positive and some negative correlations detected. The descriptive statistical analysis has shown that the insurance sector's development is higher in economically wealthy countries, such as the UK, Denmark, Finland, Ireland, France and the Netherlands. A positive, statistically significant relationship was detected between insurance penetration and economic growth in Luxembourg, Denmark, the Netherlands and Finland. However, a negative statistically significant relationship was identified in Austria, Belgium, Malta, Estonia and Slovakia.

Insurance, generally speaking, is a social good that can be classified in numerous occasions as a public good, something that helps (or should help) citizens. Insurance companies, mutuals and cooperatives enable individuals and companies to protect themselves against infrequent but extreme losses at a cost which is small compared to the feared loss. Life insurance contracts can last for short periods of time (for example, accidental death) or very long periods of time (e.g. an entire lifetime) (Lester, 2009).

Insurance is a business of providing economic protection, therefore, without a well-developed insurance component; an overall economy cannot be successful. All insured risks are redistributed to all insurers. Insurance companies spread their risks by pooling different forms of insurance. In the case of unforeseen events, the insurer must pay compensation to the insured person (Croatian Insurance Bureau, 2017).

In regard to the previously written definitions of the insurance business, it is very important for new potential competitors to know the market of specific countries. Customers' characteristics, their attitudes toward the insurance business, as well as their actions determine how the market shapes. A low percentage of foreign companies in a certain market indicate that the market isn't very attractive, so density and penetration rates will be lower. The share of life insurance in total premiums depends on whether the customers in a domestic market are aware of the need and necessity of engaging in life insurance purchases. Some more

conservative customer segments in specific countries do not engage in life insurance purchasing. This factor also results in lower density and market penetration rates, as well as lower share of life insurance in total premiums, as foreign competitors don't find that type of insurance market attractive enough.

Further on, in the next subchapter I explain the main functions and importance of insurance and describe the characteristics of those types of insurances.

## **1.1 Function and importance of insurance**

The insurance industry has become so big that the competition for every market segment is more than fierce. Regulatory institutions of every country have a specific set of policies and regulations to protect domestic enterprises from foreign companies with more capital. Even in a free market, where the Solvency II regulation implies free market entry for any competitor, insurance companies still have to keep in mind that not all markets are similar.

Global competition has pressured insurance companies worldwide to develop their product and services portfolio in order to stay competitive. Companies tailor their portfolio for the end customer or the enterprise (whoever is the insurance buyer), aiming to offer as many benefits as possible. In my research I find that some of those benefits were examined and researched in Rejda and McNamara (2014, p. 31–32), which divided the major and economic benefits of insurance as I explain in the following couple of paragraphs.

Indemnification for loss implies that individuals and families should be restored to their former financial position after a loss occurs. As a result, they will maintain their financial security. Because insurers are restored either in part or in whole after a loss occurs, they are less likely to apply for public assistance or welfare benefits, or to seek financial assistance from relatives and friends.

The reduction of worry and fear explains, for example, the case in which family heads have adequate amounts of life insurance and thus they are less likely to worry about the financial security of their dependents within the event of premature death. Still, persons insured for long-term disability do not have to worry about the loss of earnings if a serious illness or accident occurs. Also, property owners who are insured enjoy greater peace of mind because they know they are covered if a loss occurs (De Weert, 2011).

Sources of investment funds indicate that the insurance industry is an important source of funds for capital investment and accumulation (Blanchard, 2017). Premiums are collected in advance of the loss, and funds which aren't needed for covering immediate losses and expenses can be loaned to business firms. These funds are typically invested in shopping centers, hospitals, factories, housing developments, and new machinery and equipment. The investments increase a society's stock of capital goods and promote economic growth and full

employment. Insurers also invest in social investments, such as housing, nursing homes and economic development projects. In addition, because the total supply of loanable funds is increased by advance payment of insurance premiums, the cost of capital for business firms that borrow is lower than it would be in the absence of insurance.

Here, the Solvency II regulation comes in handy, as it emphasizes complete transparency toward insurance policy holders and all other interest groups involved in the ecosystem.

Following the previously mentioned statement, more and more banks have started to target the interest rates of the insurance market. One recent example is the case of Agram Bank, whose majority owners (more than 94%) are a number of key Croatian insurance companies.

Loss prevention is a very important program which employs a wide variety of loss-prevention personnel, including safety engineers and specialists in fire prevention, occupational safety and health, and products liability. Their knowledge and expertise help save money and calculate the risk of possible losses.

Credit enhancement is an interesting financial instrument in which insurances offer a borrower a better credit risk because it guarantees the value of the borrower's collateral, or gives greater assurance that the loan will be repaid.

The previously mentioned benefits are offered to diverse customer segments. For example, some enterprises that are in the logistics business have the need to protect their company vehicles; therefore they would be offered *loss prevention* insurance. The elderly population is very likely to be offered a type of insurance that *eases fear and worry*.

Andrijanić and Klasić (2002) write about usual types of participants or personas in the insurance business for which the insurances are tailored.

According to Andrijanić and Klasić (2002), an insurer is a party who agrees to compensate people, companies or other organizations for specific financial losses. This service is typically provided for an exchange of payments called premiums. The exact perils that are covered and the exact cost of the premiums are laid out in the contractual agreement between the insurer and the insured.

The policyholder is a person or entity who owns an insurance policy and has the privilege to exercise the rights stated in the contract. This party is often, but not always, the insured, and may or may not be one of the policy's beneficiaries.

From a social point of view, insurance is an economic device for reducing and eliminating risk through the process of combining a sufficient number of homogeneous exposures into a group to make the losses predictable for the group as a whole (Vaughan, 2008, p. 41).

After the contract between an insurance company and the policyholder has been defined, there are certain following characteristics that need to be addressed in the preceding definition. Based on the preceding definition (Rejda & McNamara, 2014, p. 20), pooling of losses means that an insurance company aims to spread losses incurred by a few over an entire group, so that in the process, average loss is substituted for actual loss. The payment of fortuitous losses derives from a fortuitous loss, which is one that is unforeseen and unexpected by the insured and occurs as a result of chance. In other words, the loss must be accidental. Risk transfer represents a pure risk which is transferred from the insured to the insurer, who is typically in a stronger financial position to pay the loss than the insured. Indemnification means that the insured is restored to his or her approximate financial position prior to the occurrence of the loss.

In the framework of insurance, safety funds play an important role in the business. Thus, there are two joint functions of insurance, according to Bijelić (2002, p. 26).

The main functions of insurance are: a) function of compensation for damage and payment of insurance sums; and b) preventive function (if we can convey funds/resources for precaution).

The other functions of insurance are: a) social function; and b) developmental function.

The main function is to protect from economic danger, or to engage in calculating the acceptable risk that is threatening people and their estate. This is done through compensation for damage and payment of insurance amounts to everyone who has problems with the insurance risks.

Insurance can have a preventive function, for financing preventive measures if the formation of preventive funds is foreseen by eliminating a sum from a gross premium.

Among other functions, I find it important to highlight the social function of safety funds. The development of insurance enables less potential obligation of a country to offer different types of economic support to individuals and corporate bodies for damage events. We can conclude that every established economy aims at a wide range of economic protection through insurance risks, for corporate bodies as well as individuals, so to lower the pressure on national funds.

An important function of insurance is its developmental function. Insurance companies have important funds at their disposal which can be invested in varied developmental programs. High-quality funds for investments in developmental programs are long-term collected funds (life insurance funds, pension insurance and annuities).

Following, in the next chapter I describe types of insurances offered by insurance companies to end users. These types are generally the same in each country, however, their structure in total insurances sold depends on the culture of a country, or more specifically, on the



spending culture of targeted market segments. In areas more prone to natural catastrophes, there is a better chance of higher demand for property insurance than in other areas, which are less prone.

## **1.2 Types of insurance**

In the previous chapter I address the importance of insurance companies and the main entities included in the process. I explain some basic characteristics of necessities for insurance, and further on in this chapter, I address the key types of insurances.

Following research, insurance can be divided and subdivided into classifications based on the perils insured against, or the fundamental nature of a particular program. The primary distinction is between private insurance and social insurance. In addition to these two classes, there is a third class of quasi-social insurance coverages called public benefit guarantee programs. Private insurance consists (for the most part) of voluntary insurance programs available to the individual as a means of protection against the possibility of loss. Social insurance is a compulsory insurance, usually operated by the government, whose benefits are determined by law and in which a primary emphasis is made on social adequacy (Vaughan, 2008, p. 45).

Today, private insurance can be classified into three broad categories:

*Life insurance* - Designed to provide protection against two distinct risks: premature death and superannuation (Vaughan, 2008, p. 46). The death proceeds can also provide periodic income payments to the deceased's beneficiary (Rejda & McNamara, 2014, p. 27);

*Health insurance* - Accident and health insurance is defined as insurance against loss by sickness or accidental bodily injury;

*Property and liability insurance* - Property insurance indemnifies property owners against the loss or damage of real or personal property caused by various perils, such as fire, lightning, windstorm, or tornado (Rejda & McNamara, 2014, p. 27).

Following the description of the most common insurance types, through my studies I find it clear that the core business and daily operations of all insurance companies are focused around risk assessment and estimation of uncertainty. Therefore, I discuss risk as one of the most important topics of the insurance market sector in the following chapter.

### 1.3 Risks covered by insurance

There are numerous definitions related to risk, but historically, risk has been defined in terms of uncertainty, concerning the occurrence of a loss.

When speaking of risk, it is important not to confuse the terms peril and hazard with the concept of risk. Peril should always represent the cause of loss, while hazard is a condition that increases severity of loss. For example, a moral hazard could be the dishonesty of an individual that increases the severity of a loss, such as faking an accident to collect the amount of a claim from an insurer (Bačić, 2016).

The classifications of risk are as follows (Rejda & McNamara, 2014):

*Pure and Speculative Risks* - Speculative risk describes a situation in which there is a possibility of loss, but also a possibility of gain. Gambling is a good example of a speculative risk.

*Diversifiable Risk and Non-Diversifiable Risk* - Diversifiable risk can be reduced or eliminated by diversification so this type of risk never affects the entire economy but only individuals. This risk is also called nonsystematic risk or particular risk.

*Enterprise Risk* - This type of risk encompasses all major risks faced by a business (company). Other than pure and speculative risks, which are already mentioned above, there are strategic risks, operational risks and financial risks. Strategic risk represents uncertainty regarding a firm's financial goals and objectives. When a firm is entering a new line of business, that line may be unprofitable for the business. Operational risk, just as the name suggests, is a type of risk that results from the firm's business operations.

It is important for risk managers to combine all types of risk into one program. By packaging major risks into a single program, a company can offset one risk against another. That way, the overall risk can be successfully reduced.

Two fundamental characteristics of risk covered by insurance are (Vaughan, 2008, p. 34):

- transferring or shifting risk from one individual to a group;
- sharing losses, on some equitable basis, by all members of a group.

The primary function of insurance is the creation of the counterpart of risk, which is security. Insurance does not decrease the uncertainty for an individual, as to whether an event will occur, nor does it alter the probability of occurrence. However, it does reduce the probability of financial loss connected with the event. The risk an insurance company faces is not merely a summation of the risks transferred to it by individuals. An insurance company is able to do

something that the individual cannot, and that is to predict, within rather narrow limits, the amount of losses that will actually occur (Vaughan, 2008, p. 35–36).

The four requirements listed as follows represent the "ideal" elements of an insurable risk (Vaughan, 2008, p. 43):

1. There must be a sufficiently large number of homogeneous exposure units to make losses reasonably predictable. This means that the business model needs to be focused around mass market customers in order to diversify risk, since the profit calculations would not be sustainable for niche markets.
2. The loss produced by risk must be definite and measurable - people must be able to tell when a loss has taken place, and must be able to set some value on the extent of it. This point addresses precise amounts and calculation methods used to define the amount of money owed to a policy holder.
3. The loss must be fortuitous or accidental - the loss must be the result of a contingency; that is, it must be something that may or may not happen. It must not be something that is certain to happen. This point is one of the most important points regarding risk for insurance companies due to insurance of any fraudulent activity involving money extraction from the insurer.
4. The loss must not be catastrophic - it must be unlikely to produce loss to a very large percentage of the exposure units at the same time, such as natural disasters (e.g. tsunamis, earthquakes, etc.).

The previously described risk points protect insurers, while regulations and policies derived from the government are appointed to protect potential customers. The government has three roles in insurance policy dictation, according to Lester (2009, p. 2–3):

1. To ensure that those who are granted licenses are competent to enter the business and will have sufficient scale. This indicates that every competitor in the insurance market has to be liquid enough to be able to compensate all the policy holders at once, if that is the case.
2. To ensure that there are sufficient competitors to prevent cartels from developing, while limiting numbers to a level that prevents pyramid structures (known as cash flow underwriting) from emerging.
3. To protect the public and direct companies in the insurance sector toward running a responsible business model which adds value to the end customer, government and the insurer.

To conclude, every insurance company business model derives from punctual risk assessment, which leans on probability methodologies. Businesses such as insurances profit from uncertain events, which gives them mathematical leverage. Since every risk is thoroughly assessed and most of the customers are aware of that, they need added value provided by

insurers to commit and purchase different types of insurance policies. The government is there to ensure that an insurance business is run properly and sustainably, with an emphasis on responsibility toward all interest groups (Jorion, 2011). Hence, in the next chapter I point out key institutions for insurance company activity monitoring, as well as some legal framework. Furthermore, I emphasize new regulatory framework provided by the EU, Solvency II and the effects it has on the Croatian insurance market.

## **2 REGULATION OF THE INSURANCE MARKET IN CROATIA**

Insurance makes a significant contribution to economic growth and development. It provides a risk transfer to economical transactions. The insurance market in the EU is still in a process of harmonization, with new regulations forming into a single market. This means that the same rules should apply to all participants which are dealing with and providing insurance business (Blanchard & Johnson, 2013). Since Croatia joined the EU, the same rules apply to it too.

The accession of countries to the EU follows the liberalization of the insurance market in relation to other EU member states. Liberalization means free access to a new member state's market, which is based on the Treaty establishing the European Community and directives in the field of insurance.

Within the EU, a Freedom of Service principle (hereinafter: FOS) has been established so that an insurer from one member state can directly ensure risks in another member state. The second principle is the Freedom of Establishment (hereinafter: FOE), which reduces and eliminates the obstacles that prevent insurers from a new member state from establishing a company, branch, or a direct business in another member state.

An insurer from one EU member state has the option of providing insurance services through the establishment of an independent insurance company in another member state (which was possible before joining the EU), and through a brokerage (following the FOE principle or FOS principle) by providing insurance services from its home country. This is possible even if there is no representative office in the other member state.

However, market liberalization doesn't mean countries can act of their own will in a foreign insurance market. Every country has its own legal framework aligned with EU regulations and policies. Thus, the insurance market and insurance activities in the Republic of Croatia are governed by the Insurance Act and Act on Compulsory Insurance within the transport sector and related subordinate legislations.

The Croatian Financial Services Supervisory Agency (hereinafter: HANFA) has a supervising role in Croatia's insurance market, and is responsible for enforcing the law. The main purpose of the agency is to ensure an efficient and stable market while protecting the interests of

insured persons. At the end, the insurance market's stability affects the overall stability of the financial sector (Insurance Act, Official Gazette 30/15).

## **2.1 Regulatory institutions in the EU**

EU regulations must be implemented in an adequate manner to ensure financial stability, to maintain public confidence in the financial system and to protect consumers. There are two pillars related to the supervision of the EU's financial system: macro-prudential supervision by the European Systemic Risk Board (hereinafter: ESRB) and micro-prudential supervision by European and member states' supervisory authorities. ESRB is responsible for the stability of the EU's overall financial system, while micro supervisory authorities are the European Insurance and Occupational Pensions Authority (hereinafter: EIOPA), European Securities and Markets Authority (ESMA), European Banking Authority (EBA), and supervisory authorities of individual member states (European Commission, 2019).

EIOPA's goal is most important since its mission is to enhance the coordination of the supervision of the EU insurance and pension fund sector and participate in the creation of the EU's single market for financial services. Since there are numerous institutions which play important roles in creating regulatory framework for the entire EU, every country also has at least one of their own monitoring institutions, which helps implement the entire necessary regulatory framework in a domestic country. In this way, the insurance business stays transparent and sustainable. In Croatia, that agency is HANFA.

HANFA was established in 2005, including three existing supervisory institutions: the Croatian Securities Commission; the Agency for Supervision of Pension Funds and Insurance; and the Insurance Companies Supervisory Authority.

HANFA is a supervisory body whose role is supervision of financial markets, financial services and all entities which provide those services. The agency represents an independent legal entity with public authority within the scope of its activities and competence laid out in the Act on the Croatian Financial Services Supervisory Agency, as well as other laws. It is responsible to the Croatian Parliament.

Here, I find it important to mention international relations and cooperation among supervisory authorities within the EU and on a global level. There is a large number of globally active firms offering financial services outside their national borders, which is the reason why international cooperation is becoming increasingly significant.

In sum, the principal objectives of HANFA are to stimulate and safeguard the stability of the financial system, look after, and supervise the legitimacy of supervised entities' operations. In order to achieve these goals, HANFA supports principles of transparency and in this way build confidence among financial market participants by regularly publishing reports for

consumers. HANFA is a member of the EIOPA and European Securities and Markets Authority (ESMA) (HANFA, 2018).

EIOPA (European Insurance and Occupational Pensions Authority) is one of the three European Financial Supervisory Authorities resulting from the reform of the financial sector's supervision structure of the EU.

It was established on January 1<sup>st</sup>, 2011, with EU Regulation no. 1094/2010 of the European Parliament and the Council as a successor to the Committee of European Insurance and Occupational Pensions Supervisors (CEIOPS). It is also established as an independent and advisory body of the European Parliament, the Council of the EU and the European Commission. EIOPA's task is to contribute to the stability of the EU's financial system by ensuring integrity, transparency, efficiency and orderly functioning of the financial markets, by increasing the protection of insured persons, beneficiaries and pensioners, while performing their tasks independently, objectively and according to the interests of the EU (HANFA, 2012).

The Regulatory Board consists of eight members, including six representatives of national regulators, EU members, and one representative of the European Commission and the Chair of EIOPA. The President of the Management Board represents EIOPA in front of the Council of the EU, the European Commission and the European Parliament.

The main objectives of this European regulator are:

- Better consumer protection and restoring confidence in the financial system
- Ensuring high, efficient and consistent levels of regulation and supervision while taking into account the different interests of all members and different characteristics of financial institutions
- Better harmony and consistent application of rules for financial institutions and financial markets throughout the EU
- Strengthening oversight of cross-border groups
- Promoting the joint action of European regulators.

EIOPA is responsible for monitoring and identifying trends, potential risks and weaknesses that can occur at the micro, cross-border and cross-sectoral levels, at the same time ensuring a high, effective and constant level of regulation and supervision, while taking into account the various interests of the EU member states and the different nature of financial institutions (EIOPA, 2015).

All the previously mentioned institutions have one, common goal – to ensure market stability in the long run. One particular regulation, Solvency II, represents a strong pillar through which new regulatory strategies in insurance markets all over the world are being implemented. The Solvency II regulation ensures stability and long term sustainability of the

insurance market, which enables market liberalization. I address more on the Solvency II regulation in the next chapter.

## **2.2 Solvency II**

Since the financial sector represents one of the key pillars of every economy, and the insurance sector represents its important composition, it is very important to monitor all key stakeholders within the sector. Insurance companies in Croatia are under strict supervision and regulation since the main goal of the sector is sustainability and keeping insurance functions fluid. This is only possible through integration of all insurance branches, such as resolving damages and sustaining preventions. All key functions of insurance businesses must align in order to keep sustainability and regulations in line, such as developmental functions, social functions, anti-inflation functions, and psychological and civil functions as well.

The previously mentioned necessities require new and complex regulations which address holding on to present stability and focusing on adjustment to future regulatory challenges. This regulatory requirement should, besides protecting insurance customers, ensure the long-term stability of the entire financial sector and insurance sector. It should also adopt and answer to all future needs of the market. The previously described regulation refers to Solvency II, and is, according to EU institutions, an enormous improvement since the Solvency I regulation (Bernardino, 2016).

The Solvency II regulation isn't that new at all. It was launched in 2000 as a regulatory framework which was based on the idea that all risks which endanger the financial and insurance sector must be recognized and consequently evaluated. Following, all companies in the insurance market should be encouraged to implement risk management strategies and all regulatory institutions should provide more transparency to all shareholders.

Regarding the accession procedure between Croatia and the EU, the present insurance law still has many Croatian firms opposing the implementation of the Solvency II regulation. According to those companies, the market bankruptcy rates of insurance companies are low relative to industry stability in crisis conditions, while the implementation costs of new regulations are high.

Regardless of the previously stated arguments, Solvency I is, according to all institutions' regulations, seriously outdated and in need of a modification and market adjustment.

Solvency II became applicable on January 1<sup>st</sup>, 2016. The new regime was applied by all 28 EU member states.

The new system aims to offer a harmonized framework for insurance companies in the EU, which will strengthen financial soundness in the industry and provide adequate levels of

insurance capital that will ensure businesses can survive even during difficult periods. By promoting quality management systems and managing related risks, the level of consumer protection of insurance products will be increased (Bernardino, 2016). A harmonized way of reporting and disclosure of information will provide key information for supervisory bodies, thereby enabling their timely action (European Commission, 2016).

As important it is to achieve the adequate protection of policyholders, Solvency II will ensure it, and it will be one of the main positive outcomes of this new regulatory framework. The insurance market will be rising and the competitiveness will be improved by transparency and consolidation in the EU insurance market. All of this mentioned above will be achieved through risk diversification benefits regarding capital relief, more severe requirements for capital management and expanded public disclosure requirements (ECB, 2007).

Insurers will always make an effort to reduce their concentration of risk, which could be one of the main drivers of failure. Therefore, they are seeking diversification in order to gain from capital relief, which will definitely reduce the cost of capital and increase profitability (CROF, 2005).

The other positive side of Solvency II can be seen through consolidation, which could improve the level of efficiency of the EU's insurance sector, as firms that are not performing well will have to become more efficient, exit the market, or merge with more efficient companies. As the primary goal of these mergers and acquisitions should be to increase the market share of an acquisition, the firms that acquire rather choose more efficient firms, as the cost of merging with them would be lower than that of an inefficient target (Cummins & Rubio-Misas, 2001).

Identifying the benefits of diversification of risk through internal models can encourage large companies to grow further to benefit from economies of scale. Ultimately, bigger companies can expect greater economic opportunities if the merging entities enter new markets and distribute their products to a broader user base (European Central Bank, 2007).

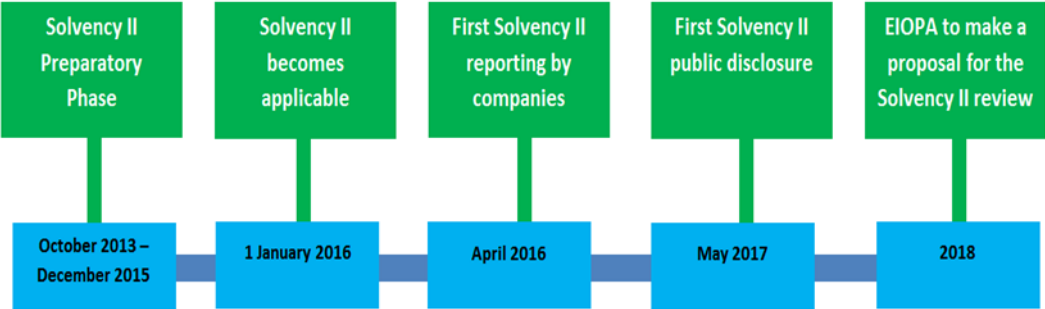
I describe the previously explained regulatory measure (Solvency II) and its timeline in Figure 1 below.

The timeline for the Solvency II regulation was initially designed by one of the most important EU regulatory institutions, EIOPA. According to EIOPA, the preparation phase for the readiness of the insurance markets in the EU was designed throughout October of 2013 and December of 2015. Until 2016, according to EIOPA, all EU members and accession countries were supposed to adjust their previous market regulations and policies in order to fit with the new regulatory needs of Solvency II. Following, at the beginning of 2016, Solvency II became applicable and companies started adjusting from the previously outdated Solvency I regulatory system. The initial Solvency II results provided by insurance companies in EU were presented in the first quarterly reports of 2016.



In May 2017, the EU presented its first Solvency II report to the public, and in the year 2018, according to results, the first reviews of the Solvency II regulation effects were needed. EIOPA was the mandatory institution for the proposal of possible reviews.

Figure 1: Solvency II Timeline



Source: EIOPA, (2019).

In preparation for the Solvency II regulation adjustment, the Croatian Insurance Bureau (hereinafter: HUO) conducted a research in 2010 and the results of the research were presented in the workshop on September 22<sup>nd</sup>, 2010. The research included 78 participants, all employed in the insurance market sector, included in the research. More than 50 % of the research participants (experts in the insurance market) consider the biggest Solvency II challenge the requirements of the second pillar, while one third of the participants consider the biggest challenge the first pillar. Less than 20 % of the participants thought that the biggest challenges of Solvency II lie in the third pillar.

In the next subchapter I introduce the complete structure of the Solvency II regulation and its implementation effects on the Croatian insurance market.

Croatia’s EU accession indicated that Croatia was also obligated to participate in preparations for the Solvency II implementation process. That meant that HANFA, which is the leading regulatory insurance institution in Croatia, had to conduct an expert working group for the implementation process, composed of experts in the field of capital solvency (Grgić, 2013). The group also had to ensure that the gaps between previous and present regulatory measures were completely covered.

The previously mentioned expert working group conducted a due diligence study which lasted more than half a year. The study included 25 insurance and reinsurance companies which cumulatively make 99.7 % of the entire gross premium (HANFA, 2012). The goal of the

study was to define some specific characteristics of the Croatian insurance market, and more simply, the study wanted to focus on the general objectives which included better preparation of the companies in the insurance market. Since the Solvency II regulation relies very much on risk analysis, transparency and quantification of the entire insurance business, the intention of the study was to provide all important information regarding quantifiable effects of Solvency II, to check technical infrastructure of insurance companies and introduce ways to upgrade some obsolete infrastructural systems, and especially to introduce new ways for insurance companies' data collection, analysis and storage.

The data analyzed from the study indicated poor results for the Croatian insurance market, which pointed out that more than a third (36 %) of the companies had required solvent capital between 100 % and 200 %, while the solvency ratio of all participants was 196 % (Jurilj, Stipić & Česić, 2015).

According to Solvency II, all risks based on insurance and reinsurance companies should be quantitatively and qualitatively recognized and managed. In this way, each company could determine the required level of capital.

The Solvency II regime consists of the three pillars as shown in Table 1:

*Table 1: Solvency II*

<b>Pillar I.</b>	<b>Pillar II.</b>	<b>Pillar III.</b>
<b>Calculation of capital requirements</b>	<b>Management of risks and governance</b>	<b>Reporting and disclosure</b>
SCR	Regulations on financial services supervision	Transparency
MCR		Disclosure requirements
Own funds		Competition related elements
Investments		

*Source: Swiss Re (2006).*

Pillar I – Calculation of capital reserves; consisting of quantitative measures, valuation of assets and liabilities, calculation of technical provisions, own funds, the solvency margin and the minimum required capital. It outlines the standard formula insurance companies across the EU have to use for the calculation of their capital reserves covering all types of risk.

Pillar II – Management of risks and governance; containing the requirements for the management of potential risks and for governance. Companies have to carry out a comprehensive test and assessment of their own risk called ORSA (Own Risk Solvency

Assessment). They should also set up an organizational unit for risk management and identify certain risks which are not calculated in the standard formula. Those risks are important for the business of particular insurance or reinsurance companies. All the requirements of the second pillar are the core of a new regulation based on a complete system of recognition and managing risks. It requires a full adjustment of the company to this new model of business.

Pillar III – Reporting and disclosure; this is also a significant part of the Solvency II regime because it refers to the new reporting rules of the supervisory body, emphasizing the importance of market and business transparency and reporting all key data to a wide circle of interested parties – from supervisors, insurers, owners and the community (EIOPA, 2015).

To better understand the importance of the Solvency II regime, I list some fundamental differences between the former regulatory regime (Solvency I) and this new one in Table 2:

**Table 2: Solvency I vs. Solvency II**

<b>SOLVENCY I</b>	<b>SOLVENCY II</b>
Several supervisory regimes differing from each other	Single supervisory regime for the whole EU
Companies don't need to closely look at several types of risks	Companies better understand and, thus, more efficiently mitigate the risks they face
Consumers always suffer the most if their company is affected by the economic reality	Robust risk management and governance means well protected consumers
Supervisors don't have a full picture of the companies' profiles	Enhanced reporting allows supervisors to see upcoming problems and to react timely

*Source: EIOPA, (2019).*

The EU's insurance market liberalization is founded on complete transparency, risk management and better understanding of data management. These guidelines, if implied properly, open up each country's market to foreign companies and support the free flow of capital in the EU's insurance market. This makes domestic markets more penetrable and desirable for foreign competitors, and that's what Solvency II is all about: keeping complete transparency and sustainability while managing risks, which allows any company to compete in a specific market.

### 3 TRENDS IN THE CROATIAN INSURANCE MARKET

#### 3.1 Croatian insurance market analysis

According to data collected from HANFA, in September 2017 there were a total of 20 insurance companies doing business in the insurance market. Among these, there were five companies that transacted with life insurance and seven companies with non-life insurance. The rest of the eight companies did both: life and non-life insurance. In Table 3, I show how the number of insurance companies was declining through the years. This was the case with other transition countries as well, such as Bulgaria and Romania, which entered the EU in 2007 and also had a decline in domestic and foreign enterprise numbers afterwards.

This notion explains how difficult is it to adjust business operations to a new set of regulations and policies that weren't here before. Companies which were not adequately prepared for the transition left the market or merged with companies that fit the conditions. Such is the case of newly formed clusters of insurance companies, such as Euroherc, Jadransko insurance company and others, in order to form a bank. More specifically, Agram Bank is under the majority ownership of this insurance cluster which was formed for stronger market competition (Hladika & Marić, 2014).

These new actions were undertaken by market players after the Solvency II regulation started its implementation. It required higher solvency capital which was not achievable for some insurance companies.

As I display in Table 3, Solvency II took some casualties in the Croatian insurance market. After year 2013, we can see that both life insurance companies and non-life insurance companies both decreased from 2013 – 2017.

*Table 3: Number of insurance and reinsurance companies*

	2008	2009	2010	2011	2012	2013	2014	2015	2016	30.9.2017.
<i>Life insurance</i>	8	8	6	7	7	7	7	6	5	5
<i>Non - Life insurance</i>	9	10	10	10	10	10	10	9	8	7
<i>Composite</i>	10	10	10	10	10	9	8	8	8	8
<i>Reinsurance</i>	2	2	1	1	1	1	1	1	1	0
<b>TOTAL</b>	<b>29</b>	<b>30</b>	<b>27</b>	<b>28</b>	<b>28</b>	<b>27</b>	<b>26</b>	<b>24</b>	<b>22</b>	<b>20</b>

*Source: HANFA (2018).*

Considering the absolute number of companies in the observed period, further on I provide a description of the concentration of foreign and domestic insurance companies in Croatia and

their market share expressed in euros and in percentage according to Croatian Insurance Bureau's analysis for 2017.

Looking at the total premium, at the end of year 2016, Croatia Insurance company secured the largest market share, with € 305 million in premiums, representing a 26.45 % stake in the Croatian insurance market. The second was a foreign insurance Company, Allianz, with € 158 million in total premium and a market share of 13.65 %, and the third, Euroherc Insurance, whose premium was € 107.9 million at the end of 2016, which is 9.39 % of the market (Croatian Insurance Bureau, 2017).

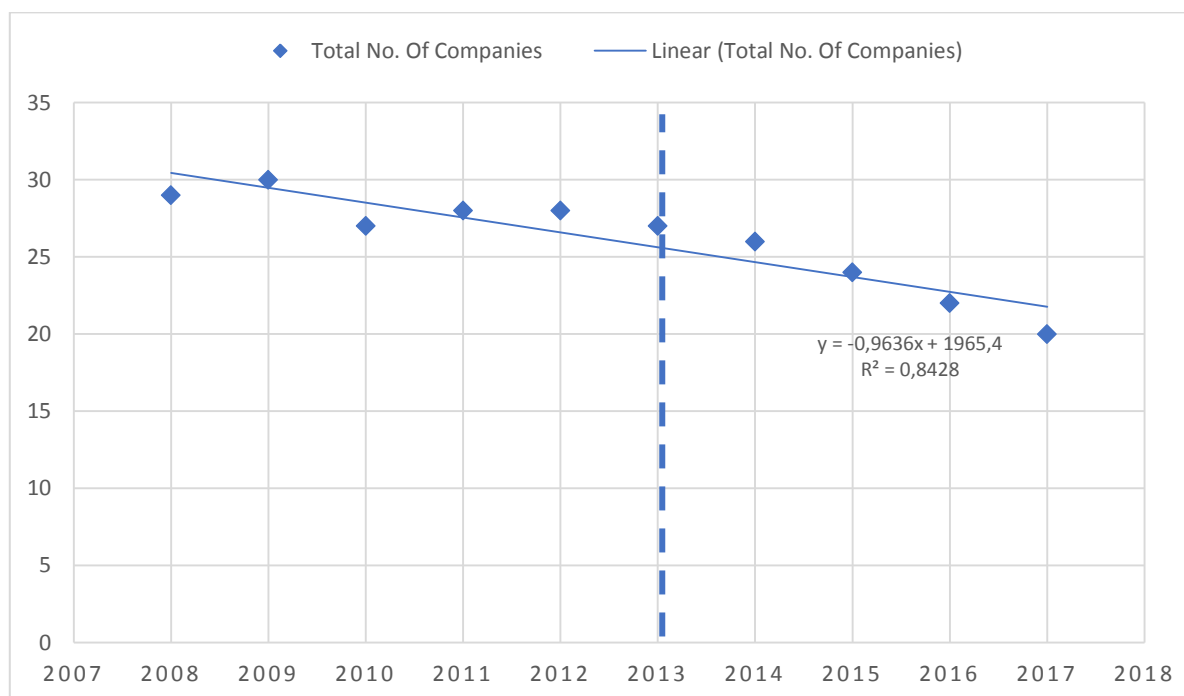
Considering these ratios, the three biggest insurance companies in Croatia (which make 13.63 % of all insurance market companies) aggregate as much as 49.49 % of the entire insurance market in millions in premiums (Croatian Insurance Bureau, 2017).

For the purposes of this research, I split the available time series into two periods, the period before the Republic of Croatia joined the EU (2008–2013) and the period after (2013–2017). In the graph I show the linear drop of the total insurance and reinsurance companies in the observed period (2008–2017). Conclusively, the number of insurance and reinsurance companies drops by 0.94 companies on average, linearly and annually. The percentage of residuals explained by this linear model is 84.0 %.

The linear model is explained by the equation as follows:  $\hat{y}_{ins.comp.} = 1965,4 - 0.96x$ . I present the following equation in Figure 2. The negative trend was significantly affected by the global economic crisis (2008), as well as the implementation of the Solvency II regulation.

We can see the decrease of total insurance company numbers after the economic crisis, and it is also visible that there is a solid, continuous rise and sustainability of total insurance companies during the few observed years (2010, 2011 and 2012). In the year of Croatia's accession, the Croatian insurance market, like all the other countries' insurance markets', decreased due to the consequences of Solvency II preparations. These preparations especially took a toll on transition countries, which had initial problems with the infrastructure and changing the transparency of the system, as well as the risk calculation system.

Figure 2: Insurance and reinsurance company trends before and after joining the European Union (2008 – 2017)



Source: Adopted from HANFA (2018); own work.

A negative linear trend continued after EU accession because of the struggles Croatia had with adopting new regulations, policies and insurance market rules integrated in the Solvency II regulations. Transition countries such as Bulgaria and Romania had an even bigger decrease of domestic insurance market companies after joining the EU, also because their system was old, non-transparent and had no risk assessment policies.

Taking a closer look at Table 4, I indicate that both the number of companies and number of employees can be divided into three different periods. The first period captures the economic crisis period and it lasts from 2007 – 2012, when the first implementation of Solvency II started.

There is a continuous decrease of company numbers on the European market and the percentage drop rate is continuous from 2007 – 2012. After 2012, there is one year of positive growth, but again, the drop rate begins in 2013, due to difficult adjustments of insurance companies to the Solvency II regulations. The number of employees follows similar movements as the number of companies. It's obvious that that there was a significant drop rate of employees in the insurance sector industry because of the global economic crisis in 2010 (-7.2%). Later, this trend continued, however, not because of the crisis but because of regulation adjustments for Solvency II, which emphasize a more digital way of conducting business. Human capital became unnecessary in some insurance sector branches. Therefore, the number of employees in the insurance market kept dropping. Solvency II regulations

emphasize a digitally transformative business model and more data driven decision making, which means less working power and more efficient results.

The variables I present in Table 4 show a total number of companies and total number of employees, which are both on the decrease in the continuously observed period of time.

*Table 4: Structural data of European insurance markets with a focus on total number of companies and total number of employees*

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>Total number of companies</b>	3,989	3,987	3,921	3,837	3,748	3,639	3,715	3,403	3,440	3,356
<i>Growth rate, %</i>		-0.1%	-1.7%	-2.1%	-2.3%	-2.9%	2.1%	-8.4%	1.1%	-2.4%
<b>Total number of employees</b>	1,031,676	1,032,510	1,050,389	974,366	972,498	964,610	962,449	958,778	950,088	939,999
<i>Growth rate, %</i>		0.1%	1.7%	-7.2%	-0.2%	-0.8%	-0.2%	-0.4%	-0.9%	-1.1%

*Source: Adopted from Croatian Insurance Bureau (2017); own work.*

As I mention in Table 4, the number of insurance companies in European markets, as well as the total number of employees in European markets, has been steadily decreasing over the observed period of time, with only one positive indicator being in 2013, when the number of insurance companies in European markets increased by 2.1%.

Also, the European insurance market mainly affected the negative trend because of its structure within the global insurance market.

In Table 5 I present evidence which indicates better insurance market integration further on. Mostly, I focus on transition countries and a couple of developed EU countries. In order to adequately compare the presented data, I calculate all absolute frequencies as a percentage of countries' GDP, in order for the data to be comparable. In Table 5 I show the insurance market's total written premiums as a ratio of specific countries' GDP. I analyze their total market written premiums for the period from 2007 – 2015.

*Table 5: Croatia and the EU's insurance markets' total premiums written in comparison to countries' GDP*

geo\time	2007	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%
<b>BG</b>	2.38	2.46	2.28	2.15	1.97	1.63	2.11	1.77	1.78
<b>CZ</b>	3.56	3.23	3.66	3.97	3.67	3.78	3.62	3.63	3.38
<b>HR</b>	2.89	2.81	2.94	2.85	2.78	2.79	2.79	2.66	2.56
<b>HU</b>	3.59	3.07	3.26	3.07	2.56	2.64	2.67	2.56	2.49
<b>RO</b>	1.46	1.52	1.44	1.55	1.40	0.97	1.01	1.20	0.96
<b>SI</b>	5.39	5.32	5.73	5.82	5.49	3.99	5.46	5.15	5.08
<b>SK</b>	3.06	3.19	3.17	2.95	2.85	1.19	1.26	1.27	2.78
<b>SW</b>	6.57	6.02	7.98	8.30	7.62	6.91	7.00	7.65	7.94

*Source: Adopted from EUROSTAT (2018); own work.*

In the period I observe, the results indicate a decline in percentage of total market premiums written in all the transition countries. This is not the case with developed countries such as Sweden and Slovenia, which show more volatile, but on average positive growth rates.

These numbers indicate that the insurance markets within transition economies have more difficulties coping with the Solvency II regulations, which affects countries' total written premiums.

As I previously state, developed countries which already had a more transparent and risk managed insurance market had better results in total written premiums, while other transition economies are still coping with Solvency II regulatory adjustments.

More accurately, transition countries, which have a low percentage of premiums in total GDP, surprisingly have lower drop rates of premiums within their GDP structure than developed countries. This is because transition economies were heavily affected by the global economic crisis and had almost irrelevant insurance markets (e.g. the case of Bulgaria in 2013 and Romania in 2013).



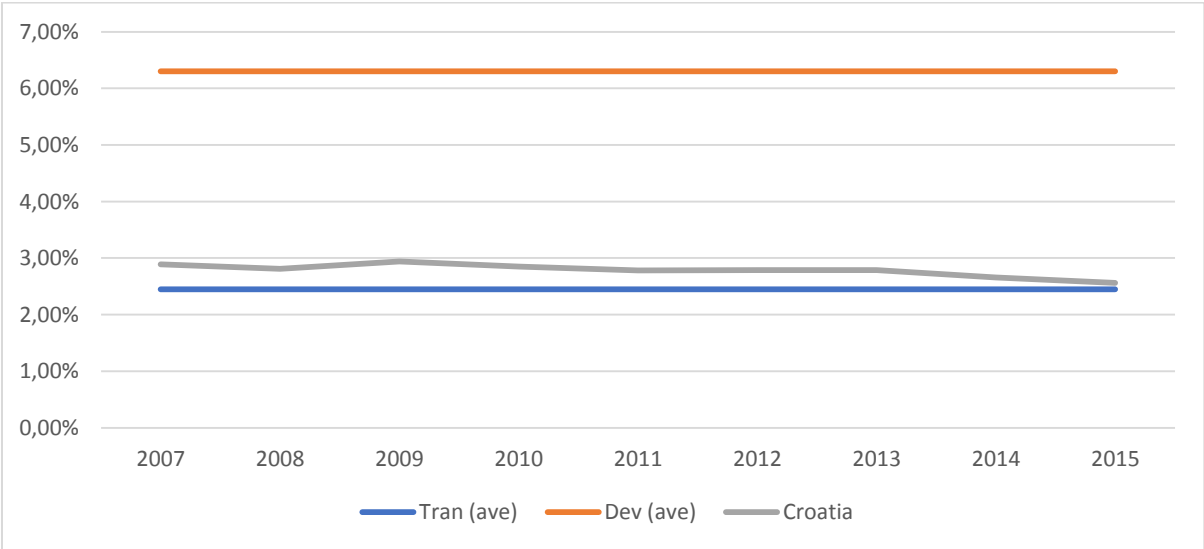
Other countries, such as Slovakia, the Czech Republic and Hungary had a decrease of premiums written because of adjustments to Solvency II regulations. These were all undeveloped countries before the start of the 21<sup>st</sup> century, with almost no digital infrastructure to support necessities for the Solvency II implementation. That’s why most of these countries weren’t able to adjust as fast as Solvency II regulations demanded. They had to adjust their entire risk management policies, focus on data management and data driven decision making, which affected insurance markets to let go of many employees, and also to orient others to a more digital approach.

Below, in Figure 3, I present Croatia’s insurance market positioning in regard to total premiums written and expressed as percentage of countries’ GDP.

For a better comparison, I sorted the data by *developed* category and *transition* country category. I place Slovenia and Sweden in the developed category, since Slovenia’s economy has rapidly developed during the first fifteen years of the 21<sup>st</sup> century. Then, I group the rest of the countries in the transition category (Croatia excluded).

Further on, I calculate the mean for both developed and transition countries and afterwards, I compare the average premiums to GDP with Croatia’s premiums as a proportion of GDP in Figure 3.

*Figure 3: Comparison of average total written premiums of developed and transition countries expressed in % of countries’ GDP and Croatia’s premiums expressed in % of GDP (2007 – 2015)*



*Source: Adopted from EUROSTAT (2018).*

As I present in Figure 3, transition countries show an average of 2.4 % in total written premiums in the observed period, while developed countries show average rates higher than 6.2 % in their GDP structure. Croatia’s percentage of premiums in GDP structure is slightly

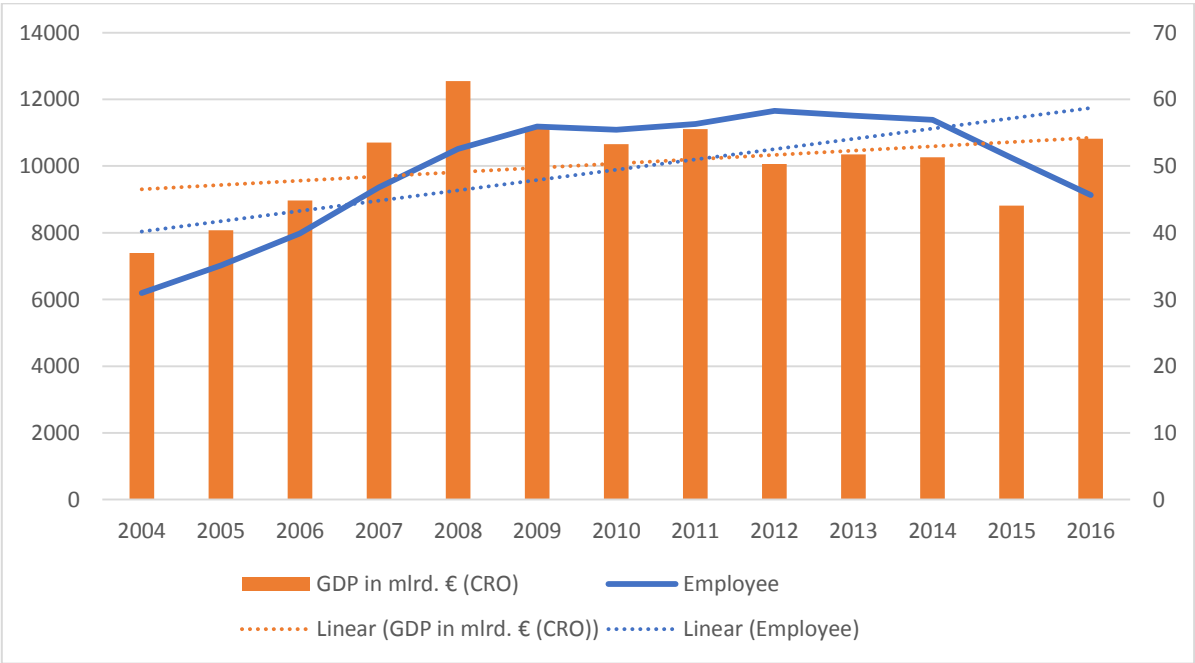
higher than transition countries' average. The biggest difference I note is in 2009, when Croatia had its highest premiums, a little above 3 %, and since, during the implementation of Solvency II regulations, premiums started to decrease until 2015, when premium values were lowest, almost as low as those of the transition economies' average (around 2.4 %).

After Croatia joined the EU, national borders opened up for foreign capital. The last merger happened in April of 2017, and it was also one of the main reasons for the decrease rate of domestic companies, since Croatia Lloyd reinsurance company merged with Croatia Insurance, which took over all of its claims and liabilities.

In my research I find that companies were achieving greater profits through mergers, improving performance and implementing risk management. Mergers followed the process of liberalization in order to create a stronger competition in the insurance market sector.

Also, one important economic indicator is employment within the sector. Croatian insurance market trends regarding employment in the insurance sector were seen as positive until the implementation of the Solvency II regulations. Though over time the trend is becoming positive, the eye test shows decrease in employment within the Croatian insurance market sector. The drop rate started in 2012, a year prior to Croatia joining the EU. I present the trend analysis of employment movements within the Croatian insurance market in Figure 4.

Figure 4: Trend line of number of employees and GDP in Croatia's insurance market sector (2004 – 2016)



Source: Own work.

When observing the Croatian market, numbers show the decrease in number of employees by 2.4 % (or by 308 employees in absolute) in the period from 2004–2016. However, the more important indicator is the linear decrease trend of employment, which started exactly after year 2012, when Croatia joined the EU. Since Solvency II regulations addressed the existing EU insurance market issues, such as lack of transparency and risk management, as well as inadequate data management, the processes were technologically improved. This meant that there was surplus in the employment category. Consequently, the insurance sector suffered significant layoffs following EU accession.

Here, I find it important to emphasize the GDP movements in the exact observed period of time. The growth of GDP indicated investments in the insurance market in Croatia as well. New investments were mandatory because of Solvency II regulations, which helped reinforce the obsolete infrastructure that was used in the former insurance market sector in Croatia. The new infrastructure became more digital, less depended on human factors and more on data and predictions. Thus, there is a steady decrease in the number of employees in the insurance sector in Croatia after Solvency II implementation. However, there is also a slow average GDP growth in the same observed period, which is in line with other authors who prove that economic growth impacts the entire insurance market's growth.

On the other hand, the analysis of employment rates from 2004, prior to the EU accession and during the Solvency I regulatory regime, indicates almost exponential employment increase. These analyses confirm the theory I explain in chapters one and two, showing the lack of efficiency and technology behind Solvency I regulations.

### **3.2 Consequences of market liberalization**

For each country the process of liberalization is individual and is achieved over time in several stages. The main objectives for all are to reduce the restrictions in the insurance sector, to encourage competition which is an important indicator for faster economic growth and to eliminate monopolies. Liberalization should increase stability of the financial sector, therefore it is important to have better supervision of the insurance sector to avoid instability of the financial sector (Škuflić, Galetić & Gregurić, 2011).

With the accession of countries to the EU, there is a liberalization of the insurance market in relation to other EU member states, i.e. free access to the market of a new member state, which is based on the establishing Treaty of the European Union and insurance directives. Within the EU, the FOS principle was established, by which an insurer from one of the member states can directly provide for risk in another member state (Jurilj, Stipić & Česić, 2015).

The second principle is the FOE, which reduces and eliminates the obstacles preventing insurers from the new member states from establishing a company, a branch, or direct

business in another member state. The insurer from other EU member states has the option of securing insurance services through the establishment of an independent insurance company in a member state (as far as possible before joining the European Union) and through brokerage (an affiliate, representation, or office) provided under the FOE principle, or by the FOS principle, by providing insurance services from its home country, even if there is no representative office in the other member state. In Croatia, the Insurance Act of 2005 stipulates the minimum share capital of insurance companies in the amount of 3.12 million € (exceptions are companies that carry out only one activity of non-life insurance if it does not cover liability insurance, loans and guarantees) (Krišto, 2008).

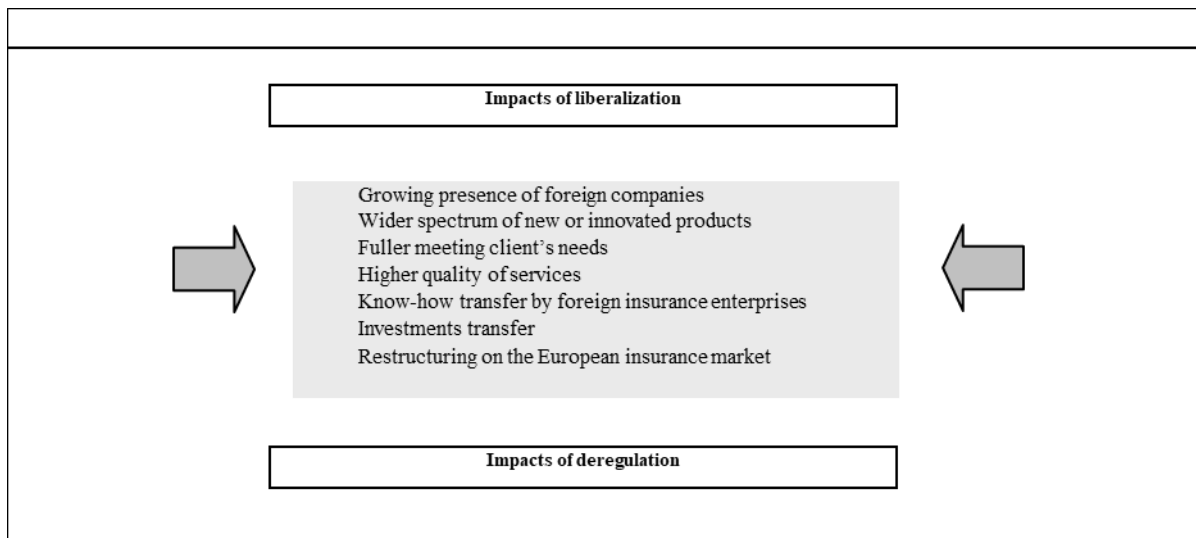
By amending the law from 2008, Croatia's accession to the EU stipulates that the minimum share capital will increase to 3.64 million € and will be adjusted each year by the percentage change in the consumer price index if the change is greater than 5%. Furthermore, by joining the European Union's insurance companies, member states are entitled to carry out insurance activities within the territory of the Republic of Croatia, either directly, or through a subsidiary. In the same way, companies that have obtained a license to carry out insurance business in the Republic of Croatia may provide the same services in any member state (Stipić, 2013).

The process of liberalization affected most countries with faster growth. The liberalization of the insurance market in Croatia has brought many results in the insurance sector and caused an increase in the number of foreign companies, as foreign companies now having an easier market entry. This has influenced a dynamic growth in competitiveness.

New conditions of the European insurance market were established, totally different from insurers to insurers. This led to a huge reduction in the average premium for motor vehicle liability insurance, which is one of the main causes of premium decreases by 9.4 % in 2014 in the non-life insurance group, as well as decreases in the total gross written premiums (hereinafter: GWP) by 5.7 %. Life insurance premiums recorded a slight increase by 3.9 % in 2014 (see Table 8, p. 38).

In 2014, the Croatian insurance market was characterized by the liberalization of the price list for motor vehicle liability insurance. The real liberalization process began after Croatia joined the EU, when insurance companies that were dealing with motor vehicle liability insurance began to use their own, new premium rates. In this way, the process of liberalization started with the abolishment of common conditions.

Figure 5: The Single Market Effects and Deregulation Effects



Source: Sterzynski, (2003).

One of direct effects of liberalization is an increase of competition, which I explain in next chapter.

### 3.3 Opening of the market for foreign competitors

On December 31<sup>st</sup>, 2016, eight insurance companies were directly majority-owned by residents, while 13 insurance companies were directly majority-owned by non-residents. Only the reinsurance company was directly majority-owned by residents. As I mention above, in 2017 this reinsurance company was merged. According to HANFA's 2016 annual report, there is a noticeable increase in the number of companies with the majority share of foreign capital, hence a decrease number of domestic insurance companies.

The insurance market was relatively closed for new competitors before the Republic of Croatia joined to the EU and integrated its policies with EU policies and regulations. Until 2014, it was hard for foreign companies to penetrate the Croatian market. After Croatia joined the EU and became a part of a single insurance market, this situation changed significantly. An easier market entry for foreign competitors will definitely increase growth in competitiveness. Besides the entry of foreign companies, there is a change in the legal form of acting on the market and a greater volume of products and the reduction of business costs (Sterzynski, 2003).

It was expected that huge changes would affect the Croatian insurance market, with stronger penetration of the local market by foreign firms. This means that foreign insurance companies are more present in Croatia now, in 2018/2019, than they were at the beginning of the 21<sup>st</sup>

century. They are performing their activities through branches, agencies, representatives, insurers, or through acquisitions (Sterzynski, 2003).

Following, the foreign and domestic structures have also changed since Croatia joined the EU. As I previously explain, some domestic companies undertook mergers with foreign companies, and some went out of business caused by inability to adapt to Solvency II regulatory standards.

In Table 6 I display two comparison years – 2015 and 2016, which were the years of the Solvency II implementation in Croatia. The effects of this strict regulation were visible on the market structure in the first years of its implementation. Croatia’s previously described insurance market analysis is in line with the results in Table 6, since there was a significant drop rate of employment within the insurance market sector. It is clear that the Croatian insurance market sector sustained some serious hits.

*Table 6: Number of insurance companies by ownership and structure of insurance businesses (as at December 31<sup>st</sup>)*

	<b>Segment</b>	<b>2015</b>	<b>2016</b>
<b>Domestic</b>	Non-life	7	6
	Life	2	1
	Composite	1	1
	Reinsurance	1	1
	<b>Total</b>	<b>11</b>	<b>9</b>
<b>Foreign</b>	Non-life	2	2
	Life	4	4
	Composite	7	7
	Reinsurance	0	0
	<b>Total</b>	<b>13</b>	<b>13</b>

*Source: Croatian Insurance Bureau (2016).*

Also, Table 6 indicates the stability in number of foreign companies in the observed years (2015 and 2016).

Foreign insurance companies, which come from highly regulated economies, such as Germany and Austria, had barely any difficulties adjusting to the transparent regulation of insurance activities and the supervision of the same.

It should be considered that any attempt in increasing market shares would increase a strong competition, and such pressures cause a significant decline in insurance prices, which might

be harmful to the industry. It is supposed that the search for diversification benefits will enhance the mergers and acquisitions in the European insurance sector (European Central Bank, 2007).

Even though there were more foreign companies, 56.10 % were in favor of domestic companies, thanks to Croatia Insurance company, which captures over a quarter of the insurance market alone. In 2015, 13 foreign companies captured 43.90 % of the entire insurance market in Croatia.

In year 2016, there was a decrease of insurance companies in Croatia, and both were domestic. The ratio between domestic and foreign companies in the insurance market became even wider, and so in 2016, there were 13 foreign companies in the insurance market, with a market share of 44.5 %. This meant that domestic companies' market share decreased by 1.5 % in comparison to the previous year (Croatian Insurance Bureau, 2017).

Further on, domestic and foreign insurers offer new services related with insurance, or they are improving existing products to gain more consumers and to diversify from their competition. This is a positive aspect of competition for consumers. Many years ago, this wasn't the case, as choices were scarce. Now clients have much better choices among different products and services offered by insurers. The important thing is that there are no more administrative borders between markets, therefore, products are available to all EU customers.

The reduction of costs is a trend between European insurers, which became a necessary basis of their strategy, enabling economies of scale, as I mention above.

Also, the psychological aspect of customers nowadays, in 2019, is more valuable. All industries depend on satisfying the needs and problems of end customers. Even though the pricing aspect is still of much importance to customers, insurance companies must tailor their portfolios to fit the needs of the end customers. These strategies are well implemented in western European countries and in the U.S. market, but domestic companies in Croatia tend to avoid these approaches and continue to act as in previous times by offering end users the same, traditional product/service, with only the price being the difference. According to Kotler, Kartajaya and Setiawan (2016) it is quite important for companies to start creating their business strategies catering to the end user by focusing on empathy.

Promotional campaigns for products and services launched by foreign companies in Croatia had an emotional segment in them in order to address empathy and motivate end users to act and purchase, while Croatian companies focus their promotion around their products and services and their strengths and qualities.

The insurance market trends in transition economies such as Croatia are easily notable. The case of Bulgaria and Romania which joined the EU in 2007 show similar insurance market patterns.

Firstly, in Bulgaria there were 37 domestic companies until they joined the EU in 2007. There were also 23 subsidiaries of EU enterprises in the Bulgarian market during the same time period. After 2007, the number of domestic enterprises stayed the same in 2008, however, it fell to 36 enterprises in 2009, and it fell in the same trend until a low point of 33 domestic enterprises in 2012.

In the same period, the number of foreign competitors was the same from 2007 – 2010, when it fell to 22 in 2011 and then 20 in 2012. The decreasing trend continued for foreign enterprises, as in 2015, the number of EU enterprises in the Bulgarian market reached a low point of 18 enterprises.

During the same time period, from 2012 – 2016, the Bulgarian insurance market rose up to 46 enterprises from 2012 – 2015. These indicators may point out that the enterprises from the EU simply weren't accepted within the customer market segments.

Similar market trends can be seen in the Romanian case study. Romania was the country that entered the EU in 2007 with Bulgaria. In 2004, Romania had 39 domestic and seven foreign EU insurance companies in their market. From 2004 – 2007, the number of domestic enterprises rose to 42 enterprises and 33 enterprises were from the EU. After joining the EU and accepting a new set of market policies and regulations, the same thing that happened to the Bulgarian market happened with the Romanian market. The number of domestic enterprises rose until 2009 – the peak year in which the number of domestic enterprises was 45. However, at the end of 2015, the number of domestic enterprises fell to 35, which was the lowest number from 2004 – 2015.

A number of foreign enterprises left the market as well. In 2010, there was a big drop from 42 to 34 foreign enterprises in the Romanian insurance market, and by 2015 this number rose to 40 enterprises, which indicates the insurance market's struggles.

Following the cases of Romania and Bulgaria, there was a significant drop rate in the number of domestic companies in the European insurance market from 2007 – 2016. The rate decreased by 15.9%, and the Croatian market, as previously shown, followed that trend. The decrease rate of companies in the Croatian insurance market in the exact same period was 8.7 %. The biggest drop rates were noted with transition countries, such as Slovakia (-33.3 %) and Latvia (-53.3 %).

On the other hand, the Polish insurance market has moderately developed. For example, penetration and density rates grew as high as 3.1 % in 2017 respectively, standing at around the average of the selected transition country peers. As of the first quarter of 2018, there were



61 insurance companies in Poland, of which 27 were life insurers, 33 non-life insurers and one was a reinsurance company.

After a strong downturn in 2013 and 2014, followed by significant growth in 2015 and 2016, the GWP score has shown a rapid growth of 11.3 %, which was the highest among transition country peers.

Slovakia has similar insurance market indicators to Poland. The Slovak insurance market is also considered moderately developed. The penetration rate stood at 2.6 % in 2017, and is around the average value for similar countries. As of the end of 2016, there were 15 companies operating in the country, where three were life insurers and 12 composite insurers. In Slovakia, there is almost up to a 50:50 ratio of life to non-life insurance. After the market shrunk in 2015 and 2016, caused by Solvency II implementation, it finally expanded strongly in 2017 as GWPs grew by 9.3 %. Claims increased at a lower speed than premiums at 3.2 % in 2017. The insurance market concentration in Slovakia is very high. As of 2016, including branches operating in the country, the top five companies' share of the market was 70.5 % and the top 10 accounted for 90 %, where the three largest companies are Allianz (26.5 % market share), Kooperativa (20.7 %) and Generali (9.4 %) (Stipić, 2013).

### **3.4 Review of life insurance trends in Croatia**

In Croatia, the share of total premiums in GDP in 2014 amounted to 2.6 %, of which 1.8 % is the share of non-life insurance premiums and 0.8 % is the share of life insurance premiums. These shares are lower than in 2013, when the proportion of the total premiums in GDP was 2.75 %, which is still lagging behind in comparison with developed countries of the EU (Bačić, 2016).

In the years before the crisis, the insurance market has shown a steady growth. In 2008, the insurance market achieved € 1.26 billion in premiums, and already in 2009, premiums decreased by 2.7 % to € 1.22 billion.

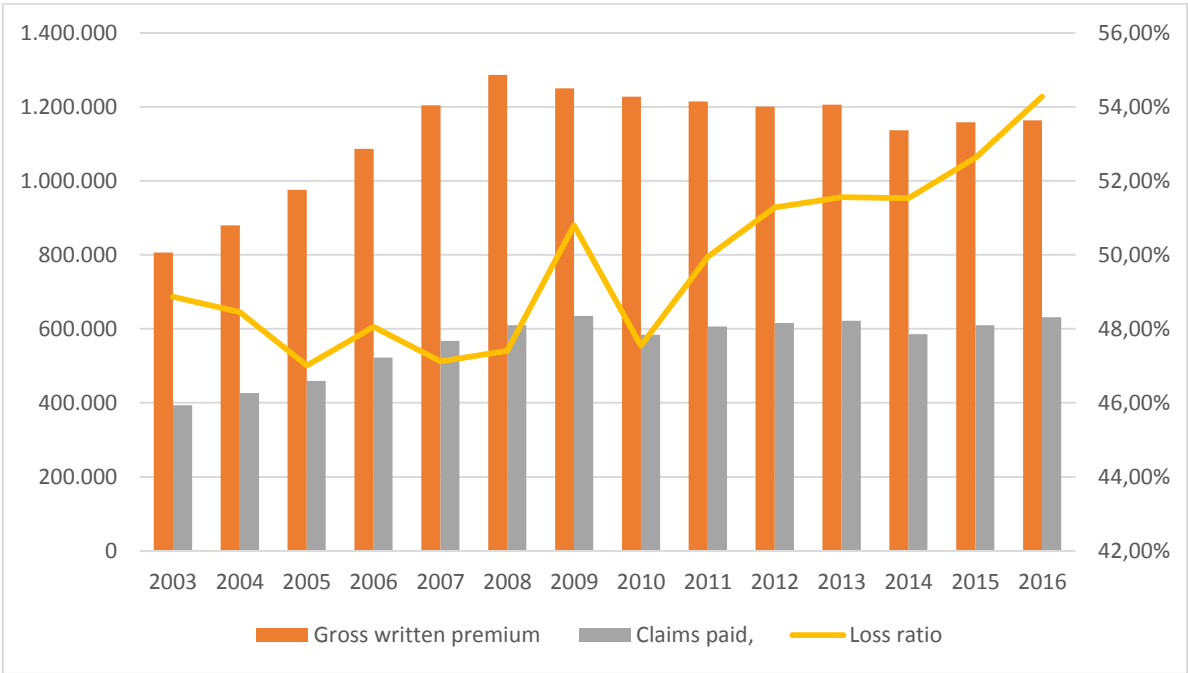
In the period from 2008–2014, the largest decline in premiums occurred in 2014, when the premium was lower by 5.68 % compared to the previous year. It is also the largest decline in premiums from the beginning of the financial and economic crisis in the Republic of Croatia. Such a fall is the result of reduced premiums in all types of insurance, but mostly in premiums for motor vehicle liability insurance (the fall of 18.3%) (HANFA, 2012).

In Table 7 I show the total GWP of insurance companies in Croatia which resulted in growth until 2008, when it reached the highest point in the observed period. In 2009, as a result of the world economic crisis, GWP recorded a drop of 2.8 % in total premiums. The negative trend continued until 2013. In that year, total premiums had a growth of 0.4 %. In the EIOPA

report, after the first installment of the Solvency II regulations, some countries, including Croatia, reacted positively in certain categories, such as GWP.

In 2015, the positive trends in the life insurance market raised the total insurance premium, which, compared to the previous year, grew by 1.9 %. By the end of 2016, total premium growth rose up by 0.4 %. However, this happened due to positive developments in the non-life insurance market (0.9 %), while life insurance dropped by 0.5 % (Croatia Insurance company, 2016).

Figure 6: Gross written premium, claims paid between and loss ratio from 2003 – 2016 in the Republic of Croatia for the total insurance market



Source: HANFA (2016).

Firstly, In Figure 6 I present how GWPs in total reacted after the economic crisis. It resulted in a steady decrease after 2008, and continued to decrease until 2014, which is two years after the first implementation trial of Solvency II. The insurance market adjusted to the Solvency II regulations which affected the increase in GWP in 2015 and 2016. Also, claims paid had similar movement volatility as GWP, except for in year 2009, when the highest loss ratio was recorded. It is speculated that insurance policy holders were involved in numerous fraud attempts to try to gain money from the insurance companies right after the crisis, so, in 2009 there is an unexpected high level of loss ratio. Also, after the crisis, and during the period of the Solvency II implementation, there is a loss ratio increase trend recorded. The highest loss ratio is recorded in 2016, and it surpasses the margin of 50 % in 2015 and 2016.

It is possible to see the Solvency II impact on the GWP line movement. The crisis and new Solvency II regulations affected the Croatian insurance market. The crisis negatively affected customer expenditure, which decreased and had impact on the GWP line movement.

Also, the average percentage of growth of claims paid is higher (4.16 %) than the average percentage of the GWPs (3.43 %) in the period I observe. The previously described data is shown in Table 7.

It can also be stated that both indicators (GWPs and claims paid) had a significant downfall after Croatia joined the EU. After 2013, there is a slow growth percentage present, which could be explained with foreign capital entering the market, and slow adaptation to the Solvency II regulation.

*Table 7: Gross premiums written for total insurance from 2003 – 2016 in Croatia*

Year	Gross written		Claims paid,	
	premium in 000 €	% Change	gross amount (€)	% Change
<b>2003</b>	805,782	8.8	393,758	8.10
<b>2004</b>	880,134	9.2	426,456	8.30
<b>2005</b>	976,186	10.9	458,867	7.60
<b>2006</b>	1,086,432	11.3	522,103	13.78
<b>2007</b>	1,203,941	10.8	567,289	8.65
<b>2008</b>	1,286,441	6.9	609,860	7.50
<b>2009</b>	1,249,948	-2.8	634,959	4.12
<b>2010</b>	1,227,929	-1.8	583,816	-8.05
<b>2011</b>	1,214,608	-1.1	606,659	3.91
<b>2012</b>	1,200,428	-1.2	615,567	1.47
<b>2013</b>	1,205,491	0.4	621,545	0.97
<b>2014</b>	1,137,060	-5.7	585,912	-5.73
<b>2015</b>	1,158,751	1.9	609,772	4.07
<b>2016</b>	1,163,592	0.4	631,509	3.56

*Source: HANFA (2016).*

Table 7 shows a slow and steady increase of GWP from 2014–2016. Since there is a significant downfall in 2014 in comparison to 2013, GWP in the Croatian insurance market report stable and steady growth.

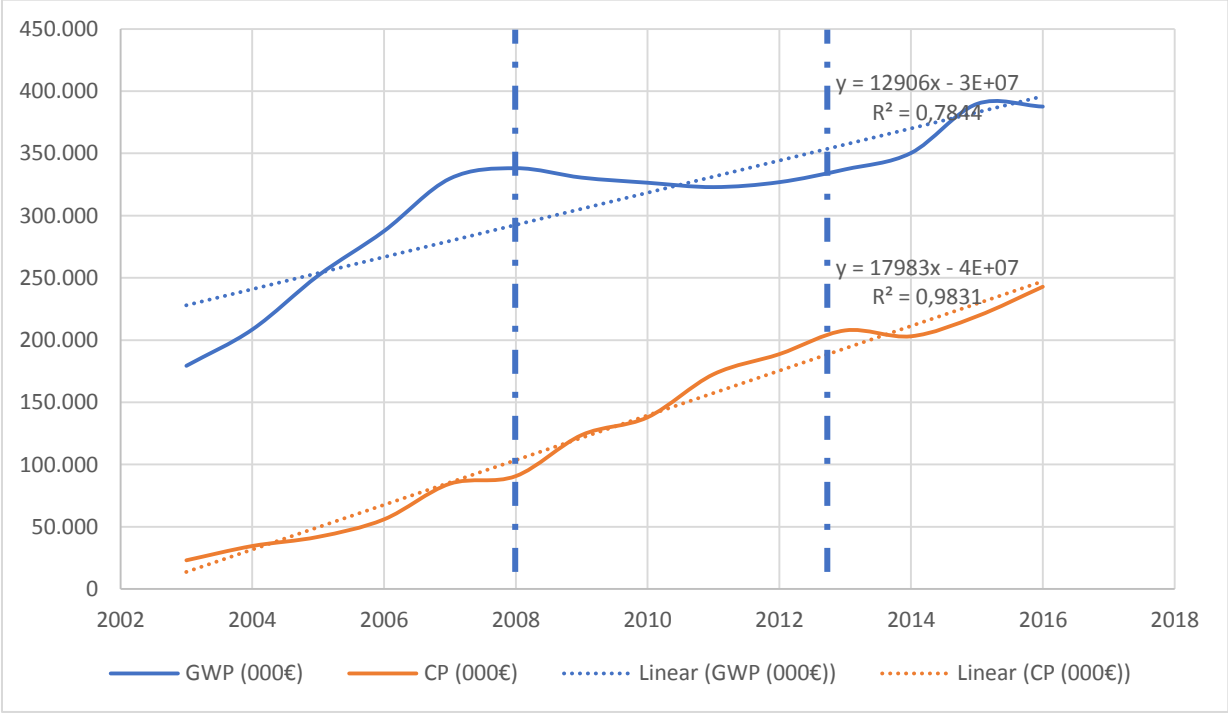
As for life insurance, the data I present in Table 8 indicates linear growth of GWPs, as well as the claims paid in the observed period.

The growth rate of GWPs in life insurance for the observed period was annually increased, in average by € 12,906 (000), and the claims paid by € 17,983 (000).

Also, there is a higher average rate of growth for claims paid in the observed period than for the GWPs. Both indicators dropped significantly, as the previously described data shows, which indicate that the companies within the insurance sector had difficulties adjusting to the Solvency II regulations.

Following, in Figure 7, I make a comparison between GWP and claims paid in the observed period from 2003–2016 for the life insurance market. Both lines are positive and linear, but the closer we approach the final observed year, the gap between the lines becomes closer. The blue line labels the GWP line, which is clearly more positive, while the orange line labels the claims paid category.

*Figure 7: Gross written premium and claims paid for life insurance between 2003 – 2016 in the Republic of Croatia*



Source: HANFA (2016).

The gap between GWP and claims paid is shrinking as the time interval comes to an end, which indicates that the net profit margins are getting smaller.

Previous to the crisis year, the Croatian market recorded increased life insurance GWP, which was just below € 350,000 in 2007. After the market crashed in 2008, there was a stable and continuous decrease of GWP values until the market reconsolidation, after the implementation of Solvency II. After the implementation of Solvency II, the GWP continued to increase in 2014 and 2015.

Claims paid had steady but continuous positive movement during the entire observed period. In year 2013, right after the Solvency II implementation, the graph shows the smallest gap between GWP and claims paid, which indicates the highest loss ratio within the life insurance domain in the observed period.

The results I discuss are shown in Figure 7 and the data collected is presented in Table 8.

*Table 8: Gross premiums written for life insurance from 2003 – 2016 in Croatia*

Year	Gross written		Claims paid,	
	premium in 000 €	% Change	gross amount (€)	% Change
<b>2003</b>	179,295	17.1	23,033	20.6
<b>2004</b>	208,440	16.3	34,498	49.8
<b>2005</b>	251,783	20.8	41,854	21.3
<b>2006</b>	287,548	14.2	55,921	33.6
<b>2007</b>	329,741	14.7	84,554	51.2
<b>2008</b>	338,112	2.5	90,657	7.2
<b>2009</b>	330,529	-2.2	123,683	36.4
<b>2010</b>	326,412	-1.2	137,921	11.5
<b>2011</b>	322,904	-1.1	172,480	25.1
<b>2012</b>	326,873	1.2	188,678	9.4
<b>2013</b>	337,135	3.1	207,757	10.1
<b>2014</b>	350,332	3.9	203,026	-2.3
<b>2015</b>	389,729	11.2	219,116	7.9
<b>2016</b>	387,607	-0.5	242,850	10.8

*Source: HANFA (2016).*

In the analysis of GPW of life insurance it is possible to see the reverse proportional effects of Solvency II in the case of GWP of life insurances. Since the implementation of Solvency II,

GWP has been decreasing slowly but steadily, and claims paid has been increasing, also slowly, but steadily.

### **3.5 Review of non-life insurance trends in Croatia**

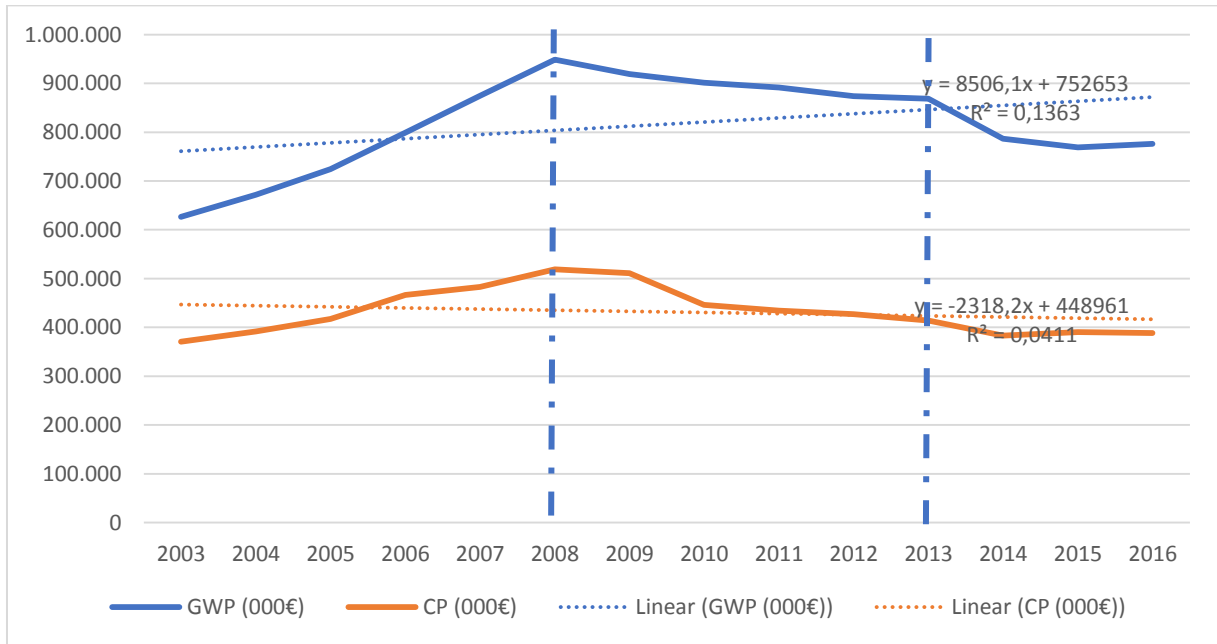
The movement of non-life insurance premiums in Croatia is similar to the movement of total insurance. There was growth until 2008, after which it gravitated toward decrease, consequently to the economic crisis.

Until 2008, the reduction in unemployment and the stabilization of household purchasing power had a positive impact on the insurance market, especially in the segment of life insurance. In 2009 and later, a negative trend was recorded. Premiums were decreasing due to the economic crisis, as a consequence of the increase of unemployment and the reduction of disposable household income, as well as a lack of confidence in the capital market.

Following the previously stated, after Croatia joined the EU, there have been significant downfalls in both trends. Since their peak in 2008, written premiums have declined constantly, so the positive trend line indicator is influenced by the previous growth before the global crisis. The non-life insurance claims paid trend line is both a less volatile and more reliable indicator, since it moves closely by the linear trend line. According to the equation, the written premiums for non-life insurance will increase yearly and by an average of € 8 506 (000).

Also, the claims paid have a negative linear trend throughout the observed period, and are decreasing on average and annually by € 2 318 (000). Both trends are volatile according to r square scores, which were partially caused by the economic crisis in 2008.

Figure 8: Gross written premium for non-life insurance between 2003 – 2016 in the Republic of Croatia



Source: HANFA (2016).

In the GWP analysis for non-life insurance in the Croatian market, it is clear that there is a GWP increase during the 2002 – 2008 period, when the highest peak was also recorded. Since the economic market crash, the GWP in the non-life insurance market was decreasing continuously.

At the same time, claims paid rose until 2008, after which it continuously decreased until 2016.

In Table 9, I show absolute values and % of change in regard to the previous year. Prior to the economic crisis, the GPW for non-life insurance peaked in 2008. Since then, there was a significant downfall present until 2016, when the Croatian insurance market began to shape up again (Table 9).

*Table 9: Gross premiums written for non-life insurance from 2003 – 2016 in Croatia*

<b>Year</b>	<b>Gross written premium in 000 €</b>	<b>% Change</b>	<b>Claims paid, gross amount (€)</b>	<b>% Change</b>
<b>2003</b>	626,487	8.8	370,725	7.4
<b>2004</b>	671,695	7.2	391,958	5.7
<b>2005</b>	724,403	7.8	417,014	6.4
<b>2006</b>	798,883	10.3	466,182	11.8
<b>2007</b>	874,201	9.4	482,735	3.6
<b>2008</b>	948,329	8.5	519,202	7.6
<b>2009</b>	919,420	-3.0	511,276	-1.5
<b>2010</b>	901,516	-1.9	445,895	-12.8
<b>2011</b>	891,704	-1.1	434,179	-2.6
<b>2012</b>	873,554	-2.0	426,889	-1.7
<b>2013</b>	868,356	-0.6	413,787	-3.1
<b>2014</b>	786,728	-9.4	382,886	-7.5
<b>2015</b>	769,021	-2.3	390,656	2.0
<b>2016</b>	775,985	0.9	388,659	-0.5

*Source: HANFA (2016).*

GWPs declined steadily after joining the EU. The biggest decline was notable from 2013–2014, when the GWPs fell by 9.4 % in comparison to 2013.

Following the previous analysis, I compare and describe the two groups of insurance (life and non-life) throughout the observed period (2003–2016). Some slow rates of growth in the sector are visible, however, they are mostly an indicator of new foreign capital and competition in the Croatian market.



## **4 COMPARATIVE ANALYSIS OF CROATIAN AND EU INSURANCE INDUSTRIES**

### **4.1 Methodology and research design**

The main purpose of every research is to obtain knowledge and extend understanding, to collect facts and evidence and interpret it in order to present a picture of the research problem to the world. Therefore, a master plan, which identifies the research methods and gathering procedure, is called a research design (Creswell & Tashakkori, 2007). There are numerous types of research designs and their choice depends on the nature of the objectives that the researcher aims to achieve.

In preparing this master's thesis, in order to answer my research questions and to achieve its objectives, I use different methods: methods of analysis, comparative methods, methods of description and research by using secondary data.

The selected literature captures Croatian and foreign authors in the field of insurance and risk management, EIOPA and The European Economic and Social Committee's (hereinafter: EESC) publications. For information related to Croatia, I used publications from the HANFA, HUO and Croatian Bureau of Statistics.

I conducted my research through secondary data. With this type of research, I utilize secondary data obtained from various sources. So, the dataset I use in this study consists of datasets provided by private insurance companies in the Republic of Croatia, such as Croatia Insurance company and other various topic-related publications and open source datasets on the websites of the previously mentioned companies.

The analysis of the research I lay out serves mostly as a descriptive analysis of the data found in other scientific researches and significant, topic-related publications. With the descriptive analysis, I aim to simply explain the data dynamics. For this reason, in the thesis I use many line graphs which point out the movements of the observed variables and help the reader better understand causes and consequences of certain graph movements. In my research I also include a distribution of frequencies analysis (absolute and relative).

Comparative methods I include are a statistical F-test for determining the statistically significant differences within observed variables. More specifically, I use the F-test to determine whether there are statistically significant differences between Croatia and other countries in density and penetration. Boobier (2016) suggests to use the main indicators of every insurance sector to fundamentally analyze potential differences and market dynamics, such as penetration and density.

I use the F-test when the objective is to compare three or more nominal variables, such as three countries (in the case of this thesis), three regions, etc. The F-test uses sample data means of observed populations and compares them in order to confirm or reject the null hypothesis regarding the equality of the means of the observed populations.

I conduct all the F-tests on a significance level of 5%, which is a standard significance probability. If the p-value score is lower than the significance level of 5%, that means that there are statistically significant differences present and that results vary from country to country (in this thesis). Taking a closer look at the average scores tells us what caused the statistically significant differences.

The focus of this research is the assessment of the impact of Croatia joining the EU and the impact of Solvency II regulations on the insurance market in Croatia, so the collected data is also compared over time. With trend analyses, I aim to determine the relationships between the observed variables over time. I collected the data yearly; from 2004 – 2016, so that the sample size would include 13 observations. The data was collected from the previously mentioned sources, and I analyze and interpret it in this thesis.

Following the previously noted, I conduct trend analyses to analyze movements and relationships over time. A trend analysis consists of line graph supported by a linear line, which show the change of variables over an observed period of time.

In this thesis I analyze the insurance market of Croatia and the EU for the period of 2004 – 2016, with some updated data from the previous year, 2017.

I base my analysis of the insurance market in Croatia on the analysis of key performance indicators, such as density, penetration and share of life insurance in total premiums. Those indicators also represent basic development indicators of the insurance market. Following, I analyze the collected data in Microsoft Excel using a data plugin application for statistical analysis.

#### **4.2 International comparison based on the basic indicators of insurance development**

The insurance market in the EU is still in the process of alignment into a single, integrated market. The main reasons for this are EU expansions. Harmonization challenges refer both to the regulations and the practices of countries, which, prior to accession, had their own regulations, taxes, policies and laws. This is why the harmonization of the American market is and always will be easier (Napier, 2015). There are so many cultural differences present in the EU, which also makes the integration process even harder.

During this harmonization process, there are three key development indicators for each insurance market sector. These are insurance density, insurance penetration and share of life premiums in GDP.

The measure of insurance penetration and density reflects the sector's level of development. While insurance penetration is measured as the percentage of the insurance premium to GDP, insurance density is calculated as the ratio of premium (in €) to the total population (per capita).

Insurance density is used as an indicator for the development of insurance within a country and calculated as the ratio of total insurance premiums to the entire population of a given country (Table 10).

This indicator shows the underdevelopment of the insurance market in the observed countries. Namely, the per capita premium is considerably lower than the average annual premium paid for by the EU member states. Only one third of the premium per capita belongs to life insurance, compared to EU 28, and in the world, where both cases are almost identical (almost 60 per cent belongs to life insurance).

Table 10: Insurance density in Croatia, the EU and the world in 2015 and 2016

	Life Insurance				Non-Life Insurance				Total			
	2016		2015		2016		2015		2016		2015	
	€	%	€	%	€	%	€	%	€	%	€	%
Croatia	<b>95.1</b>	33.3	<b>93.1</b>	33.5	<b>190.5</b>	66.7	<b>184.7</b>	66.5	<b>285.6</b>	100.0	<b>277.8</b>	100.0
EU 28	<b>1349.1</b>	60.9	<b>1387.3</b>	61.9	<b>867.5</b>	39.2	<b>855.2</b>	38.1	<b>2215.6</b>	100.0	<b>2242.5</b>	100.0
World	<b>328.2</b>	55.3	<b>321.4</b>	55.7	<b>265.0</b>	44.6	<b>256.2</b>	44.4	<b>593.5</b>	100.0	<b>577.6</b>	100.0

Source: Swiss Re (2016).

Table 11: Insurance Penetration in Croatia, the EU and the world in 2015 and 2016

	Life Insurance				Non-Life Insurance				Total			
	2016		2015		2016		2015		2016		2015	
	% of GDP	%	% of GDP	%	% of GDP	%	% of GDP	%	% of GDP	%	% of GDP	%
Croatia	0.86	33.46	0.88	33.59	1.71	66.54	1.74	66.41	2.57	100	2.62	100
EU 28	4.5	60.81	4.68	61.82	2.9	39.19	2.89	38.18	7.4	100	7.57	100
World	3.5	55.56	3.47	55.70	2.8	44.44	2.77	44.46	6.3	100	6.23	100

Source: Swiss Re (2016).

The interrelation of Croatia and EU 28 shows that total premium per capita is more than seven times higher in the EU 28, which is four times higher in non-life insurance, and with life insurance the differences are extremely unfavorable, higher almost by 15 times (Table 10).

Compared to the world, relations are more favorable: life insurance density in the world is slightly less than four times higher than in Croatia, and for non-life insurance the difference is smaller. This ultimately means that the density of insurance in the world is much higher than in Croatia.

I calculate insurance penetration in Table 11. This indicator shows the relative size and importance of insurance in the domestic economy and is calculated as the ratio of direct gross premiums to GDP.

As in the previous tables, the following facts can be summed up. A comparison of Croatia with EU 28 shows that the insurance penetration of total insurance is almost three times greater in EU 28, while life insurance penetration is five times greater, and non-life insurance is almost 70 percent greater.

Clearly, there is a different culture of expenditure present in the insurance market in Croatia. Customers are not used to spending money in the insurance domain. They mostly spend it if they have to, like in the case of car insurance, which is an obligation for every car owner. This behavior results in previously observed differences between life and non-life insurance premiums written.

In order to adequately compare density and penetration between Croatian and EU insurance markets, I conduct a series of F-tests. Firstly, Croatia was compared with several transition countries (Slovakia, Poland and Czech Republic) in order to try to detect the statistically significant differences. Then, I repeat the procedure with developed countries (Sweden, France and Denmark).

The results of the first testing indicate that there are statistically significant differences between the observed countries and the Republic of Croatia within the density of total premiums per inhabitant in the domestic market.

Also, I chose these countries because of their similar heritage, political background and developmental trends. Further on, I select developed countries randomly, while still making sure they are all similar to each other in order to deduct greater volatility.

*Table 12: Density scores (total premiums per inhabitant) in the period from 2004 – 2016 for the selected transition and developed countries*

Country	CZ	HR	PL	SK	DE	FR	SE
	€	€	€	€	€	€	€
<b>2004</b>	342	201	114	140	1,844	2,517	2,316
<b>2005</b>	374	231	130	144	1,915	2,773	2,621
<b>2006</b>	413	258	145	157	1,964	3,080	2,318
<b>2007</b>	452	287	176	166	1,979	3,038	2,343
<b>2008</b>	473	305	183	193	2,001	2,826	2,199
<b>2009</b>	498	299	178	377	2,090	3,068	2,542
<b>2010</b>	569	291	198	370	2,186	3,173	3,119
<b>2011</b>	549	283	189	374	2,178	2,890	3,104
<b>2012</b>	557	280	219	375	2,261	2,742	2,902
<b>2013</b>	523	279	209	401	2,328	2,833	3,014
<b>2014</b>	522	263	335	403	2,384	2,994	3,261
<b>2015</b>	512	270	329	365	2,388	3,094	3,479
<b>2016</b>	492	277	323	369	2,365	3,075	3,133

*Source: Insurance Europe (2018).*

Developed countries such as France, Sweden and Denmark have much higher density scores (Table 12) which indicate higher expenditure for developed insurance markets. Further on, France had a higher density per inhabitant score in 2016 within all countries, 3,075 €. In 2016, Sweden had 3,133 € density per inhabitant score and Denmark had the lowest values within the observed developed countries.

Testing results (Appendix 2) indicate that there are statistically significant differences present within the observed countries ( $F=523.87$ ;  $p<0.05$ ). Also, it is visible that there are decreases in density score per inhabitant in almost all countries except Poland, France and Sweden. To conclude, developed countries are able to cope and adjust to the Solvency II regulations since their markets have similar infrastructure, which enables these countries to implement changes such as Solvency II easier.

To discover specific average density differences, individual t-tests were conducted, and those tests indicate that there are statistically significant differences present in every comparison except when comparing Croatia and Slovakia (Appendix 5).

The second important indicator is penetration, which I describe at the beginning of the chapter. As previously mentioned, the same countries were selected and compared with the Croatian insurance market. I divided the countries into developed countries and countries in transition, as in the previous testing.

In Table 13 I show penetration scores for each observed period. An initial eye-test indicates that the Czech Republic has higher average penetration rates than other transition countries.

*Table 13: Penetration (total premiums to GDP) scores of transition and developed countries in comparison to Croatia from 2004 – 2016*

Country	CZ	HR	PL	SK	DE	FR	SE
	%	%	%	%	%	%	%
<b>2004</b>	3.6	2.6	2.1	2.2	6.7	9.2	6.8
<b>2005</b>	3.5	2.7	2	2	6.9	9.8	7.5
<b>2006</b>	3.4	2.8	2	1.9	6.8	10.5	6.3
<b>2007</b>	3.4	2.8	2.1	1.6	6.5	9.9	6
<b>2008</b>	3	2.7	1.9	1.6	6.4	9.1	5.7
<b>2009</b>	3.5	2.9	2.1	3.2	7	10.2	7.6
<b>2010</b>	3.8	2.8	2.1	3	6.9	10.3	7.9
<b>2011</b>	3.5	2.7	1.9	2.9	6.6	9.1	7.2
<b>2012</b>	3.6	2.7	2.1	2.8	6.6	8.6	6.5
<b>2013</b>	3.5	2.7	2	2.9	6.6	8.8	6.6
<b>2014</b>	3.5	2.6	3.1	2.9	6.6	9.2	7.3
<b>2015</b>	3.2	2.6	2.9	2.5	6.4	9.4	7.6
<b>2016</b>	2.9	2.5	2.9	2.5	6.2	9.2	6.7

*Source: Insurance Europe (2018).*

Testing results (Appendix 9) also prove the initial question regarding the existence of statistically significant differences between the insurance market penetration rates of the observed transition and developed countries ( $F=540.04$ ;  $p<0.05$ ). Further on, I compare Croatia with the developed countries of the EU in order to analyze the statistical differences in penetration rates of insurance markets. The initial results show the degree of differences that the developed countries have in comparison to transition countries in terms of penetration rate per insurance market.

Also, individual t-tests were conducted to inspect statistically significant differences between individual comparisons of the countries with Croatia. There are statistically significant differences present in every comparison except in comparison with Slovakia (Appendix 12).

The previously analyzed results indicate very high differences between countries of the EU and Croatia in terms of insurance market density and penetration. Even countries such as the Czech Republic, which is also a country of the former Socialist Bloc, caught up with the speed of development that other developed countries display. The Croatian insurance market is still among the last within the EU insurance markets.

Croatia's slow administrative system and bureaucratic apparatus is still years away from catching up with excelling EU processes, policies and helpful regulations for market liberalization.

It is clear from the provided data that the Croatian insurance market is only now entering real and severe restructuring. Compared to other developed countries, density and penetration scores were significantly lower, even in comparison to certain transition countries. Solvency II and its effects slowed down the entire insurance market sector in Croatia, but in the long run, the restructuring was inevitable to ensure the long term stability of the insurance and financial sector.

To sum up the previously presented results, the relationship of penetration between Croatia and the world is worse than the interdependence of density: the penetration of life insurance in the world is nearly four times higher, and for non-life insurance it is almost two times higher. In total insurance, this means almost two and a half times more penetration in the world than in Croatia. Considering the previously described penetration and density market scores, I present calculated forecasts for the next three years, using the *naïve* forecasting model II which I explain in the methodology chapter. In Table 14 I present the density market scores per country, with three years added as forecast years (2017, 2018 and 2019).

*Table 14: Density scores and forecast density scores in the period from 2004 – 2019 for the selected transition and developed countries*

<b>Country</b>	<b>CZ</b>	<b>HR</b>	<b>PL</b>	<b>SK</b>	<b>DE</b>	<b>FR</b>	<b>SE</b>
	€	€	€	€	€	€	€
<b>2004</b>	342	201	114	140	1,844	2,517	2,316
<b>2005</b>	374	231	130	144	1,915	2,773	2,621
<b>2006</b>	413	258	145	157	1,964	3,080	2,318
<b>2007</b>	452	287	176	166	1,979	3,038	2,343
<b>2008</b>	473	305	183	193	2,001	2,826	2,199
<b>2009</b>	498	299	178	377	2,090	3,068	2,542
<b>2010</b>	569	291	198	370	2,186	3,173	3,119
<b>2011</b>	549	283	189	374	2,178	2,890	3,104
<b>2012</b>	557	280	219	375	2,261	2,742	2,902
<b>2013</b>	523	279	209	401	2,328	2,833	3,014
<b>2014</b>	522	263	335	403	2,384	2,994	3,261
<b>2015</b>	512	270	329	365	2,388	3,094	3,479
<b>2016</b>	492	277	323	369	2,365	3,075	3,133
<b>2017</b>	472	274	320	373	275	3,045	2,786
<b>2018</b>	538	312	365	425	314	3,471	3,176
<b>2019</b>	538	312	365	425	314	3,471	3,176

*Source: Adopted from Insurance Europe (2018).*



The forecasting analysis for density market insurance scores indicates drop rates in the first forecasting year for all the observed countries. In the second year, density scores increase, this is similar to historical data, as a result of market adjustment. The third year marks a stable and continuous density score for all observed countries. These forecasting scores are in line with the way the insurance market reacts in the observed period of time. After a couple of years of decrease scores, market mechanizations balance the scores. In the period I observe in Table 14, the market displays sustained global recession consequences in 2006, 2007 and 2008, and those consequences are visible in later years, such as 2010 and 2011. After market stabilization, the EU implemented the Solvency II regulations in order to improve the European insurance market sector, which also had consequences in density scores because many countries had adjustment issues and could not transform their sectors as quickly as it was necessary. These market transformations also had an effect on the density scores of the observed countries, which is visible in 2016, the year of the Solvency II implementation.

Further on, in Table 15 I calculate the forecasting penetration scores expressed as a percentage of GDP, providing results that are in line with the density forecasting scores.

*Table 15: Penetration (total premiums to GDP) scores and forecasts of transition and developed countries in comparison to Croatia from 2004 – 2019*

<b>Country</b>	<b>CZ</b>	<b>HR</b>	<b>PL</b>	<b>SK</b>	<b>DE</b>	<b>FR</b>	<b>SE</b>
	%	%	%	%	%	%	%
<b>2004</b>	3.60	2.60	2.10	2.20	6.70	9.20	6.80
<b>2005</b>	3.50	2.70	2.00	2.00	6.90	9.80	7.50
<b>2006</b>	3.40	2.80	2.00	1.90	6.80	1.,50	6.30
<b>2007</b>	3.40	2.80	2.10	1.60	6.50	9.90	6.00
<b>2008</b>	3.00	2.70	1.90	1.60	6.40	9.10	5.70
<b>2009</b>	3.50	2.90	2.10	3.20	7.00	1.20	7.60
<b>2010</b>	3.80	2.80	2.10	3.00	6.90	1.30	7.90
<b>2011</b>	3.50	2.70	1.90	2.90	6.60	9.10	7.20
<b>2012</b>	3.60	2.70	2.10	2.80	6.60	8.60	6.50
<b>2013</b>	3.50	2.70	2.00	2.90	6.60	8.80	6.60
<b>2014</b>	3.50	2.60	3.10	2.90	6.60	9.20	7.30
<b>2015</b>	3.20	2.60	2.90	2.50	6.40	9.40	7.60
<b>2016</b>	2.90	2.50	2.90	2.50	6.20	9.20	6.70
<b>2017</b>	2.60	2.40	2.90	2.50	6.00	9.00	5.80
<b>2018</b>	2.90	2.50	2.90	2.50	6.20	9.20	6.71
<b>2019</b>	2.90	2.50	2.90	2.50	6.20	9.20	6.69

*Source: Adopted from Insurance Europe (2018).*

The penetration scores show exact movements as density scores, which are in line with the previously explained market transformations, such as insurance market transparency, data driven risk deduction and decision making derived from Solvency II implementation.

In the next chapter I explain some basic indicators of profitability in the Croatian insurance market.

### **4.3 Basic indicators of profitability in Croatia**

A financial ratio can be defined as a relationship between two pieces of individual quantitative financial information connected with each other in some logical manner, and this connection is considered to be a meaningful financial indicator which can be used by different financial information users.

Profitability ratios are an indicator of a company's overall efficiency. Usually, ratios are used as a measure for earnings generated by a company during a period of time based on its level of sales, assets, capital employed, net worth and earnings per share. Profitability ratios measure the earning capacity of a firm and are considered to be an indicator of growth, success and control (Malik, 2011; Dorofiti, 2015). Creditors, for example, are also interested in profitability ratios, since they indicate the company's capability to meet interest obligations. Shareholders also are interested in profitability, as it will indicate the progress and the rate of return on their investments. The ratios of the return on assets (ROA) and return on equity (ROE) are the mostly used profitability ratios in the analysis.

In addition to the previously mentioned three basic insurance indicators, the differentiation of the national insurance industry is achieved by several established indicators of profitability of the insurance market.

The loss ratio is a ratio of incurred losses and loss adjustment expenses to the total collected insurance premiums. This ratio represents an overall loss ratio for a company. The loss ratio is often in the 65 % to 75 % range. In the beginning of a coverage period the amount of loss ratio is unknown.

A second important measure is the expense ratio, which is equal to a company's underwriting expenses divided by written premiums. Those expenses are, for example, acquisition costs, some general expenses and underwriting costs. This ratio is usually in the 25 % to 40 % range.

The combined ratio measures incurred losses and expenses in relation to the total premiums collected. The combined ratio is one of the most common measures of underwriting profitability. If the combined ratio exceeds 1 (or 100 %), it indicates an underwriting loss. If the combined ratio is less than 1 (or 100 %), it indicates an underwriting profit.

In Table 16 below I show the results collected for the insurance market in Croatia from 2014–2018.

*Table 16: Basic insurance indicators of profitability in Croatia*

<b>Year</b>	<b>The loss ratio (%)</b>	<b>The expense ratio (%)</b>	<b>The combined ratio (%)</b>
<b>2014</b>	64.1	43.5	107.6
<b>2015</b>	63.9	39.2	103.1
<b>2016</b>	61.2	38.9	100.2
<b>2017</b>	63.8	36.9	100.7
<b>2018</b>	63.1	37.2	100.3

*Source: Croatian Insurance Bureau (2018).*

The loss ratio I present in Table 16 doesn't fit with the previously mentioned 65–75 % range. Also, in the year 2014, there was a 43.5 % of expense ratio recorded, which was outside the 25–40 % domain. In the following two years, changes were marginal, but inside the recommended domain. The combine ratio indicator surpasses 100 % in every observed year, which indicates the country is underwriting a loss.

Some of the further comparisons of profitability indicators of the market are *Return on asset*, which was 0.43 % for life insurance in the Republic of Croatia and 2 % for non-life insurance. At the same time, in the EU, the data were similar, and as for life insurance, the score was 0.4 %, while for non-life insurance it was 1.4 %.

Also, the *Return on equity* for life insurances in the Republic of Croatia was 4.46 %, and for non-life insurance it was 7.97 %. At the same time, in the EU, there was 7.8 % ROE for life insurance and 6.1 % ROE for non-life insurance (Stipić & Stipić, 2014, p. 7).

All the profitability indicators point out lower scores in the Croatian insurance market than those in the EU.

These results derive from the slow and non-transparent previous regime and its regulations. In the past, there was no risk management involved and data management was not seen as important. With Solvency II, those aspects became relevant and slowed down the entire insurance market sector.

#### 4.4 Discussion of results

Before the conclusion, I share a few paragraphs to describe the most important findings of my research and to address the research questions. Primarily, in the first research question I address the following:

*How much did European Union's regulations and market liberalization affect insurance companies in Croatia, with an emphasis on the share of foreign capital?*

Everything changed when Solvency II came and obligated complete transparency, technological improvements of the infrastructure, risk-management oriented business and data oriented business.

All of the regulations and policies brought with Solvency II negatively impacted the Croatian insurance market by slowing it down and causing all the indicators to decrease. All the observed basic indicators decreased after the Solvency II implementation, such as density, penetration and GDP of the country.

These indicators follow similar destinies, such as those in other countries' cases, namely, Romania and Bulgaria. In last two observed years, 2015 and 2016, there were 13 foreign companies present in the Croatian market, with 44.5 % of the total market share, which indicates the increase of foreign competitors by 1.5 % in comparison to the previous year. Also, there was a decrease in domestic insurance companies in Croatia in the observed period, as I present in chapter 3.1 titled *Croatian insurance market analysis*, which indicates that the drop rate was linear and on average one domestic company per year.

These results show that domestic companies didn't have enough capital to sustain market liquidity, which became mandatory after Solvency II regulation implementation. Also, domestic companies had issues adjusting their entire infrastructure, and couldn't iterate their business model to new, transparent and risk oriented, more sophisticated models. These inabilities affected the decrease of domestic and increase of foreign companies in the Croatian insurance market.

Even though there were no foreign entries in the Croatian insurance market, stable business models adopted in existing foreign insurance companies indicate that these companies possess the necessary processes, teams and management needed to perform under the regulatory standards of Solvency II.

*How did the basic KPIs – insurance market density, penetration and share of life insurance in total premiums – change after Croatia's accession to the EU?*

Considering the share of life insurance in total premiums, their percentage decreased in 2014 in comparison to 2013. Also, their percentage was 2.75 % lower than in other developed European countries. Furthermore, the decrease rate in GWPs on the Croatian

insurance market is visible in 2016 in comparison to 2015, with a drop rate of 0.5 %, indicating the Solvency II implementation effect.

Even though some privatization activities in the Croatian insurance market are present, the market recovery is still in progress. The density score in the Croatian insurance market was more volatile than the penetration score.

The density decreased from 2010 – 2016, from a high point of 291 € to 277 € in 2016, while penetration also decreased in a smaller amount, from 2.8 % in 2010 to 2.5 % in 2016. Both density and penetration scores show significant differences in results when compared to developed countries, which is in line with the share of life in total premiums score – also 2.75 % lower in Croatian than in the rest of the observed European countries.

To conclude, all three KPIs decreased in the observed period after the Solvency II implementation, which could indicate several things. Firstly, the entire market decreased after the initial test phase of the Solvency II regulation. Solvency II indicated that companies in the entire market should improve their market risk assessment in decision making, which was hard for existing companies in the Croatian market since the decision-making process affected capital liquidity, which was non-transparent and full of risky investments in most companies in the Croatian insurance market.

Secondly, there was a need for the digital evolution of existing insurance companies, since all business done before was non-digitalized and wasn't data oriented, which became a mandatory issue to resolve with the Solvency II implementation.

Thirdly, in Croatia, customers don't have enough purchasing power to choose to spend on life insurance; so consequently, customers insure only obligatory objects such as cars and other types of property demanded by the law.

*Are there significantly statistically differences between Croatian and EU insurance market and if yes, quantify the previously expressed correlation?*

The third research question examines the relationship between the insurance market in Croatia and EU countries. In this thesis, I provide certain evidence, such as the overview of the insurance sector in Croatia, in transition and developed countries, by examining insurance penetration, density and its relationship with the economic growth of the country.

To discover specific average density differences, individual t-tests were conducted, and those tests indicate that there are statistically significant differences present in every comparison except when comparing Croatia and Slovakia (Appendix 5).

The second important indicator is penetration, which I describe at the beginning of the chapter. As previously mentioned, the same countries were selected and compared with the Croatian insurance market. I divided the countries into developed countries and countries

in transition, as in the previous testing. Also, individual t-tests were conducted to inspect statistically significant differences between individual comparisons of the countries with Croatia. There are statistically significant differences present in every comparison except in comparison with Slovakia (Appendix 12).

All results indicate a decrease of the insurance market's key indicators. Firstly, there is a reverse proportion of share of life premiums in total written premiums in Croatia compared to the EU, which is already a bad indication. Foreign investors do not consider this attractive market behavior. Also, Croatia's insurance market profitability indicators are outside of the domains of the combined ratio, which indicates underwritten loss for the entire sector.

Furthermore, penetration rates in the Croatian market are in the domain from 0 to 2.8%, which is an average score for a transition economy. The alarming factor is that these numbers are decreasing, which means that the market is reacting negatively to the Solvency II regulations. Density numbers are also on the downfall, which goes in line with all the previously stated results.

All insurance industry indicators show decrease, which means slow and painful adjustment to market regulations. Even though the density and penetration score forecasts indicate small drop rates, which correspond with the previously mentioned results, after a second and third forecast year, there is considerable growth and stability present, which is in line with previous volatile insurance market movements. I present these results through descriptive statistics.

Most results for developed countries indicate a positive impact of life insurance on economic growth in the EU, but there is a considerable difference between transition and developed economies in their market adjustments, such as Solvency II presented in this thesis. I indicate the GDP decrease in Croatia after Solvency II regulations – from € 54 billion in 2012 to € 43 billion in 2015. These were the years in which the first Solvency II propositions were given to transition countries such as Croatia. All other indicators such as penetration, density and number of employees follow the economic movements in the country, which is the case in many other European and non-European countries, such as Romania, South Africa, Austria, Switzerland and others.

Density scores in Croatia increased in 2010, and afterwards the economic crisis captured many transition economies, including Croatia. After 2010 in Croatia, insurance market density scores started to decrease and dropped until 2016, partially because of economic crisis recovery and partially because of the inability to adjust to Solvency II requirements, which demanded heavy insurance market reforms I explain in chapter 2.2. The penetration scores followed the density line, and after the crisis the Croatian market suffered there is a decrease in 2016, which is normal according to economic movements explained in literature.

To conclude, all significant KPIs covered in literature on the insurance market show volatile movements in terms of penetration density and economic growth, which is predictable for a transition country (e.g. Romania and Bulgaria; chapter 3.3.). Economic growth proves to be crucial, since it is directly correlated to insurance market movements because of its volume and share in GDP. The Croatian market follows the same formalities, since its KPIs move according to GDP movements. Croatia's GDP dropped by approximately 20 % from 2012–2016, and during the same period, the quantification for density was decreased by 21 %, and by 0.04 % for penetration.

## CONCLUSION

Global insurance companies represent a significant economic strength, both within the financial sector, as well as on its own. The number of insurance companies in the EU countries exceeds 5,000. It is worthy to mention Germany, with over 600 and France, with 450 insurance companies. The insurance industry obviously employs a large number of people in addition to influencing the economic development of a state.

Since the insurance market plays such an important role in the economy of every country it enables to mitigate loss. EIOPA is supervisory regulatory institution in the EU. EIOPA is responsible for monitoring and identifying trends, potential risks and weaknesses. In Croatia, the institution with the same function is HANFA, which directly responds to EIOPA since Croatia joined the EU.

After Croatia's accession, the Croatian insurance market was obligated to implement the Solvency II regulations and adjust to a new set of rules, laws and regulations. Solvency II was implemented to evolve the outdated and slow insurance market which was obsolete, had low digital linkage, high risk-oriented business decision-making, irresponsible capital handling, etc. The Croatian market sustained difficulties adjusting to the new Solvency II regulations since it was old and non-flexible, with no digital infrastructure and outdated product and services supply.

Solvency II plays a major role in the EU's insurance market integration. It helps build transparency across the entire EU insurance market and is entirely based on risk assessment, management and quantification, which indicates countries with an old, slow and non-transparent insurance market sector, would have to improve their infrastructure. Also, one of the necessities for implementation of Solvency II is a technologically improved system necessary for data management.

Those regulations had bad impact on the Croatian insurance market. Initially, after accession, there was a decrease of insurance companies in the Croatian insurance market, with a stable number of foreign companies.

Result analysis shows that total written premiums decreased over an observed period of time (2004–2016), as well as life premiums and non-life premiums. There was even a decreased difference between total written premiums and total claims paid, which was quite alarming. Other insurance market indicators point out that employment in the insurance market sector was decreasing after Solvency II was implemented. Following, the profitability indicators of the insurance market sector in Croatia were also low.

Regarding the results, the GDP growth in 2001–2007 ranged from 3.8 % to 5.5 %, while GDP growth slowed by 2.4 % in 2008, steadily declining. Financial results of insurance companies in 2011 were considerably better due to the reduction of losses. Solvency II



impacted the decrease of penetration rates for the insurance market during the entire observed period (2004–2016). The density scores followed this negative trend, which, in general, severely slowed down the development of the insurance market in Croatia.

Also, one critical thought is that the Croatian insurance market is one of the rarest to have an opposite proportion of life written premiums in % of total written premiums (36:64), which is quite opposite in the EU. These results also address the cultural aspects of Croatian customers, which do not prefer products and services that insurance companies offer. Measured by gross premiums on the insurance market, as in previous years, non-life insurance prevailed. In the previous years, the most significant reduction in the share of non-life insurance was recorded in the total premiums, which was mainly influenced by the fall in motor vehicle liability insurance premiums and, on the other hand, the mild growth in life insurance premiums.

In conclusion, according to literature, insurance markets are in direct correlation with the economic growth of a country, which is provided in the third research question of this thesis. I closely examine its main indicators, which show insurance market development such as density, penetration score and GDP movement, using methods of descriptive and inferential statistics.

According to the results, I observe that the KPIs are in direct correlation with economic growth. From country to country, economic growth is mostly differently influenced. In developed countries, economic growth is accomplished through the digital transformation of sectors, privatization and building efficient and digital solutions and processes in companies. In transition countries, governed by the state, it is difficult to shift management roles and to innovate. These examples are seen in Croatia, as well as in other transition economies. This slow transition disables regulations such as Solvency II to make fast progress, due to organizational culture in companies and because of the way decision making is managed.

Lastly, I find that the Croatian insurance market is similar to the entire Croatian economy – unprepared for severe changes such as Solvency II, which is clearly reflected on the insurance market's development indicators. Nevertheless, those changes are necessary and inevitable to ensure long term sustainability and security of the insurance market sector in Croatia.

## REFERENCE LIST

1. Akinlo, T. & Apanisile, O. T. (2014). Relationship between Insurance and Economic Growth in Sub-Saharan African: A Panel Data Analysis. *Modern Economy*, 5(02), 120.
2. Andrijanić, I. & Klasić, K. (2002). *Tehnika osiguranja i reosiguranja*. Zagreb: Mikrorad.
3. Bačić, S. (2016). *Transfer imovinskih rizika i rizika od odgovornosti poduzeća na društva za osiguranje* (Doctoral dissertation). Split: The Faculty of Economics.
4. Bernardino, G. (2016). *Solvency II implementation - beyond compliance*. Rome: EIOPA.
5. Bijelić, M. (2002). *Osiguranje i reosiguranje*. Zagreb: Tectus.
6. Blanchard, O. & Johnson, D. (2013). *Macroeconomics*. USA: Pearson Education.
7. Blanchard, O. (2017). *Macroeconomics*. (7<sup>th</sup> Edit.), USA: Pearson Education.
8. Boobier, T. (2016). *Analytics for Insurance*. UK: Wiley Finance.
9. Čepelakova, L. (2015). *The Impact of the Macroeconomic Environment on Insurance Companies* (masters thesis). Prague: Faculty of Social Sciences.
10. Creswell, J. W. & Tashakkori, A. (2007). *Differing Perspectives on Mixed Methods Research*. UK: Wiley Finance.
11. Croatian Insurance Bureau (2010). *Croatian Insurance Market in 2009*. Zagreb: Croatian Insurance Bureau.
12. Croatian Insurance Bureau (2017). *Insurance Market in the Republic of Croatia 2016; Key Facts*. Zagreb: Croatian Insurance Bureau.
13. CROF - Chief Risk Officer Forum, (2005). *A framework for incorporating diversification in the solvency assessment of insurers*. London: CROF.
14. Cummins, J. D. & Rubio-Misas, M. (2006). Deregulation, consolidation, and efficiency: evidence from the Spanish insurance industry. *Journal of Money, Credit and Banking*, 323–355.
15. Cummins, J. D. & Rubio-Misas, M. (2001). *Organizational Choice and Efficiency: Evidence from the Spanish Insurance Industry*. (Working paper). Philadelphia: Wharton Financial Institutions Center.
16. De Weert, F. (2011). *Bank and Insurance Capital Management*. UK: Wiley Finance.
17. Dorofti, C. & Jakubik, P. (2015). *Insurance Sector Profitability and the Macroeconomic Environment* (No. 4). EIOPA, Risks and Financial Stability Department.
18. ECB - European Central Bank (2007). *Potential impact of solvency II on financial stability*. Frankfurt: ECB
19. European Commission (2016). *Report for Croatia*. (Working Paper). Bruxelles: European Commission
20. European Commission (2019). *Capital Markets Union: Creating a stronger and more integrated European financial supervisory architecture, including on anti-money*

- laundrying*. Obtained 15 October 2019 from [https://europa.eu/rapid/press-release\\_MEMO-19-1928\\_en.htm](https://europa.eu/rapid/press-release_MEMO-19-1928_en.htm)
21. European Insurance and Occupational Pension Authority (2015). *Financial Stability Report*. EIOPA
  22. European Systemic Risk Board (2016). *Report on systemic risks in the EU insurance sector*. ESRB.
  23. EUROSTAT (2018). *Insurance, gross claims payments by type of enterprise* (Data file). Obtained 10 July 2019 from [https://ec.europa.eu/eurostat/product?code=SBS\\_INS\\_5A&mode=view](https://ec.europa.eu/eurostat/product?code=SBS_INS_5A&mode=view)
  24. Grgic, M. (2013). Harmonizacija propisa iz područja osiguranja i reosiguranja putem pravnog okvira Solvency II. *Zagrebačka pravna revija*, 2(2), 161–183.
  25. HANFA - Croatian financial services supervisory agency (2019). *Annual report 2018* (internal material). Zagreb: HANFA.
  26. HANFA - Croatian financial services supervisory agency (2018). *Annual report 2017* (internal material). Zagreb: HANFA.
  27. HANFA - Croatian financial services supervisory agency (2017). *Annual report 2016* (internal material). Zagreb: HANFA.
  28. HANFA (2012). *Izveštaj O Provedenoj Studiji Kvantitativnih Utjecaja (Qis Studiji) Regulative Solvency II Društava Za Osiguranje I Društava Za Reosiguranje U Republici Hrvatskoj*. Zagreb: HANFA.
  29. HUO - Croatian Insurance Bureau (2017). *Insurance Market in the Republic of Croatia 2016; Key Facts*. Zagreb: HUO.
  30. Hladika, M. & Marić, M. (2014). Analiza investicijskog portfelja društava za osiguranje u Republici Hrvatskoj. *Ekonomska misao i praksa*, (2), 509–540.
  31. Hussels, S., Ward, D. & Zurbruegg, R. (2005). Stimulating the Demand for Insurance. *Risk Management and Insurance Review*, 8(2), 257–278.
  32. Insurance Europe (2018). *European insurance industry database* (Data file). Belgium: Insurance Europe
  33. Insurance Research Council (2015). *Growth in Homeowners Insurance Claim Costs*. Obtained 10 June 2019 from <https://www.insurance-research.org/sites/default/files/downloads/FINAL%202015%20Homeowners%20News%20Release.pdf>
  34. Jorion, P. (2011). *Financial Risk Manager Handbook Plus Test Bank*. (6<sup>th</sup> Edit.), UK: Wiley finance.
  35. Jurilj, M.; Stipić, M.; Česić, Z. (2015). Regulative SOLVENCY II kao preduvjet poslovanja osiguratelja u Europskoj Uniji – primjer Republike Hrvatske. *Mostariensia: časopis za humanističke znanosti*, 117–130.
  36. Junker, L., Gerssen, S. & Jutte, M. (2014). Global Insurance Industry Insights. An in-depth perspective. *McKinsey Global Insurance Pools*, 1–25
  37. Kotler, P., Kartajaya, H. & Setiawan, I. (2016). *Marketing 4.0: Moving from traditional to digital*. New Jersey: John Wiley & Sons.

38. Kozarević, S., Regan, L. & Gibbons, R. J. (2008). *The European Union Integration Process and Insurance Market Development: The Case of the Former Yugoslav Countries*. The United States: International Insurance Foundation.
39. Krišto, J. (2008). *Osnove Solvency II*. Zagreb: Hrvatski ured za osiguranje
40. Lester, R. (2009). *Consumer protection insurance*. Washington: The World Bank
41. Malik, H. (2011). Determinants of insurance companies profitability: an analysis of insurance sector of Pakistan. *Academic Research International*, 1(3), 315.
42. Napier, H. R. L. (2015). *An empirical analysis of macroeconomic factors and the effects on insurance demand and profitability* (Doctoral dissertation). Johannesburg: Wits Business School
43. Peleckiene, V., Peleckis, K., Dudzeviciute, G. & Lapinskiene, G. (2017). Changes of Insurance Intermediaries Regulation in the Eu Countries. *Economic Science for Rural Development Conference Proceedings*, (46), 135–141.
44. Rejda, G. E. & McNamara, M. J. (2014). *Principles of Risk Management and Insurance*. Upper Saddle River: Pearson Education Inc.
45. Škuflic, L., Galetic, F. & Greguric, B. (2011). Liberalization and market concentration in the insurance industry: Case of Croatia. *Economic Review: Journal of Economics and Business*, 9(2), 61–75.
46. Sterzynski, M. (2003). The European Single Insurance Market: Overview and impact of the liberalization and deregulation processes. *Belgian Actuarial Bulletin*. 3(1).
47. Stipić, M. (2013). *Hrvatski osiguratelji i tržište osiguranja u EU*. Knin: Veleučilište Marko Marulić
48. Stipić, M. & Stipić, H. (2014). Hrvatsko osigurateljno tržište kao sastavnica tržišta Europske unije. *Zbornik radova, Dani hrvatskog osiguranja*.
49. Swiss Re (2006). *Solvency II: An integrated risk approach for European insurers*. Sigma No. 4/2006. Obtained 10 June 2019 from [https://media.swissre.com/documents/sigma4\\_2006\\_en.pdf](https://media.swissre.com/documents/sigma4_2006_en.pdf)
50. Swiss Re (2016). Sigma World Insurance in 2016: No: 3/2017 Obtained 10 June 2019 from [https://www.swissre.com/dam/jcr:1f198386-eab9-408e-a970-1b0f7fe20bf8/4sigma3\\_2017\\_en.pdf](https://www.swissre.com/dam/jcr:1f198386-eab9-408e-a970-1b0f7fe20bf8/4sigma3_2017_en.pdf)
51. Tipurić, D. & Markulin, G. (2002). *Strateški savezi: suradnjom poduzeća do konkurentne prednosti*. Zagreb: Sinergija nakladništvo.
52. Vaughan, B. R. (2008). Watered Down: Are Insurance Companies Getting Hosed in the Wind vs. Water Controversy. *U. Ill. L. Rev.*, 777.
53. Vaughan, E. J. & Vaughan, T. (2007). *Fundamentals of Risk and Insurance*. John Wiley & Sons.





## **APPENDICES**

## **Appendix 1: Povzetek (Summary in Slovene language)**

Globalne zavarovalnice predstavljajo pomembno gospodarsko moč, tako v finančnem sektorju, kot tudi same po sebi. V državah EU je preko 5.000 zavarovalnic. Omeniti velja Nemčijo z več kot 600 in Francijo s 450 zavarovalnicami. Zaposlujejo veliko število ljudi in hkrati pomembno vplivajo na ekonomski razvoj države.

Ker ima zavarovalniški trg tako pomembno vlogo v gospodarstvu vsake države, so potrebne nujne regulative trga. EIOPA je regulativna institucija v Evropski uniji. Odgovorna je za spremljanje dogajanja in prepoznavanje trendov, možnih tveganj in slabosti na zavarovalniškem trgu. Na Hrvaškem obstaja institucija z enako funkcijo HANFA, ki je od vstopa Hrvaške v EU neposredno povezana z EIOPA.

Po vstopu Hrvaške v EU je bil hrvaški zavarovalni trg dolžan izvajati uredbe Solventnost II in se prilagoditi novemu nizu pravil, zakonov in drugih predpisov. Solventnost II se je izvajala za pomoč pri razvoju zastarelega in počasnega trga, ki ni imel ustrezne digitalne povezave, poleg tega pa je imel visoko tvegano poslovno odločanje, neodgovorno ravnanje s kapitalom ipd. Hrvaški zavarovalniški trg je imel pri prilagajanju novim predpisom precejšnje težave, saj je bil star, nefleksibilen, brez digitalne infrastrukture, z zastarelo ponudbo izdelkov in storitev.

Solventnost II ima pomembno vlogo pri integraciji zavarovalniškega trga v EU. Pomaga povečati preglednost nad celotnim zavarovalniškim trgom v EU in v celoti temelji na oceni tveganja in kvantifikaciji ter upravljanju s tveganji. Navaja, da bi morale vse države s starim, počasnim in nepreglednim sektorjem zavarovalniškega trga izboljšati svojo infrastrukturo. Za izvajanje Solventnosti II je potreben tudi tehnološko izboljšan sistem, z ustrezno infrastrukturo za upravljanje s podatki.

Uvedeni predpisi so slabo vplivali na hrvaški zavarovalniški trg. Sprva je po implementaciji predpisov na hrvaškem zavarovalnem trgu prišlo do zmanjšanja števila zavarovalnic, s stabilnim številom tujih zavarovalniških podjetij.

Analiza rezultatov kaže, da so se v opazovanem obdobju (2004–2016) skupne obračunane premije znižale. Prav tako so se znižale življenjske in premoženjske premije. Nastala je manjša razlika med celotno obračunanimi premijami in v celoti plačanimi terjatvami, kar je bilo precej zaskrbljujoče. Drugi kazalniki zavarovalniškega trga poudarjajo, da se je število zaposlenih v zavarovalnem sektorju po uvedbi Solventnosti II zmanjšalo. Kazalniki donosnosti zavarovalniškega sektorja na Hrvaškem so bili prav tako nizki glede na formalno oblikovane marže.

Kar se tiče rezultatov, je BDP med letoma 2001–2007 beležil rast med 3.8 in 5.5 %, v letu 2008 se je rast upočasnila za 2.4 % in od takrat naprej stalno upada. Finančni rezultati zavarovalnic v letu 2011 so bili zaradi zmanjšanja škode bistveno boljši. Uvedba predpisov Solventnosti II je vplivala na znižanje stopnje penetracije na zavarovalniškem trgu v



celotnem opazovanem obdobju (2004–2016). Rezultati so sledili temu negativnemu trendu, ki je na splošno močno upočasnil razvoj zavarovalnega trga na Hrvaškem.

Kritično dejstvo je tudi delež življenjskih premij v odstotkih vseh obračunanih premij (36:64), kar je posebnost hrvaškega trga. To razmerje je v EU ravno nasprotno. Ti rezultati odražajo tudi kulturne vidike hrvaških strank, ki ne preferirajo storitev in izdelkov, ki jih ponujajo zavarovalnice. Kar se tiče bruto premij na zavarovalniškem trgu, je tako kot v preteklih letih prevladovalo premoženjsko zavarovanje. V preteklih letih je bilo najpomembnejše zmanjšanje deleža premoženjskih zavarovanj v skupnih premijah, kar je posledica padca premij za avtomobilska zavarovanja, ter na drugi strani blaga rast premij življenjskih zavarovanj.

Glede na literaturo lahko zaključimo, da so zavarovalni trgi v neposredni povezavi z gospodarsko rastjo države, ki je podana v tretjem raziskovalnem vprašanju te diplomske naloge., je pregledana literatura potrdila predstavljeno tretje raziskovalno vprašanje diplomske naloge, da je zavarovalniški trg v neposredni povezavi z gospodarsko rastjo države. Natančno so bili preučeni njegovi glavni kazalniki, ki kažejo razvoj zavarovalnega trga, kot so gostota, ocena penetracije in gibanje BDP, z uporabo opisnih in inferencialnih statističnih metod.

Glede na rezultate opazam, da so kazalniki naložb v neposredni povezavi z gospodarsko rastjo. Od države do države se vplivi na gospodarsko rast večinoma razlikujejo. V razvitih državah se gospodarska rast dosega z digitalno preobrazbo sektorjev, privatizacijo, gradnjo učinkovitih in digitalnih rešitev ter procesov v podjetjih. V tranzicijskih državah, ki jih večinoma upravlja država, je menjava vodilnih vlog in biti inovativen v rešitvah večji problem. Tak primer lahko opazimo tako na Hrvaškem, kot tudi v drugih tranzicijskih državah. Ta počasen prehod onemogoča predpisom, kot je Solventnost II, hiter napredek, zaradi organizacijske kulture v podjetjih in zaradi načina sprejemanja odločitev.

Zaključna ugotovitev je, da je hrvaški zavarovalniški trg podoben celotnemu hrvaškemu gospodarstvu - nepripravljen na korenite spremembe kot je Solventnost II, kar se jasno odraža tudi na razvojnih kazalnikih zavarovalniškega trga. Kljub temu so te spremembe nujne in neizogibne za zagotovitev trajnega razvoja in varnosti sektorja zavarovalništva na Hrvaškem.

**Appendix 2: Density mean differences testing between transition and developed countries and Croatia**

**SUMMARY**

<i>Groups</i>	<i>Count</i>	<i>Average</i>	<i>Variance</i>
CZ	13	482.8078	4936.754
HR	13	271.0749	805.565
PL	13	209.7953	5486.094
SK	13	294.9392	12585.05
DE	13	2144.927	36805.04
FR	13	2931.059	34682.64
SE	13	2796.129	180822

**ANOVA**

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	1.24E+08	6	20665029	523.8793	2.52E-64	2.208554
Within Groups	3313478	84	39446.17			
Total	1.27E+08	90				

Source: Own work.

**Appendix 3: T-test for testing statistically significant differences in average density scores between Czech Republic and Croatia**

	<i>CZ</i>	<i>HR</i>
Mean	482.8078	271.0749
Variance	4936.754	805.565
Observations	13	13
Hypothesized Mean Difference	0	
df	16	
t Stat	10.07433	
P(T<=t) one-tail	<0,05	
t Critical one-tail	1.745884	
P(T<=t) two-tail	<0,05	
t Critical two-tail	2.119905	

Source: Own work.

**Appendix 4: T-test for testing statistically significant differences in average density scores between Croatia and Poland**

	<i>HR</i>	<i>PL</i>
Mean	271.0749	209.7953
Variance	805.565	5486.094
Observations	13	13
Hypothesized Mean Difference	0	
df	15	
t Stat	2.78551	
P(T<=t) one-tail	<0,05	
t Critical one-tail	1.75305	
P(T<=t) two-tail	<0,05	
t Critical two-tail	2.13145	

Source: Own work.

**Appendix 5: T-test for testing statistically significant differences in average density scores between Croatia and Slovakia**

	<i>HR</i>	<i>SK</i>
Mean	271.0749	294.9392
Variance	805.565	12585.05
Observations	13	13
Hypothesized Mean Difference	0	
df	14	
t Stat	-0.74357	
P(T<=t) one-tail	>0,05	
t Critical one-tail	1.76131	
P(T<=t) two-tail	>0,05	
t Critical two-tail	2.144787	

Source: Own work.

**Appendix 6: T-test for testing statistically significant differences in average density scores between Croatia and Denmark**

	<i>HR</i>	<i>DE</i>
Mean	271.0749	2144.927
Variance	805.565	36805.04
Observations	13	13
Hypothesized Mean Difference	0	
df	13	
t Stat	-34.8379	
P(T<=t) one-tail	<0,05	
t Critical one-tail	1.770933	
P(T<=t) two-tail	<0,05	
t Critical two-tail	2.160369	

Source: Own work.

**Appendix 7: T-test for testing statistically significant differences in average density scores between Croatia and France**

	<i>HR</i>	<i>FR</i>
Mean	271.0749	2931.059
Variance	805.565	34682.64
Observations	13	13
Hypothesized Mean Difference	0	
df	13	
t Stat	-50.9107	
P(T<=t) one-tail	<0,05	
t Critical one-tail	1.770933	
P(T<=t) two-tail	<0,05	
t Critical two-tail	2.160369	

Source: Own work.

**Appendix 8: T-test for testing statistically significant differences in average density scores between Croatia and Sweden**

	<i>HR</i>	<i>SE</i>
Mean	271.0749	2796.129
Variance	805.565	180822
Observations	13	13
Hypothesized Mean Difference	0	
df	12	
t Stat	-21.3625	
P(T<=t) one-tail	<0,05	
t Critical one-tail	1.782288	
P(T<=t) two-tail	<0,05	
t Critical two-tail	2.178813	

Source: Own work.



**Appendix 9: Penetration mean differences testing between transition and developed countries and Croatia**

**SUMMARY**

<i>Groups</i>	<i>Count</i>	<i>Average</i>	<i>Variance</i>
CZ	13	0,034154	6,14E-06
HR	13	0,027	1,17E-06
PL	13	0,022462	1,76E-05
SK	13	0,024615	3,01E-05
DE	13	0,066308	5,23E-06
FR	13	0,094846	3,56E-05
SE	13	0,069	4,58E-05

**ANOVA**

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0,067602	7	0,009657	540,7639	3,73E-74	2,106465
Within Groups	0,001714	96	1,79E-05			
Total	0,069317	103				

Source: Own work.

**Appendix 10: T-test for testing statistically significant differences in average penetration scores between Czech Republic and Croatia**

	<i>CZ</i>	<i>HR</i>
Mean	0.034202	0.027053
Variance	5.73E-06	9.83E-07
Observations	13	13
Hypothesized Mean Difference	0	
df	16	
t Stat	9.946093	
P(T<=t) one-tail	<0,05	
t Critical one-tail	1.745884	
P(T<=t) two-tail	<0,05	
t Critical two-tail	2.119905	

Source: Own work.

**Appendix 11: T-test for testing statistically significant differences in average penetration scores between Croatia and Poland**

	<i>HR</i>	<i>PL</i>
Mean	0.027053	0.022578
Variance	9.83E-07	1.72E-05
Observations	13	13
Hypothesized Mean Difference	0	
df	13	
t Stat	3.788501	
P(T<=t) one-tail	<0,05	
t Critical one-tail	1.770933	
P(T<=t) two-tail	<0,05	
t Critical two-tail	2.160369	

Source: Own work

**Appendix 12: T-test for testing statistically significant differences in average penetration scores between Croatia and Slovakia**

	<i>HR</i>	<i>SK</i>
Mean	0.027053	0.024382
Variance	9.83E-07	3.03E-05
Observations	13	13
Hypothesized Mean Difference	0	
df	13	
t Stat	1.722583	
P(T<=t) one-tail	>0,05	
t Critical one-tail	1.770933	
P(T<=t) two-tail	>0,05	
t Critical two-tail	2.160369	

Source: Own work.

**Appendix 13: T-test for testing statistically significant differences in average penetration scores between Croatia and Denmark**

	<i>HR</i>	<i>DE</i>
Mean	0.027053	0.066248
Variance	9.83E-07	4.96E-06
Observations	13	13
Hypothesized Mean Difference	0	
df	17	
t Stat	-57.9753	
P(T<=t) one-tail	<0,05	
t Critical one-tail	1.739607	
P(T<=t) two-tail	<0,05	
t Critical two-tail	2.109816	

Source: Own work.

**Appendix 14: T-test for testing statistically significant differences in average penetration scores between Croatia and France**

	<i>HR</i>	<i>FR</i>
Mean	0.027053	0.094762
Variance	9.83E-07	3.64E-05
Observations	13	13
Hypothesized Mean Difference	0	
df	13	
t Stat	-39.9319	
P(T<=t) one-tail	<0,05	
t Critical one-tail	1.770933	
P(T<=t) two-tail	<0,05	
t Critical two-tail	2.160369	

Source: Own work.

**Appendix 15: T-test for testing statistically significant differences in average penetration scores between Croatia and Sweden**

	<i>HR</i>	<i>SE</i>
Mean	0.027053	0.068952
Variance	9.83E-07	4.58E-05
Observations	13	13
Hypothesized Mean Difference	0	
df	13	
t Stat	-22.0756	
P(T<=t) one-tail	<0,05	
t Critical one-tail	1.770933	
P(T<=t) two-tail	<0,05	
t Critical two-tail	2.160369	

Source: Own work.