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Georg Engl

IMPACT OF INTERNATIONAL INVESTMENTS ON THE CROATIAN INSURANCE MARKET, COMPARED TO SELECTED CEE COUNTRIES

Doktorski rad

Zadar / Zagreb, 23.04.2022

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Mentor
prof. dr. sc. Drago Jakovčević

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Izjava o akademskoj čestitosti

Ja, **Georg Engl,** ovime izjavljujem da je moj **doktorski** rad pod naslovom **Impact of international investments on the Croatian insurance market, compared to selected CEE countries** rezultat mojega vlastitog rada, da se temelji na mojim istraživanjima te da se oslanja na izvore i radove navedene u bilješkama i popisu literature. Ni jedan dio mojega rada nije napisan na nedopušten način, odnosno nije prepisan iz necitiranih radova i ne krši bilo čija autorska prava.

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Predgovor

Nakon dvadeset godina rada u industriji osiguranja, veliki dio od toga na području srednje i istočne Europe, bila mi je privilegija i čast moći provesti ovo istraživanje za ovu disertaciju na sveučilištima u Zadru i Libertasu. Želio bih se zahvaliti objema institucijama i svojim mentorima.

Posebna zahvala pripada mojoj obitelji.

Georg Engl

Zadar / Zagreb, 23. travnja 2022.

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1. INTRODUCTION

1.1. General introduction

Since the fall of the Iron Curtain, the countries of the Central and Eastern European region (CEE) have been transitioning from a centrally managed economy to an advanced market economy over the past three decades. This is also true for their insurance markets. International investors have significantly influenced the development of the industry in this region. This doctoral dissertation examines whether the impact of international investments has been different on the Croatian market than on other markets in the region.

International investors have played a critical role in the development of centralized economies towards advanced market economies.

The CEE-region as such is no homogenic region, but rather a heterogenic area of different states with their own economies and therefore also with their individual insurance markets, which can differ quite significantly. They do have at least one particular thing in common as all of these countries are emerging economies that have been on their way to an advanced market economy over the past three decades including efforts for a market-oriented insurance sector. However, although Croatia is part of the CEE-region, its pattern of development might be different in certain sectors and/or in the insurance sector.

Following World War II, the former communist countries of this region nationalized the insurance sector and foreign insurers were expelled. The monopoly of the state-owned insurer was a key feature of those markets. In each country one or two state-owned insurers were established and were the sole providers of insurance.

Opening up towards international investors proved vital for the countries of the CEE region in their transition towards market economies. Numerous international investors and insurance companies have been looking for opportunities of growth in this region and took vital roles in a wide range of strategic steps, whether they have set up early green field operations and helped educate and develop the market or whether they participated in privatisations within the sector or made many of the M&A transactions in the region, brought new products into the countries or developed strategic distribution agreements with other corporations. Many of the most relevant insurance groups are or have been active in the region, with the market being already in international hands.

Similarly, with Croatia being a young developing market economy, its most important steps of developing an open insurance sector can be found in its recent past. For example, Croatia saw prices in its Motor Third Party Liability (MTPL) market liberalised only after many other countries had already passed through such a process. This important process for a development towards a market-oriented insurance sector occurred only in 2013, shortly after Croatia's accession to the European Union. Furthermore, and incidentally at a similar time occurred the sale of the majority part of the state's share in the largest Croatian insurance company Croatia osiguranje. Yet, even after this privatisation, the state holds a share of about 30,6% in Croatia's market leader.

However, the CEE-region, as well as the Republic of Croatia, have proven to be challenging markets for the international insurers as many of them have already made their exits again. This does not change the importance of international players for the insurance market in Croatia and the CEE region.

Before developing the hypotheses and the research around it, the paper gives a short glimpse into the global, regional and Croatian insurance markets where many of the international insurance groups are active in.

1.2. Global insurance markets

Since the topic of the doctoral dissertation is focused on the role of the international investors, it is beneficial to get to an understanding of the global insurance markets and its development, before delving into the CEE-region. Insurance has a worldwide contribution to the Gross Domestic Product (GDP) of around 8-9% (Chart 1), significantly varying across regions and countries. As a comparison for example, the share of insurance premium in the GDP of Croatia is below 3%. These numbers are also important when attempting to understand the strategies of these international insurance groups and their quest for finding market potential.

Apart from its important functional role and its impact on supporting the smooth functioning of businesses and the economies by organizing an effective risk transfer, the insurance industry is very relevant for the world economy.

Chart 1: Insurance premium in relation to GDP (in %)
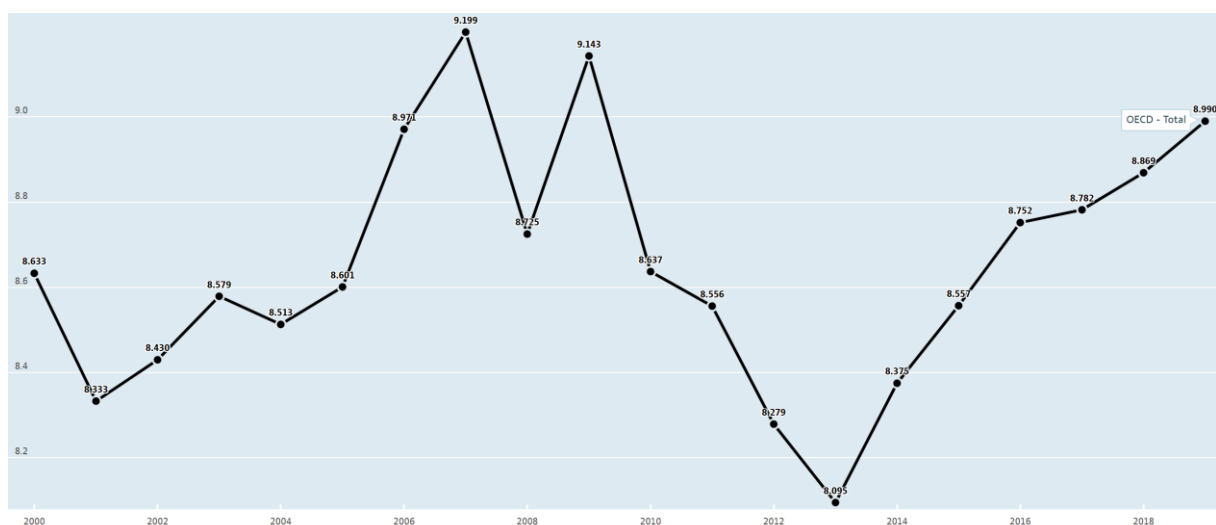
Source: OECD-statistics, all OECD countries

Economic structures and maturities largely diverge across the globe and between highly developed economies and developing countries. The same can be seen for insurance markets. The following Table 1 shows the top-ranked insurance markets and gives an understanding of how their penetration and GDP-contribution diverge from the worldwide average, which

already hints towards a significant dispersion of insurance wealth throughout the world as well as between developed and developing countries. The first table shows the premiums per capita for the respective markets, whereas the second table shows insurance premiums as a share of the GDP, hence the weight of the insurance industry in its respective economy.

The richer countries are spending significantly higher amounts on insurance. For example, the average spending on insurance per person in the United States or Switzerland is above USD 7.000, whereas the worldwide average is just above USD 800 – while in Croatia this amounts to even less than half of that, meaning, in these wealthier countries people are spending ten times as much on insurance as the average global citizen.

Table 1: Top 10 countries by total insurance premiums per capita, 2020

Rank	Country	Total premiums per capita (USD)
1	Cayman Islands	11.479
2	Hong Kong	9.746
3	United States	7.673
4	Switzerland	7.224
5	Denmark	6.521
6	Singapore	5.638
7	Macao	5.593
8	Ireland	5.588
9	Finland	5.218
10	Netherlands	5.022
	Total world	**809**

Source: Swiss Re, *sigma*, No.3/2021

Looking at the economic relevance of the insurance sector, the worldwide average of 2019 was at 7,4%, whereas in the United States or the United Kingdom this share was above 11%. Although this percentage might be influenced by many factors, also by the insurance coverages provided by the state, it appears that more developed countries have a slightly more relevant

insurance sector. This also makes sense, as we will see later, since insurance is involved in all sectors of the economy and enabling them to run more efficiently. Insurance is a very important factor for economic development and so the availability and the use of insurance goes hand in hand with the rest of the economy.

Table 2: Top 10 countries by total insurance premiums as a percent of GDP, 2020

Rank	Country	Total premiums as Percent of GDP
1	Hong Kong	20,8%
2	Taiwan	17,4%
3	Cayman Islands	14,5%
4	South Africa	13,7%
5	United States	12,0%
6	South Korea	11,6%
7	United Kingdom	11,1%
8	Denmark	11,0%
9	Finland	10,7%
10	Netherlands	9,6%
	Total world	**7,4%**

Source: Swiss Re, *sigma*, No.3/2021

Large insurance groups and international investors are often looking for opportunities of growth in developing markets. Swiss Re is expecting that the currently emerging markets will grow their insurance markets faster than their GDP and contribute already 34% to the global direct insurance premium by 2029, which is up from 21% in 2018.[1]

By far the largest geographical insurance market is the Unites States as Chart 2 below shows, which is also implying that the CEE-region is nowhere near appearing on this scale as a significant global territory, yet. The total worldwide market size in terms of annually written premium (revenue) amounts to about USD 6,3 trillion (OECD USD 5 trillion[2]). In comparison,

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[1] Swiss Re Institute, Sigma 03/2019, p. 1
[2] Source, OECD data, https://data.oecd.org/insurance/gross-insurance-premiums.htm#indicator-chart

the CEE-region, brings a market of around USD 40 billion[3] to the worldwide insurance industry. The share of the CEE-region therefore is just below 1%.

Chart 2: Market share of the total insurance market, worldwide, from 2000 to 2019, by country
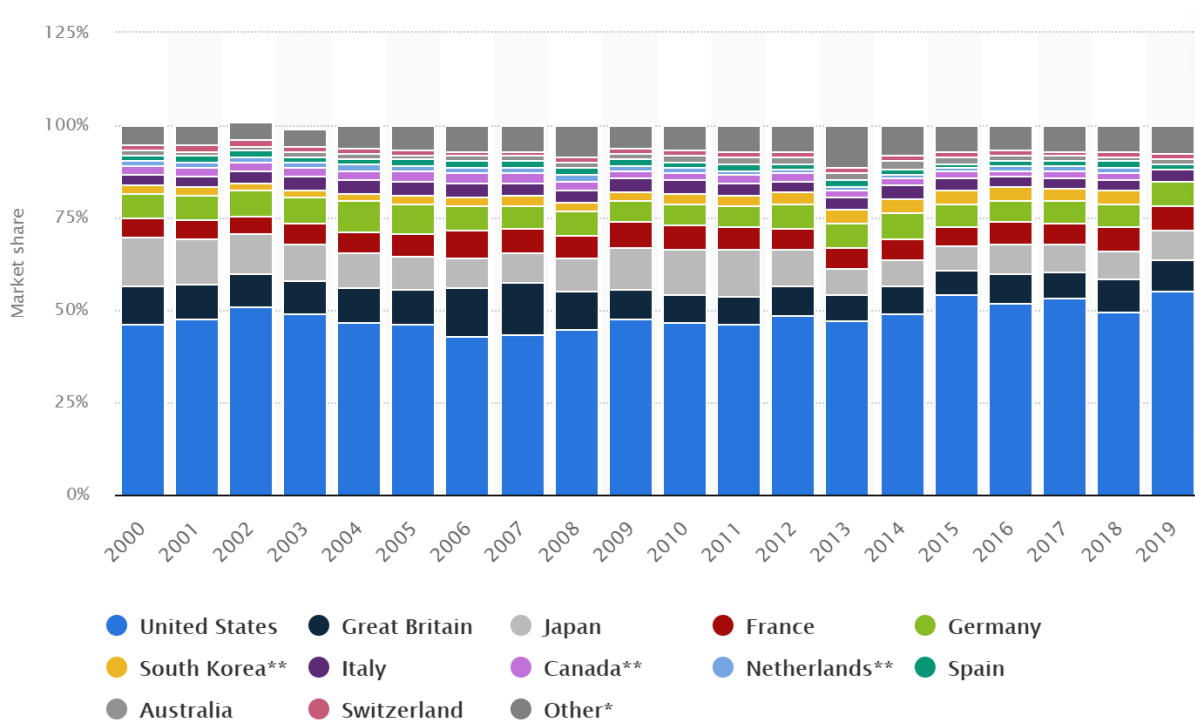
Source: Statista

Furthermore, the insurance market is a rather globally fragmented market. Although there are very large institutions active around the globe, none of them really has a dominating position, which is resulting in rather small market shares even on the top of the ranking of largest insurance groups. Individual markets are rather specific, often affected by differences in the regulatory framework and also in customer preferences resulting in differences of sales channels structures. Capital requirements, heavy investments into a structure at the beginning of an investment before being able to reap the benefits of economies-of-scale, as well as the specificities and differences in respect of regulatory supervision might be some of the reasons for this rather fragmented industry with many international, regional but also local players.

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[3] Deloitte, CEE insurance M&A outlook, 2019 (EUR 36 bn premium from 2018)

Table 3: World's largest insurance companies by net premiums written (sales)

Rank	Insurance Company Name	Domicile	2019 Net premiums written (USD 1.000)	% change from prior year
1	United Health Group Inc.	United States	189.699.000	6,52%
2	Ping An Insurance (Group) Co of China Ltd.	China	110.746.845	10,51%
3	AXA S.A.	France	101.144.960	0,34%
4	China Life Insurance (Group) Company	China	97.744.867	7,52%
5	Kaiser Foundation Group of Health Plans	United States	97.247.349	5,64%
6	Anthem	United States	94.730.000	11,38%
7	Allianz SE	Germany	86.656.640	6,45%
8	People's Insurance Co (Group) of China Ltd.	China	74.238.080	4,49%
9	Assicurazioni Generali S.p.A.	Italy	74.238.080	4,49%
10	Centene Corporation	United States	71.714.000	25,13%
11	State Farm Group	United States	70.640.883	-0,74%
12	Humana Inc.	United States	62.948.000	14,57%
13	Berkshire Hathaway Inc.	United States	62.811.000	6,07%
14	Munich Reinsurance Company	Germany	54.663.840	4,49%
15	Nippon Life Ins Company	Japan	52.026.207	-6,75%
16	CVS Health Corp Group	United States	52.026.207	13,57%
17	Life Insurance Corporation of India	India	50.491.133	12,42%
18	China Pacific Insurance Ltd.	China	46.543.259	6,84%
19	Dai-ichi Life Holdings, Inc.	Japan	45.314.104	-8,58%
20	Prudential plc	United Kingdom	43.481.000	-2,14%
21	National Mut Ins Fed Agricultural Coop.	Japan	42.580.588	-17,62%
22	MetLife Inc.	United States	42.235.000	-3,66%
23	Zurich Insurance Group Ltd.	Switzerland	41.251.000	0,05%
24	Credit Agricole Assurances	France	40.580.960	10,23%

Source: Reinsurance News, https://www.reinsurancene.ws/worlds-largest-insurance-companies/

Chart 3: Largest Insurers worldwide by market capitalisation, by Nov. 2021 (in bn USD)

Insurer	Value
Swiss Re (Switzerland)	28,07
People's Insurance Company of China (China)	29,92
Sun Life Financial (Canada)	33,59
Generali Group (Italy)	34,52
Aflac (US)	36,29
Tokio Marine Holdings (Japan)	36,49
Allstate (US)	36,51
Manulife (Canada)	38,40
China Pacific Insurance (China)	38,54
Travelers (US)	39,38
Munich Re (Germany)	42,68
Prudential Financial (US)	42,97
American International Group (US)	51,47
Metlife (US)	54,96
Progressive (US)	55,39
Prudential (UK)	57,22
Humana (US)	59,04
Zurich Insurance Group (Switzerland)	66,10
AXA Group (France)	70,88
Cigna (US)	73,50
Chubb (Switzerland)	82,83
Allianz (Germany)	98,17
Anthem (US)	104,06
China Life Insurance (China)	112,70
Ping An Insurance (China)	138,92
AIA Group (Hong Kong)	139,23
United Health (US)	428,18

Source: Statista[4]

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[4] Berkshire Hathaway eliminated here as the investment vehicle of Warren Buffet also serves other purposes than insurance.

Table 4: European largest insurers by global sales 2020 (gross written premiums)

Rank	Insurer	Domicile	Premium bn USD (gross sales)	Market share
1	Allianz Group	Germany	129,9	2,07%
2	AXA Group	France	129,5	2,06%
3	Generali Group	Italy	90,0	1,42%
4	Munich Re Group	Germany	73,9	1,17%
5	Legal & General Group	UK	64,4	1,02%
6	Aviva	UK	59,0	0,94%
7	Zurich Insurance Group	Switzerland	54,8	0,87%
8	Prudential	UK	54,8	0,87%
9	Talanx Group	Germany	45,7	0,73%
10	Swiss Re	Switzerland	42,7	0,68%
11	Swiss Life Holding	Switzerland	23,9	0,38%
12	NN Group	Netherlands	21,1	0,33%

Source: Data from Forbes, https://www.forbes.com/lists/global2000/#f0cddcd5ac04, with approximated market shares by author
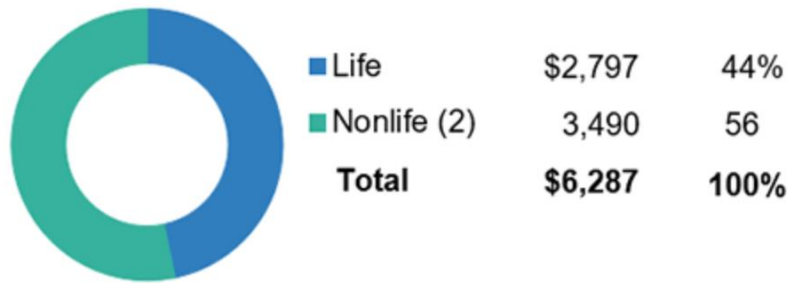
The global insurance market has a value of approximately USD 6 trillion in annual premiums written. As Tables 3 and 4 show, the largest institutions by revenue are all global players and quite large in terms of annual revenues. Table 3 is showing net premiums written, but looking at total sales (gross written premium) in Table 4 it appears, for example, that the two largest European insurance groups Allianz (Germany) with USD 129,9 bn[5] or AXA (France) with USD 129,5 bn[6] hold a global market share of below 2%, respectively.

For completeness, Chart 3 shows the market capitalisations of the largest global insurance corporations.

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[5] Forbes, https://www.forbes.com/companies/allianz/?list=global2000/&sh=1a9c43c94356

[6] Forbes, https://www.forbes.com/companies/axa-group/?list=global2000/&sh=70edee3134ab

Chart 4: Global insurance market, premiums written 2020, Life and Non Life, in US$ bn

■ Life	$2,797	44%
■ Nonlife (2)	3,490	56
Total	**$6,287**	**100%**

(1) Before reinsurance transactions.
(2) Includes accident and health insurance.

Source: Swiss Re, *sigma*, 3/2021

Looking at the vast amounts of assets under management held by insurance companies on a global scale, the significance of the industry becomes even more tangible and its relevance for the financial markets cannot be underestimated. In 2020 insurance companies managed about USD 40 trillion of assets worldwide.

Chart 5: Total assets of insurance companies 2002 – 2020, USD trillion
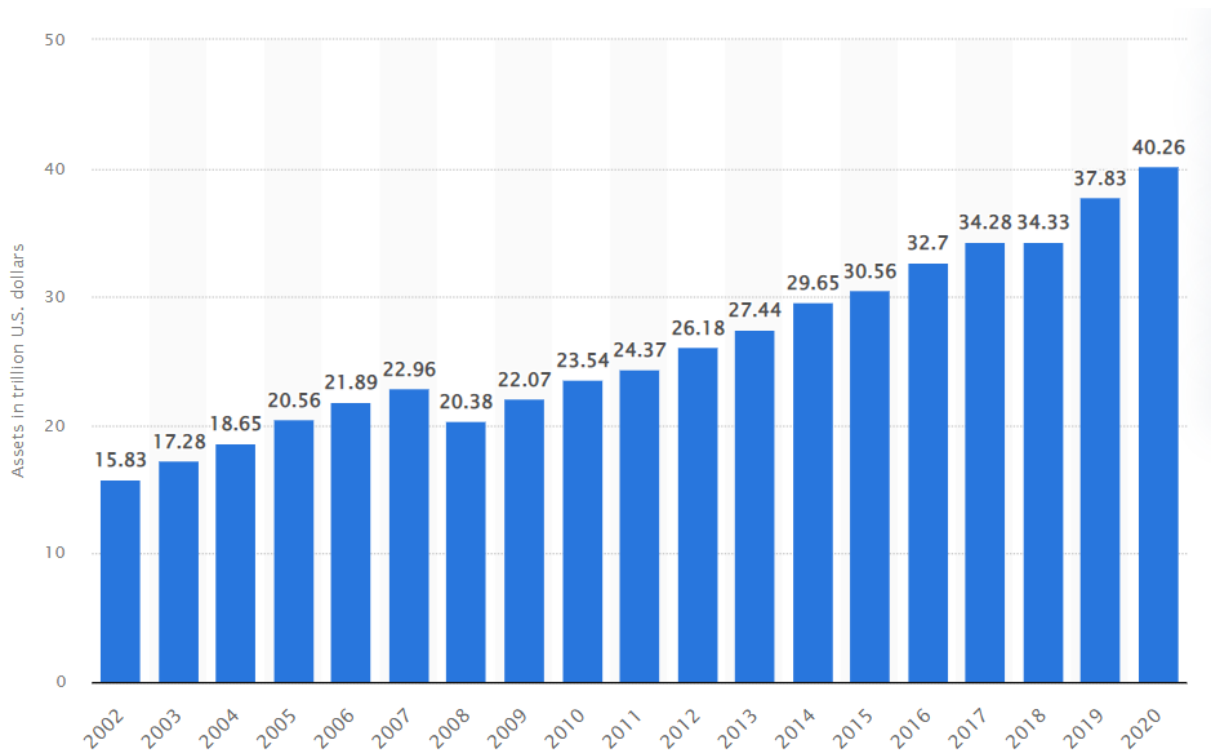
Source: Statista

Chart 6: Absolute premium growth, 2010-2019, by geographic regions

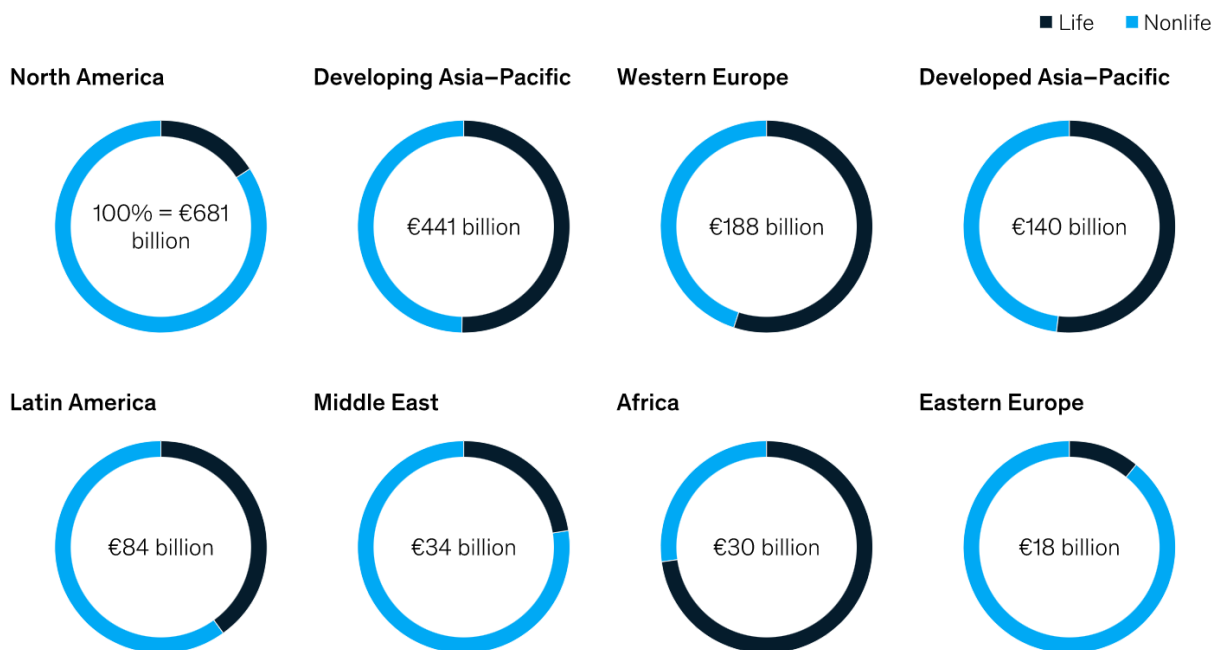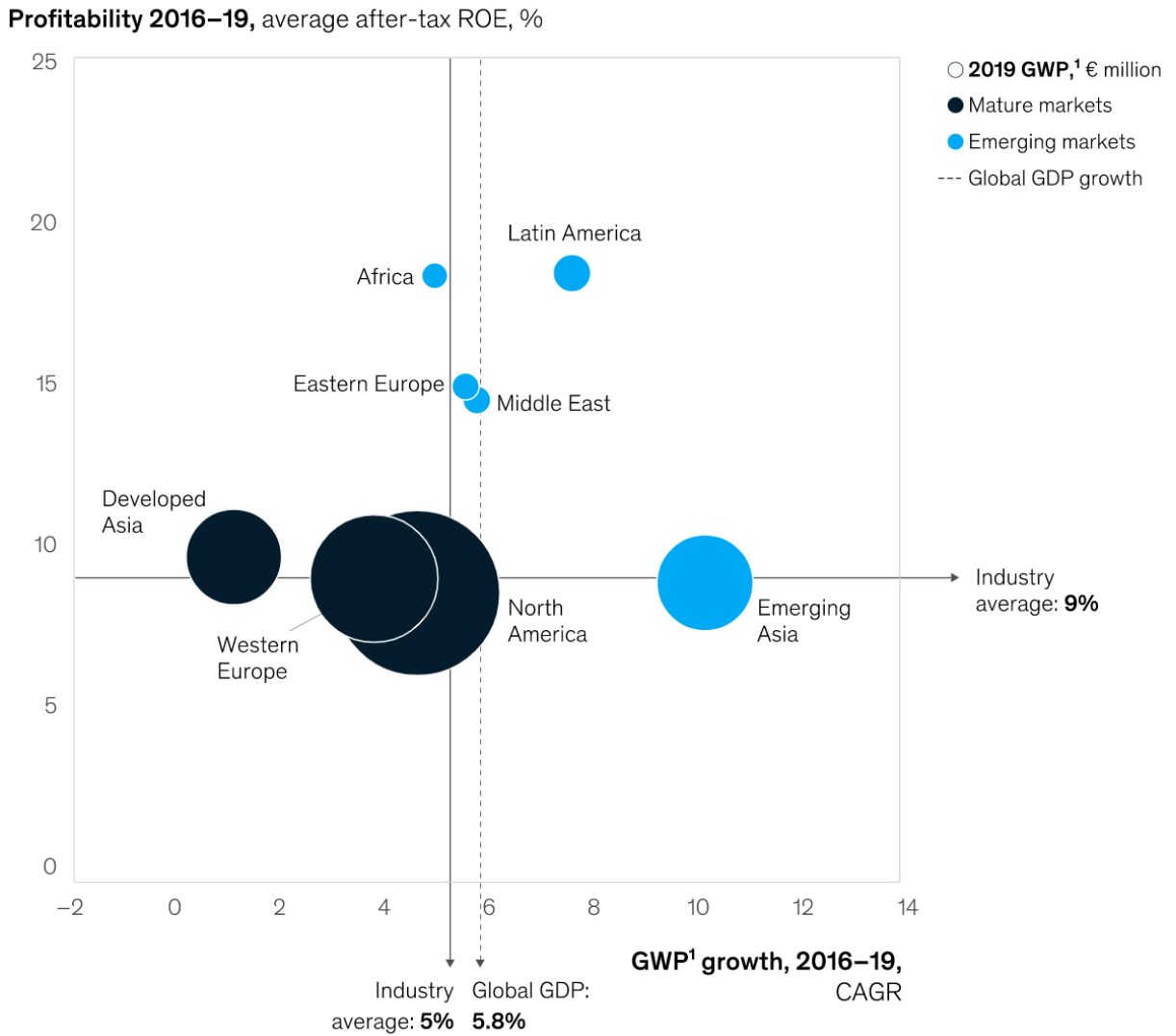Source: McKinsey, https://www.mckinsey.com/industries/financial-services/our-insights/global-insurance-pools-statistics-and-trends-an-overview-of-life-p-and-c-and-health-insurance

Charts 6 and 7 are very relevant for the strategic thought and decision-making process of international insurance groups in respect of their targeted geographical footprint. Key decision parameters here are growth potential, market profitability and diversification. While international insurance groups strive to diversify their risks across line of business and geographies by not putting all their eggs into one basket, they are all looking for opportunities of growth. Although the insurance market has its very large institutions present, it is still a globally fragmented market, where size is offering significant economies-of-scale benefits in terms of operational costs as well as cost of capital. Market profitability is being more and more influenced by regulatory topics as regulation is not homogenous across the globe, as well as capital requirements.

Chart 6 depicts the absolute premium growth between 2010 and 2019, indicating that Eastern Europe's insurance markets grew by EUR 18 bn during this timeframe, although almost entirely in the Non Life segment. Chart 7 contrast market profitability vs market growth for these regions.

The Eastern European region clearly is still a smaller market compared to the well-developed regions, but it is showing growth and potential for even further growth in the future. Together with the strong underlying profitability of the markets in this region, it is understandable why large international players would engage on these markets.

Chart 7: Market profitability and growth by geographic regions

Profitability 2016–19, average after-tax ROE, %

Source: McKinsey, https://www.mckinsey.com/industries/financial-services/our-insights/global-insurance-pools-statistics-and-trends-an-overview-of-life-p-and-c-and-health-insurance

Before addressing the research problem at hand in more detail, it is beneficial to understand where the insurance industry is today and its recent developments and the environment its participants operate in. Financial crises, economic recessions, low-interest rate environment, COVID-19 pandemic, technological innovations with digitalisation and artificial intelligence at the forefront of this development, and a significant increase in regulatory scrutiny and burden as well as changes in customer behaviour has all put additional pressure on an industry that exists already for centuries and has operated in similar ways during all this time.

In the long history of the insurance industry, when it widely kept its traditional model of doing business, there only occurred a few milestones which had such dramatic impact on the whole industry that change got enforced.

Although the financial crisis of 2008 was involving only one prominent large US-American insurer (AIG), the direct exposure of the insurance industry to the core of the crisis, the US subprime mortgage market and the financial derivatives related to it, was somewhat limited. In fact, this crisis was more of a banking than an insurance crisis. Of course, in the aftermath of the shock and the turmoil on financial markets, also insurers suffered severe losses in their investment portfolios. Interestingly though, insurers, due to their long-term investment horizon of their portfolios, were more of a stabilizing factor throughout the crisis.[7]

However, even more relevant for the insurance industry were the repercussions of the crisis, in particular in the area of risk management, which was on the European side already put to high prominence through the implementation of the new capital and risk management regime Solvency II, as well as the significant increase in regulation following thereafter, affecting many areas of business and operations.

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[7] Schich, S., "Insurance companies and the financial crisis", OECD Journal: Financial Market Trends, vol. 2009/2, 2010, https://doi.org/10.1787/fmt-2009-5ks5d4npxm36

1.3. Definition of the research problem

Insurance in the form of seeking protection against unforeseen loss already exists for millennia. While this dissertation primarily looks at the development of the insurance markets during the past thirty years in Croatia and the CEE-region, it is worth understanding the origins of the discipline of insurance in its entirety through its historic development as it is not a phenomenon of the past decades. An approach to insurance, to the development of its markets in the region and to its key international participants shall be offered before going into the depth of the econometric analysis.

The origins of insurance can be traced back to human's need for protection, with the main concept being around spreading the risks among the many. In order to protect oneself from adverse effects of natural and social forces, people have relied on various forms of protection throughout the development of the human community. Only over centuries it has evolved into modern business with people, corporations and nations needing to spread risk among a large number of people and at the same time moving it to entities which are able to handle it.[8]

Insurance is based on the principles of reciprocity and solidarity of people that provide them with financial security in the future. Therefore, insurance is based on the economic rational of compensating for damages occurred in the past in order to preserve a more secure future. During the evolvement of the human community, insurance also developed as a form of legal and economic protection of the people in a given community. The essence of insurance is to organise protection in advance, raise funds and at least partially compensate the economic damage caused to the insured from the funds, which were previously collected and allocated.[9]

As insurance as a discipline evolved and developed, not only different types and forms of insurance arose, but also the ways of collecting and distributing the funds previously collected

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[8] Beattie, A., https://www.investopedia.com/articles/08/history-of-insurance.asp
[9] Denenberg, H. S., Cummins, J. D., Insurance and Reciprocity, The Journal of Risk and Insurance Vol. 38, No. 3 (Sep., 1971), pp. 367-383

by the insurance. The first signs of the logic of insurance and economic damage protection can be found around 3.000 years BC with Chinese and Babylon traders who had to transport goods across dangerous waters. In an effort to reduce the risk of major damage, goods from larger boats were divided to various smaller boats. In the event of a boat sinking, other traders were obliged to give part of their goods to the trader who had suffered a damage after crossing the river.[10]

The first written documents of loss limitation were noted in the Code of Hammurabi from around 1755 BC. Essentially, shipowners were the insured while the lenders would be underwriters.[11] A merchant receiving a loan had to pay the lender an additional fee of money for a guarantee that the loan would be retracted but not collected in the case the shipment were stolen. The first ones to insure their people were the Achaemenian monarchs, and insurance records were submitted to notary offices.[12] In ancient Rome, maritime risks were funded by loans and high interest rates served as the equivalent to insurance fees or premium, a technique copied from the Greeks and was essential in the rise of cities and empires. The owner of the ship or goods had to take a loan before the trip, and after arriving at the destination without damage to repay the loan and pay the agreed interest. In the event of an accident, the loan was not repaid, but served as compensation for the damage suffered.[13]

The modern development of the insurance of boats goes back to the development of the Lloyd's market in London but also to Croatia, as the first law on Maritime Insurance was passed in Dubrovnik in 1568.[14] Modern forms and types of insurance are based on the principle that insurers demand adequate compensation for bearing risk. However, the largest progress of insurance occurred mainly around fundraising and distribution, without changing the essence and principles of insurance. The economic and legal essence of insurance remained the same

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[10] Thompson, W., http://wsrinsurance.com/how-insurance-began-3000-years-of-history/

[11] International Risk Management Institute, https://www.irmi.com/articles/expert-commentary/in-the-beginning-managing-risks

[12] Thompson, W., http://wsrinsurance.com/how-insurance-began-3000-years-of-history/

[13] Žiha, N., The Insurance Function of Roman Maritime Loan, in: Maritime Risk Management: Essays on the History of Marine Insurance, General Average and Sea Loan, Comparative Studies in the History of Insurance Law, Volume 11, Berlin, 2021, p. 35-60

[14] Pavić, D., Pomorsko osiguranje, knjiga prva, 1986, p. 21

during the development of the human community and corresponded to the interests of the people and the state.[15]

The dawn of modern insurance can be traced back to the Great Fire of London from the year 1666 which destroyed more than 30.000 homes. After that, Nicholas Barbon started a building insurance business and later introduced the London's first fire insurance company. Accident insurance was made available in the late 19th century, and it was very similar to modern disability coverage.[16]

Although rudimentary forms of life insurance can be found in funeral communities during the ancient times of Greece and Roman leadership, its modern forms developed much later than marine of fire insurance during the 18th century. Such late development of life insurance for example in France partially is attributed to blockades from religious concerns which deemed it an immoral speculation with people's lives. However, mathematical methods for example by Dutch mathematicians De Witt and Hudde as well as the research of Swiss mathematician Jacob Bernoulli helped lay the grounds for modern Life insurance. Croatia saw its first offerings of Life insurance in 1905, delivered by Croatia osiguravajuća zadruga.[17]

While the state has an interest to protect its people and their material goods in the community, the individuals and communities also strive for their own protection and of their own material goods. Through technological progress and modern development, society on the one hand aspires to reduce hazards and risks, and on the other hand increases them in their development and societal growth. In a more legal sense, insurance is the protection of natural or legal persons who are exposed to the same or similar dangers in terms of life, health, their property or businesses and who have same or similar risks. By pooling funds with individuals or business entities paying certain amounts of money, these funds are then used to compensate the damages incurred and to settle future liabilities in the amount required and determined statistically. Though the occurrence of the damage is expected, its date of occurrence is not yet known. As

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[15] Andrijašević, S., Petranović, V., Ekonomika osiguranja, Alfa d.d., Zagreb, 1999, p.76.
[16] Thompson, W., http://wsrinsurance.com/how-insurance-began-3000-years-of-history/
[17] Čurković, M., Ugovor o osiguranju života, Zagreb, 2005, p. 11-13

the insured has the legal right for compensation after paying the insurance premium, the amount of insurance funds available must correspond to the necessary funds for payment when the insured event occurs.[18]

Insurance as a material compensation for damage and safety in the future is continuing to be increasingly important. With ever increasing natural catastrophes like floods, storms or hails and technological man-made dangers like cyber-risks, there is an increasing relevance and demand of insurance but also an increase in complexity.

Individuals and companies are looking for protection by transferring risks to insurance companies and thereby reducing uncertainty about their net worth and standard of living. The expected cost of this protection, the premium loading, is the difference between the insurance premium charged to the policyholder by the insurer and the present value of the expected losses.[19]

The economic protection through insurance exists in compensation for damage caused by the realization of a risk on property or insured people. In laymen's terms, people jointly compensate each other for the damage which is dispersed over a large number of natural or legal persons and thus becomes less burdensome and almost negligible for all participants. And the company which organizes this process – the insurer – can itself buy compensation for some types of such damages through the purchase of reinsurance.

As insurance is a very broad and complex discipline that touches many areas of society, the state and its people, it is critical that damages are shared among a large number of individuals and that the larger the number the more the risks can be spread. Therefore, insurers have an intrinsic motivation to diversify and gain in size as insurance follows the law of the large number.[20] This helps to understand market strategies of insurers, also in the CEE-region.

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[18] Ostojić, G., Utjecaj fiskalne politike na industriju osiguranje, Zagreb, 2015, p. 16

[19] Doherty, N.A., Smith, C.W. Jr., Corporate Insurance Strategy, in: The Revolution in Corporate Finance, 4th edition, Malden, MA, 2003, p.404

[20] See further: Smith M.L., Kane S.A. (1994) The Law of Large Numbers and the Strength of Insurance, in: Gustavson S.G., Harrington S.E. (eds) Insurance, Risk Management, and Public Policy, Huebner

It is obvious to industry observers of the insurance markets in the CEE-region that there has been a continuous development and transition over the past thirty years towards advanced market-oriented insurance markets. It is also observable that international investors and insurance companies have played a major role in this development. These investors have entered these markets not primarily motivated to help in their development, but because of their own intrinsic motivation and in search of opportunities.

As shown in the previous chapter, the insurance markets of Eastern Europe, though still relatively small in share of the global market, show great potential for growth as well as profitability and are therefore very attractive for international investors which are looking for growth and diversification, after overcoming potential entry hurdles into new markets.

However, it is difficult to reliably estimate this influence of the international investors on the development of these markets without proper analysis of the data. And even more so, it is not clear whether the impact of the involvement of international investors has been consistent across different countries or whether country peculiarities and market specifics have played an even greater role in the development towards market economies.

Although there is a lot of data and literature available for the insurance industry, the existing research does not address the particular problem raised in this dissertation and analyse the impact of international investors on the insurance market in the Republic of Croatia and compare it to their impact in the other countries of the CEE-region. Therefore, it is the objective of this paper to research and define an econometric model based on the data available in respect of these scientific problems and to find also quantifiable answers for them, hence, to link the presence of international investors to the development of these insurance markets.

1.4. Research Hypotheses

The research objective of the dissertation is to assess and evaluate the impact of the engagement of international investors and the main international insurance groups on the development of the Croatian insurance market, as compared to their impact on the insurance markets of other countries in the CEE-region and define relevant parameters for this assessment. This analysis will be supported by appropriate numeric indicators of development (for example gross written premium / gross domestic product, insurance density, insurance penetration) as well as the qualitative analysis of the markets and their participants.

The entire research problem is built around one main hypothesis and three supporting hypotheses which state the following:

Hypothesis:

International investments in the Croatian insurance market have specific economic and financial effects, and these market development impact indicators are similar to those of selected CEE countries.

Supporting hypothesis 1:

The indicators of the development of the Croatian insurance market are correlated with foreign investment in the insurance market.

Supporting hypothesis 2:

The specifics of financial development, economic structure and social relations within a country affect the level of international investment and the number and type of financial products.

Supporting hypothesis 3:

The engagement of international investors also significantly influenced the development of insurance markets towards a market-oriented insurance sector in the CEE region.

These four statements are interconnected and build on each other. The main hypothesis states that the presence of international investors has had a similar effect throughout the CEE-region as it had in the Republic of Croatia. In order to fully confirm its validity, we need to first test the supporting hypothesis 1 and the correlations of the influencing factors throughout the region vs Croatia. If validated, this would confirm the existence of a relationship between the presence of the international insurers and the development of the market. The supporting hypothesis 2 takes a turn and tries to demonstrate if causality here works in the other direction by looking at the problem from a country specific point of view, aiming to understand whether specifics of a country result in a variation of how they attract international investors and their impact on the financial deepening of a country. Finally, the supporting hypothesis 3 evaluates the impact of the international insurance groups even further by proofing their influence across all selected countries on the development towards market economies.

Looking at the Croatian insurance market today, in terms of size, profitability, available products and recognizing the already decades-long presence of international companies, it is difficult to imagine this market without their contribution. Across the entire region we can observe a lot of similarities, but also differences in development. Intuitively, one might lean towards confirming that international investors have had a significant influence on the development of the Croatian insurance market, but it is the task of this research to also scientifically proof this hypothesis.

These hypotheses with their accompanying data model and research with a subsequent analysis aim to clarify and proof this impact of the international investors in Croatia as well as compare it to other markets in the CEE-region.

1.5. Expected scientific contribution

A lot of research has been done on the topic of market concentration and its impact on market development parameters, however, this is irrespective of the origin of the insurer. The aim of this research is to develop an understanding of the significance of the influence of international investors on the insurance market of the Republic of Croatia and compare it with their impact on other countries in the CEE region. This will be achieved by quantitatively and qualitatively assessing the development of these insurance markets, in particular of Croatia, and by validating these hypotheses with a designed econometric model that allows to connect the development of insurance markets in the CEE region to the level of engagement of foreign investors over the recent history. By proving (or rejecting) the validity of the main hypothesis and its supporting hypotheses in the sense that the positive impact of the international investors on the CEE region's insurance markets is valid, this understanding will be evident. A further contribution will be made if this model can serve for other markets and/or industries when aspiring to evaluate the impact of specific groups of investors on the development of their specific industries but also economies at large.

The scientific contribution of this dissertation lies in the design of models based on empirical data, quantification of directions and parameters of research variables in the development of insurance markets of selected Central and Eastern European countries in relation to the engagement and investments of international insurance groups. This includes a contribution to the expansion of the otherwise scarce literature and research on cross-country analysis on insurance markets of the CEE-region.

Based on scientific arguments this research aims to conclude whether the development of the Croatian insurance market followed a similar development than the entire region and whether international investors had a significant influence. Hence, the main scientific contribution lies in the selection of the key parameters for the testing of the hypotheses and in the development of its econometric data model.

1.6. Scientific research methods

The research will be to a large extent focused on the quantitative analysis of empirical data published by various bodies active in the insurance industry of the CEE-region, which are the insurance associations, local regulators, national banks, international insurance groups, other associations as well as other providers of statistical data. The statistical analysis with the tools of correlation and regression will be at the heart of this part, where the relationship between selected development parameters will be examined. Apart from the quantitative analysis of the data, there will also be the qualitative assessment of the impact of the activities carried out by the various insurers. The geographical focus of the research will be on Croatia as well as selected countries of the Central and Eastern European region and across multiple years (longitudinal and transversal).

The following scientific research methods will be relevant for the elaboration of this topic:

- Descriptive statistics and methods of statistical analysis

- Methods of economic modelling

- Strategic analysis

- Historical method

- Method of qualitative analysis and synthesis

- Method of generalization and specialization

- Inductive and deductive method

- Microeconomic and macroeconomic analysis

- Comparative method

The quantitative and statistic methods for research and the econometric model will be built on available data from international insurance companies, local regulators, national banks, insurance associations and other providers of statistical data.

The following research activities are envisioned:

- Analysis and review of existing literature on the topic of insurance, insurance markets in the CEE-region and their main participants including research specifically related to insurance in that region.

- Analysis of the local markets within the scope of the defined Central and Eastern European region by studying the market reports and statistics available, in particular but not restricted to, from the respective local insurance associations, local regulators and national banks.

- Analysis of the annual financial reports of the international insurance companies, which are active in these markets. These are the main strategic players in this sphere, mainly Vienna Insurance Group (Austria), Allianz Group (Germany), Assicurazioni Generali Group (Italy), Uniqa Group (Austria). There are further smaller international groups (for example from Austria) which will be also taken into consideration.

- Review of the publicly available investors and management presentation of the major insurance groups. As most of these international players are stock-listed companies, there are regular investors' presentations publicly available.

- Descriptive analysis and qualitative review of the strategies applied by the international insurers in Croatia and the CEE markets, in particular in reference to actions that are market relevant, for example in respect of M&A, participation in privatisations or market liberalisations of previously regulated markets.

- Quantitative analysis of the results of the international players and putting them into the context of the markets they are operating in.

- Comparison of market developments in dependency of specific parameters, aiming to isolate the ones relevant for understanding the impact of international investors on the CEE insurance markets.

- Development of an econometric panel of these parameters to isolate the impact of the presence of international investment in the insurance market of a country and potential application of its results to different markets.

- Definition of an econometric model to assess the impact of international investors on the insurance market, combining qualitative and quantitative factors. Analyse the impact of a higher share of international investors on the insurance density in any given market, if possible.

- Discussions with insurance experts as managers in the industry and region as well as professors serve as additional inputs on strategies of international insurers and their impact on the development of those markets.

- Peer review of the results (qualitative, quantitative) of the major international insurance groups active in Croatia respectively the CEE-region.

Studying the financial reports and investors' presentations of the main international insurance groups will allow for better understanding their strategic approach and intrinsic motivation as well as a qualitative assessment of the research problem. A review of their historic steps and for example participations in market-changing steps is critical in qualitatively assessing their impact on the developments of those markets.

Furthermore, the analysis of the quantitative data of the economies of this region provides for an understanding of their development as such. Combining it with the specific development of the insurance markets and the involvement of the specific international investors in these markets will help in comparing these influences across the markets and examine the dependencies on the international investors.

Isolating the influence of international investors for Croatia and comparing these dependencies and potential differences across Croatia and other selected CEE-markets will provide the basis for enabling to answer the research questions.

Therefore, the scientific research is built on multiple steps. First, reviewing existing literature and research, understanding the markets and the strategies of the international insurers active in these markets by qualitatively assessing the available documents and presentations as well as discussing the development of the industry with experts and managers. Second, assessing the dependencies of the insurance market development, separately across the CEE-region as well as for Croatia. Third, comparing these two dependencies and finally analyse and interpret the outcome of this research.

1.7. Structure of the doctoral dissertation

This doctoral dissertation is comprised of nine parts, which are first providing an introduction into the topic of insurance, the markets specifically examined in this paper, Croatia and the Central and Eastern European region, before describing the research problem at hand and describing the model by which it is addressed.

The introduction is diving right into the business of insurance in the CEE-region and giving an overview over the topic of this dissertation including the business itself, the geographies of the markets as such and preparing some ground for the following chapters.

In this first chapter also the research problem is defined and the objectives for the dissertation are expressed, together with its expected scientific contribution. Most importantly, the hypotheses, one main hypothesis and three supporting hypotheses, are formulated, serving as a guidance throughout the entire paper. Shortly the research methods applied for this work are then mentioned.

The following three chapters provide some framework to newcomers to the topics of this paper and the business analysed herein. In the second chapter, the essence of the insurance business is briefly described and its industry as a risk management and risk transfer function, as well as offered some overview of the main business segments and product lines. Laying some common ground here, will serve for a better understanding of the researched topics in this paper. For this purpose, several key performance indicators commonly monitored in the insurance industry are highlighted, which will allow for better grasping investors' motivations and companies' intentions.

This chapter will continue with pointing out the major forces which insurance companies and investors on such market are facing, ranging from regulatory trends to technological transformations currently ongoing.

The next chapter will shortly describe the widely but not always consistently used term of the "Central and Eastern Europe (CEE) Region" and propose a relevant scope of selected countries taken into consideration for the purpose of this research, while focusing on their common historical properties and very briefly commenting on the individual countries.

Since the main topic of this doctoral dissertation is the Croatian insurance market, in respect to the CEE-region, the fourth chapter dives into more details of insurance in Croatia and highlights its historic development, structure and key players. This part will lay the foundation for the analytical part which will follow later.

Chapter five aspires to give an overview of the insurance markets in the CEE-region, focusing on the ones relevant for the comparison attempted in this dissertation. Critical steps in the development towards market-oriented insurance market shall be carved out, in particular privatisations in the insurance sector as well as market liberalisations. This will allow comparing the market structures of different countries with the one from Croatia.

The next topic is critical to the research theme and will therefore be addressed in a separate chapter. It will be focusing on the key international investors in the insurance markets of the CEE-region, examining their respective strategies, key steps and historical development. This will allow for a qualitative assessment of the impact of international investors on the insurance markets of the region.

The seventh chapter will propose an econometric model for validating the hypotheses of this research. Collecting data from various sources, like regulatory bases in the respective countries and annual reports of the main international companies and testing for its interdependencies via regression analysis will be key for this model. The data for the insurance market of Croatia will be compared to the other markets of the region, thereby identifying potential differences in connection of the selected parameters vs the market development. Each hypothesis will be analysed with the data from the econometric model.

Chapter eight will further analyse and interpret the results of the econometric model and cross-reference it with the qualitative observations of the respective strategies of the international investors as well as enrich it with comments extracted from a group of managers of and business segment in the region analysed here, where applicable.

After having reviewed the selected insurance markets in the region, performed the analysis and having obtained the results of the research with its further interpretations, the final chapter of the doctoral dissertation draws its conclusion on the topic of the dissertation with some observations and an outlook for the Croatian insurance sector as well as the markets in the Central and Eastern European region.

At the end, a short summary in the English language and a longer summary in the Croatian language are made available, as well as the technical items of the paper with a list of sources and literature, a detailed list of data sources for the econometric model, key words, abbreviations, list of tables, charts and figures and a short biography of the author.

2.   THE INSURANCE INDUSTRY

Life is full of risks, to people, to properties as well as to business ventures. Insurance is the discipline of organizing the pooling and transfer of many of those risks, allowing for the management of risks and uncertainties, which is a crucial contribution to a functioning of economies and societies in general. This chapter will briefly lay out the fundamentals of the insurance industry, its businesses and key performance indicators as well as offer a view on current forces significantly influencing the industry.

2.1.   Insurance and the transfer of risk

Insurance is a response to the existence of risks which are all around us, unavoidable and present in every human situation. Although there are various definitions of risk, all of them deal with the uncertainty of outcomes.[21]

Definitions of risk may also vary depending on the areas of risk, as risks are often viewed widely different by different professions and people with different backgrounds. For example, entrepreneurs might have a different assessment of risks than employed managers, the views of medical doctors almost certainly diverge from those of politicians, the architect's attitude towards risks often differs from the investor's view or the teenager worries about different risks than the person responsible for a one-income household.

Difference in information might play a role, however, there is a common ground here upon all of them agree. Risk represents a danger, the possibility of a loss, the possibility of an adverse event in the future that causes some damage with human, economic and/or legal consequences. Risks in the broadest sense hold a specific threat, with uncertainty but an expected loss in some

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[21] Berg, H-P, Risk Management: Procedures, Methods and Experiences, 2010, RT&A (Vol. 1), p. 79

future – an uncertain event that can have unwanted consequences. However, it is necessary to make a distinction between risk and uncertainty as risk is allowing for the assignment of assumed probabilities to mutually exclusive outcomes of future events. Uncertainty lies there where a probability cannot be assumed.[22]

Accepting the fact that risks remain an integral part of our lives and cannot fully be eliminated, neither to life, health, property, finances or businesses, the methods of risk management are critical – and in a world that is becoming increasingly complex and uncertain – more and more important. The risk management methods can be categorized the following way, as illustrated in Figure 1:[23]

- Risk avoidance, by not engaging in certain risky activities, which might not be possible in every instance.

- Risk reduction, by various measures and activities that reduce the likelihood and/or severity of the outcome.

- Risk retention, by consciously accepting a certain level of risks, depending on budgetary capacities.

- Risk transfer, by transferring the risk to someone else – usually an insurer – for some compensation.

Insurance is an intangible product, and its price is determined by expectations of claims behaviour in the future, therefore prices of insurance of the same product can vary. In fact, for various reasons, for example different economic structures, prices for the homogenic products vary across different markets (differentiation). For example, the price of the same insurance product will be different in Croatia and in Austria. Furthermore, the same product, with the same risks insured, might be offered for differentiated premiums on the same market. For example, the price of the same insurance of the same risks in Croatia might vary across different insurers.[24]

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[22] Andrijašević, S., Petranović, V., Ekonomika osiguranja, Zagreb, 1999, p. 3
[23] http://www.hbrmag.com.au/article/read/why-smes-need-the-right-human-capital-risk-protection-1572
[24] Andrijanić, I., Klasić, K., Tehnika Osiguranja i Reosiguranja, Zagreb, 2002, p. 34

Figure 1: Risk management methods

Source: http://www.hbrmag.com.au/article/read/why-smes-need-the-right-human-capital-risk-protection-1572

Insurance is a key element of risk management considerations for individuals as well as enterprises, with the role of reducing the negative outcome of a specific risk.

> "Insurance reimburses an individual (company or household) for some or all of a financial loss that is linked to an unpredictable event or risk. This protection is accomplished through a pooling mechanism whereby many individuals who are vulnerable to the particular risk are joined together into a risk pool. Each person pays a small amount of money, known as a premium, into the pool, which is then used to compensate the unfortunate individuals who do actually suffer a loss. Insurance reduces vulnerability by replacing the uncertain prospect of large losses with the certainty of making small regular premium payments."[25]

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[25] Churchill, C., Liber D., McCord M., Roth J., Making Insurance Work for Microfinance Institutions: A Technical Guide to Developing and Delivering Microinsurance. Geneva: International Labour Organization, 2003, p. 9

When defining risks in the context of insurance three characteristics of risk are helpful: risk is calculable, collective and capital.[26] The first characteristic is really the foundation of insurance with events being assigned with probabilities that allows for understanding the chances of specifics events happening. The second one relates to the fact that risks affect an entire population and are not purely individualized. Finally, the insurance is not for an actual damage or injury but for the financial consequences of that, the loss of capital. Insurance looks at risk as the possibility and probability of occurrence of an economic damage for which there is a human willingness to compensate once it has occurred or prevent it before it occurs. The probability of risk can be quantified and measured as the likelihood of an adverse event occurring, that results in economic and/or human harm. In reality, often available historical data allows understanding the frequencies of distribution of results around expected results. Important and widely used measures for risk are standard deviation, variance, covariance and coefficient of variation (CV), as illustrated in Figure 2.[27]

For an insurance company, the probability of occurrence of a harmful event is very important as it allows to determine the amount of the required premium. This determination of the premium is obviously forward looking, but in order for the expected damages to be sufficiently covered, it is necessary to raise at least approximately that amount of financial resources. Only then the insurer will avoid paying out more than collected, hence avoiding making a loss.

The problem at the heart of insurance is a statistical one and essentially reduced to the problem of determining the required size of the necessary financial resources to cover the expected damages. Every insurance company strives to assess as accurately as possible the risks it covers from its clients and calculate the amount of premium needed to cover expected claims. Therefore, one of insurance's main risk is one of misjudging or miscalculating this expected risk, because all forecasts and projections are known to be uncertain. Although no scientific method can predict risks with 100% certainty, statistical and mathematical – or rather actuarial methods – are of paramount importance in the insurance industry.[28]

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[26] Ewald., F., Insurance and Risk, 1991, p. 201-204
[27] Further to this: Arachchige, C., Prendergast, L., Staudte, R., Robust analogues to the Coefficient of Variation, La Trobe University, 2019 and various literature on statistics in finance
[28] Ostojić, G., Utjecaj fiskalne politike na industriju osiguranje, Zagreb, 2015, p. 24

Figure 2: Illustrations for CV and standard deviation

Source: Investopedia; https://examples.yourdictionary.com/examples-of-standard-deviation.html
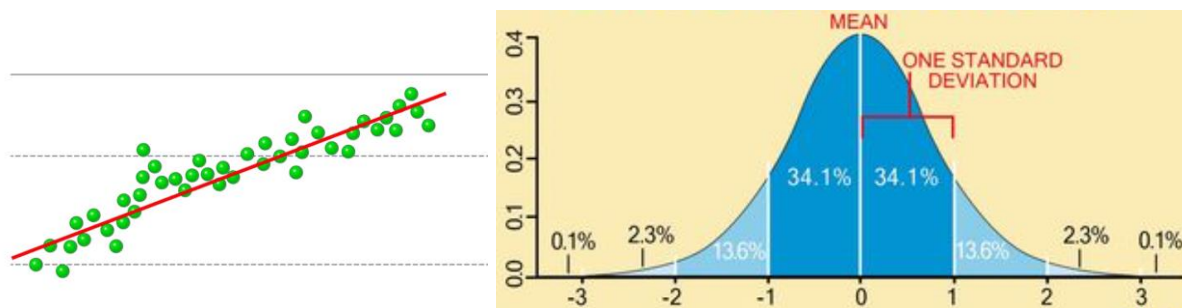
Risks, as probability distributions of losses, can be exchanged with other participants of the economy. Therefore, in the essence of the insurance business lies a risk business, a risk transaction that is transferred from the insurance taker to the insurance provider.[29] Then, an insurance policy has to reflect the following components:[30]

- The insured event that triggers the payment of a claim (for example accident, death of a policyholder, natural hazard event like storm, fire, flood,…).

- The benefit amount which becomes payable once the triggered event has occurred. Due to the pooling of funds, this payment can be much larger than the individual premium payments made by the policyholder).

- The beneficiary who will receive the benefit amount after the insured event.

- The term of cover as the period in which the insured event must occur in order for a claim to be payable.

These items are to be addressed in the insurance policy, which is the contract between the client (policyholder) and the insurer. The contract in the insurance is a bilateral contract and contains obligations for the insurer which he has to fulfil at a) the moment of entering into the contract (eg information), and b) the moment when a claims event occurs (eg payment).[31]

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[29] Farny, D., Versicherungsbetriebslehre, 3. edition, Karlsruhe, 2000, p. 35
[30] Churchill, C., Liber D., McCord M., Roth J., Making Insurance Work for Microfinance Institutions:
   A Technical Guide to Developing and Delivering Microinsurance. Geneva: International Labour Organization,
   2003, p. 10
[31] Jakaša, B., Pravo osiguranja, Informator, Zagreb, 1972, p. 229 in: Matijević, B., Osiguranje u praksi, Zadar,
   2007, p. 87

2.2. Insurance market development and economic activity

The existence of insurance markets is vital for any economic activity. Risk-averse individuals are able to enter into activities of higher risks by paying an adequate premium for the case a specific loss event might incur in the future, which is leading to an improvement of productivity returns otherwise not accessible. Each contract the insurer is supplying specifies future payments for specified situations and is favourable for the insurer as long as the received payments which are received as compensation for this cover, are sufficient to cover the expected payment to the policyholders (clients). The sum of premiums paid by all clients serves as a pool for payments to those that are entitled for such a payment because a trigger event occurred. The insurer is benefitting from the law of large numbers insofar, as with an increase of the number of contracts the insurer is collecting non-negative profits over the long-term, if the risks are correctly and sufficiently priced. These profits incentivize the insurance undertaking to assume these risks and thereby contributing to economic activity and growth.[32]

Insurance markets in developing countries are particularly attractive for economic activity as households in these countries are exposed to high risks, significantly effecting welfare and productivity. However, the financial resources spent on insurance (insurance premium per capita) in the emerging countries is still far below the developed countries. The availability of formal insurance mechanism is a precondition for efficient, but also equitable, economic activities.[33]

Elaboration on the topic of this dissertation and validating its hypotheses requires indeed an understanding of the connection of economic development and insurance. Insurance is not only an integral part of economies and economic development, moreover it is in fact vital for its development as economic participants are able to reduce some of the risks they might occur in

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[32] Moss, D., When All Else Fails: Government as the Ultimate Risk Manager. Journal of Risk and Insurance 70 (4), 2003, p. 794-96

[33] Masci, P., Tejerina, L., Webb, I., Insurance Market Development in Latin America and the Caribbean (Inter-American Development Bank), Washington D.C., 2007, p. 4

the natural course of their business. Insurance helps reduce the risks faced by economic participants and improves the efficacy of economic activity, adequately putting a price on the risks entered into by these players.

Scientific literature on topics of Finance argues that there is a connection between financial development and economic national growth.[34] By organizing the transfer of risk and indemnification but also as a financial intermediary, insurance activities are supporting economic growth. Enabling different risks to be managed more efficiently is encouraging the accumulation of new capital and promoting financial stability as well as supporting the real economy by facilitating trade and commerce. In their role as institutional investors insurers organize the collection of domestic savings which supports more productive investments and an efficient allocation of capital, in particular in the Life insurance even enabling investments with a long-term horizon. Through their core business in the Non Life insurance they help to prevent, mitigate and reduce losses and thereby protect households and companies from different kinds of risks that might otherwise adversely affect the economic activity.[35]

As elaborated above, the argument for a causal relationship between insurance industry growth and economic growth is evident. However, economic benefits of insurance are also conditioned by local specifics like national regulations, economic systems and culture. Therefore, the assessment and the effects of the interrelationships between insurance and economic growth do have a country-specific component.[36]

Several factors for the development of insurance markets can be identified and are shown in the Table 5 below based on research done by Swiss Re. The savings level and per capita GDP positively influence insurance, but themselves are also supported by a positive development of insurance markets. On the other hand, many factors like for example taxation, regulation or the

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[34] See also: Masci, P., Tejerina, L., Webb, I., Insurance Market Development in Latin America and the Caribbean (Inter-American Development Bank), Washington D.C., 2007, p. 7

[35] Arena, M., Worldbank, Does Insurance Market Activity Promote Economic Growth? A Cross-Country Study for Industrialized and Developed Countries, 2006, p. 2

[36] Ward, D., Zurbruegg, R., Does Insurance Promote Economic Growth? Evidence from OECD Countries, Journal of Risk and Insurance 67 (4), 2000, p. 489–506

insurance coverage provided by the state, can limit insurance penetration in a market. Important factors for determining growth of the insurance business are the wealth distribution, the legal framework and property rights, the actual availability of insurance products, insurance regulation and its supervision as well as perhaps societal elements of trust and risk awareness with further non-economic factors being religion, culture, and education. Life insurance and Non Life insurance are furthermore influenced by different factors, for example regulation in respect of compulsory insurance coverages, claims benefits, exposure to natural disasters or the public role in the health system impact the Non Life insurance lines. For life insurance, economic stability factors like for example, inflation, interest rates and the exchange rate or demography, the tax system, the savings rate, and the pension system are relevant factors impacting insurance market development.[37]

Table 5: Factors influencing insurance demand

General factors	Specific factors
Economic growth	Products offered
Wealth distribution of income	Distribution channels
Religion, culture	Risk awareness
Education	Insurance regulation
Property rights, legal certainty	Trust in insurance

Non Life Insurance	Life Insurance
Compulsory insurance	Economic stability (eg inflation, currency, interest rate,…)
Natural catastrophe exposure	
Public role in health and workers compensation insurance	Savings rate
	Demography
Claims awards	Tax benefits
	Pension system

Source: Swiss Re Economic Research and Modelling

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[37] Masci, P., Tejerina, L., Webb, I., Insurance Market Development in Latin America and the Caribbean (Inter-American Development Bank), Washington D.C., 2007, p. 7

A Worldbank study examining the impact of insurance market development on economic growth by measuring insurance premiums as a proxy for insurance activity in more than 50 countries, came to the following conclusions:[38]

- There is robust evidence of a significant causal relationship of insurance market activity impacting economic growth, where both Non Life as well as Life insurance premiums have positive effects on growth.

- Interestingly, while Non Life insurance is impacting both high-wealth countries and developing countries (although a larger effect is observable in richer countries), Life insurance on the other hand sees its impact in high-income nations only.

A study from 2019 looked at the relationship between economic growth and insurance across the European Union countries (which are part of the European Insurance Federation) and arrived at the conclusions of statistically significant positive relationships for Luxembourg, Denmark, The Netherlands and Finland whereas Austria, Belgium, Malta, Estonia and Slovakia showed a statistically significant negative relationship. For all other countries no statistically significant relationship between economic growth and insurance could be concluded. The correlation coefficients are shown below in Table 6.[39]

Trying to understand also causality, the unit root test and Granger causality test to study the forerunner-lag relationship between insurance penetration and economic growth were applied, which showed quite different results for the countries. Austria had a bi-directional relationship between economy and insurance, while others (except for Slovakia) have uni-directional relationships with The Netherlands, Malta and Estonia insurance influencing economic growth and Luxembourg and Finland where the development of the economy is also

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[38] Arena, M., Worldbank, Does Insurance Market Activity Promote Economic Growth? A Cross-Country Study for Industrialized and Developed Countries, 2006, p. 15

[39] Peleckienė, V., Peleckis, K., Dudzevičiūtė, G., Peleckis, K.K., The relationship between insurance and economic growth: evidence from the European Union countries, https://doi.org/10.1080/1331677X.2019.15887652019, 2019

pulling the insurance market. In respect of the CEE countries, a larger impact in particular of liability insurance was found.[40]

Table 6: Correlation coefficients insurance development and economic growth

Groups of countries	Correlation coefficient	t^{stat}	t^{cr}
Very high level			2.23
Luxembourg	0.65	2.70	
High level			
Denmark	0.79	4.05	
Ireland	0.30	1.00	
Sweden	−0.03	0.09	
Netherlands	0.58	2.26	
Upper middle level			
Austria	−0.92	7.52	
Finland	0.67	2.85	
Belgium	−0.90	6.53	
United Kingdom	0.14	0.45	
Germany	−0.52	1.92	
France	−0.41	1.42	
Lower middle level			
Italy	−0.18	0.58	
Spain	0.11	0.35	
Cyprus	−0.39	1.34	
Low level			
Greece	0.33	1.11	
Slovenia	0.04	0.13	
Portugal	0.08	0.25	
Malta	−0.69	3.02	
Czech Republic	0.03	0.09	
Very low level			
Estonia	−0.73	3.36	
Slovakia	−0.93	7.86	
Croatia	0.36	1.22	
Hungary	−0.30	1.00	
Latvia	−0.42	1.47	
Poland	0.22	0.71	
Romania	0.39	1.34	
Bulgaria	0.18	0.58	

Source: Authors' calculations based on Eurostat (2015).

Source: Peleckienė, V., Peleckis, K., Dudzevičiūtė, G., Peleckis, K.K., The relationship between insurance and economic growth: evidence from the European Union countries, Economic Research, 2019

Insurance offers protection for the insureds as well as their life and property (people's and companies') but also their incomes. Furthermore, it covers an important function in income accumulation among others for retirement. Not only insurance premium and penetration are positively related to economic growth, but evidence also exists that claims payments and

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[40] Also there, p. 1.141

insurers' operating expenses are significantly and positively related to economic growth. Further research even confirms the positive impact of capital formation, government expenditure, secondary schooling, FDI inflows, trade openness and financial development.[41]

A study from the Czech National Bank on 24 European countries demonstrates that the insurance sector moves together with the business cycle, both the Non Life and the Life business. Furthermore, they show that price elasticity diverges between Non Life and Life products, with Life insurance rather being inelastic to prices whereas Non Life insurance is deemed elastic.[42]

A study on the impact of insurance on GDP growth in the western EU-countries vs newer members from the CEE-region found that there is evidence for a contribution of the insurance sector to GDP growth. While insurance investments in the older EU countries with mature financial markets are correlated, in the emerging market countries this connection is short-run and focused and observable for the Non Life business only, which is also pointing to opportunities in this region for specific business segments.[43] A specific research also confirmed the positive effect of the development of an insurance sector on economic growth in the countries of former Yugoslavia by insurers providing indemnification and risk management options and acting as institutional investors.[44]

Another study, from the Insurance Institute of the University of St. Gallen gives some broad guidance of changes in the insurance model throughout the following phases, each characterised by its focus on different aspects of the value chain:

- Opening of markets through deregulation and moving away from products and tariffs of a regulated world, also including market consolidation (broadly until the year 2000).

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[41] More here: Apergis, N., Poufinas, T., The role of insurance growth in economic growth: Fresh evidence from a panel of OECD countries (The North American Journal of Economics and Finance), Vol. 53, 2020

[42] Hodula, M., Janků, J., Časta, M., Kučera, A., Czech National Bank, On the Determinants of Life and Non-Life Insurance Premiums, 2020, p. 3

[43] Further here: Haiss, P., Sümegi, K., Development and Economic Effects of the Insurance Sector in CEE and Mature European Economies – A Theoretical and Empirical Analysis, Vienna, 2009

[44] Njegomir, V., Stojić, Does Insurance promote Economic Growth: The Evidence from Ex-Yugoslavia region, 2010, Novi Sad, p. 31-32

- Focus on the core business after high expense and claims ratios and change in supervision paradigm (until 2005).

- Focus on profitability and operational efficiency with beginnings of automatization (until 2012).

- Rise of digitalisation and broadening of interaction via digital and mobile communication means (until 2020).

- Including customer demands in change process while cooperating across industries and rising pressure from outside the insurance industry with increasing levels of automatization (ongoing).[45]

The chronological phases shown above give some broad guidance of what has happened in global insurance markets over the past thirty years. However, these timelines are not the same across all economies and are more geared towards developed markets. It is fair to assume, that this development has some slight delay in developing countries, which is also reflected in the CEE-region. For example, the important step of deregulation, the liberalisation of prices for motor insurance, happened in Croatia as recently as 2013.

However, the presence of international insurance groups puts some pressure towards a homogenic development as these groups are able to draw on their experiences from other countries and apply them also to the CEE-region. This can be assumed, as an important success factor for international investors in the developing insurance markets.

The following chapter will now take a closer look at insurance as a business. The insurance company is, in essence, producing insurance protection or risk transfer and selling this product for the benefit of the insurance buyer. The transfer of risk from the policyholder towards the insurer and the balancing and exchange of risk within the entire portfolio of the insurance company are essential components of the insurance business.[46]

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[45] Maas, P., Janesch, R., University St. Gallen Institute for Insurance Economy, Adcubum, Industrialisierung der Assekuranz in einer digitalin Welt, St. Gallen, 2015, p.12

[46] Farny, D., Versicherungsbetriebslehre (3rd edition), Karlsruhe, 2000, p. 21

2.3. Insurance business

Insurance protection is an immaterial commodity. From the perspective of the producer of insurance, it is about offering complex bundles of services while from the point of view of the consumer of insurance it is about receiving complex bundles of benefit. The insurance business can therefore be segmented into the following components:[47]

1) Risk protection business

2) Savings and pensions business

3) Services business

As an important pillar of the financial sector, insurance is fulfilling two major roles as it a) manages the risk transfer from individuals and companies (Non Life products and Life risks components) and b) organizes the transfer of households' savings into the financial system (Life savings components).[48]

The risk protection business best reflects the initial idea of the business of insurance and still remains at the core of insurance. The person buying insurance, the policyholder, is transferring a probability distribution of risks to the insurer, thereby transferring his/her risks. This means, the insurer gives a contractual promise to the beneficiary to provide certain benefits in the occurrence of insured events. For the policyholder this transaction and the promise of compensation after an insured event results in a stabilisation of the economic situation as occurred losses are partially or wholly compensated by the insurer. The insurer on the other hand accepts many probability distributions of claims and therefore compensates the risks within the collective and across time.[49]

Inherent in the insurer's balancing of risks is the Law of the Large Numbers, which is originated in the probability theory in statistics. It states that when the sample of observations increases,

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[47] Farny, D., Versicherungsbetriebslehre (3rd edition), 2000, Cologne, p. 22

[48] Hodula, M., Janků, J., Časta, M., Kučera, A., Czech National Bank, On the Determinants of Life and Non-Life Insurance Premiums, 2020, p. 3

[49] Farny, D., Versicherungsbetriebslehre (3rd edition), 2000, Cologne, p. 22

variation around the mean observation declines, hence, the average value gains predictive power. When the average of a large number of results closely mirrors the expected value the difference becomes smaller and smaller as more results are introduced. For the insurance industry, this means, with a large number of policyholders, insurance companies can better estimate the value and frequency of future claims they will pay to policyholders and therefore the actual loss per event will equal the expected loss per event. It helps insurance companies run a stable business and policyholders pay a fair and adequate premium while the financial system is less prone to destabilisation and disruption.[50] For example, looking at fire insurance, a part of Non Life business, with fires in households occurring as independent events across various homes results in a rather solid predictability of the fire-related claims per year on the level of the portfolio. This means, companies insuring these homes against fire can be fairly much relying on the diversifiability of these claims and are therefore able to charge a risk premium very close to the expected claims value, apart from charges for the costs of the insurer and a profit margin.[51]

This concept is very relevant when looking at the strategies of insurance companies and the mechanics of their business model. The balancing of risk occurs within a portfolio of many risks and across time. The larger the portfolio, the better it balances itself. The law of the large number fully applies here and explains why insurance companies also strive for larger portfolios and therefore for expansion. This is even more relevant for the rather small CEE-markets which are not allowing for huge portfolios as the markets are of smaller size compared to well developed insurance markets. This also helps to explain some of the strategies of international companies in this region and their assessments of the attractivity of markets.

The second business segment, the savings business, is comprised of products based on a savings plan, which are offered mainly in Life insurance but can also be present in certain forms of health insurance or accident insurance with a premium refund component. The policyholder has

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[50] Ross, S., The Law of Large Numbers in the Insurance Industry, 2021
See also definition of International Risk Management Institute: Law of Large Numbers – a statistical axiom that states that the larger the number of exposure units independently exposed to loss, the greater the probability that actual loss experience will equal expected loss experience. In other words, the credibility of data increases with the size of the data pool under consideration.

[51] Grinblatt, M., Titman, S., Financial Markets and Corporate Strategy (2nd edition), 2002, p. 181

the obligation to regularly or one-off pay savings amounts to the insurer which in turn pays interest on this capital as well as has to pay out either a lump-sum or a pension at a specified date or under specific circumstances, for example the death of the insured person, to either the policyholder or the insured person.[52] The amounts are often guaranteed and therefore contain a guaranteed interest or can alternatively be invested in funds where the risk is borne by the policyholder.

Finally, the services business comprises the processes and services which are necessary for the insurer to either offer risk protection or savings products. Many administrative processes are set up to allow the insurance company to organise its business interaction with the customers, including advisory, policy administration, claims settlement, cash disbursements and cash imbursements.[53]

2.3.1. Risks in the insurance business

In the course of conducting their business and in their obligation to fulfil its primary purpose and meet claims at all times, insurance companies are also exposed to a wide range of risks. Those are to a certain extent very individual for each company depending on its portfolio and risk exposure. Solvency relevant risks are either related to the technical side of the core business or related to its investments. The technical risks can be subdivided into two types, underpricing and underreserving. Underpricing for example occurs when the insurer attracts buyers by setting excessively low premiums that, combined with investment returns, do not cover the expected claims.[54]

Interest rates and catastrophic natural events are certainly at the top of such lists, recently however almost overshadowed by the COVID-19 Pandemic. The global insurance market operates in the larger macroeconomic environment, where interest rates have been low for many years already and might still remain so for some time. Such a low interest rate environment

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[52] Farny, D., Versicherungsbetriebslehre (3rd edition), 2000, Cologne, p. 54
[53] Also there, p. 57
[54] Masci, P., Tejerina, L., Webb, I., Insurance Market Development in Latin America and the Caribbean (Inter-American Development Bank), Washington D.C., 2007, p. 4

over such a long-time horizon negatively impacts the profitability and solvency of the insurance companies. However, this also increases the probability of a change of the risk premium (spreads), which would result in a spike in interest rates. This interest rate risk is even further increasing the focus on the insurer's asset-liability mismatch risk, especially where companies are offering long-term guarantees.[55]

The European capital regime in the form of the Solvency II EU directive requires the insurance companies to adequately manage its risks (more to this in chapter about Forces in the Insurance Industry). Figure 3 shows a map of the risks as prescribed by the European Insurance and Occupational Pensions Authority (EIOPA).

Figure 3: Solvency capital requirement and standard risks (EIOPA)
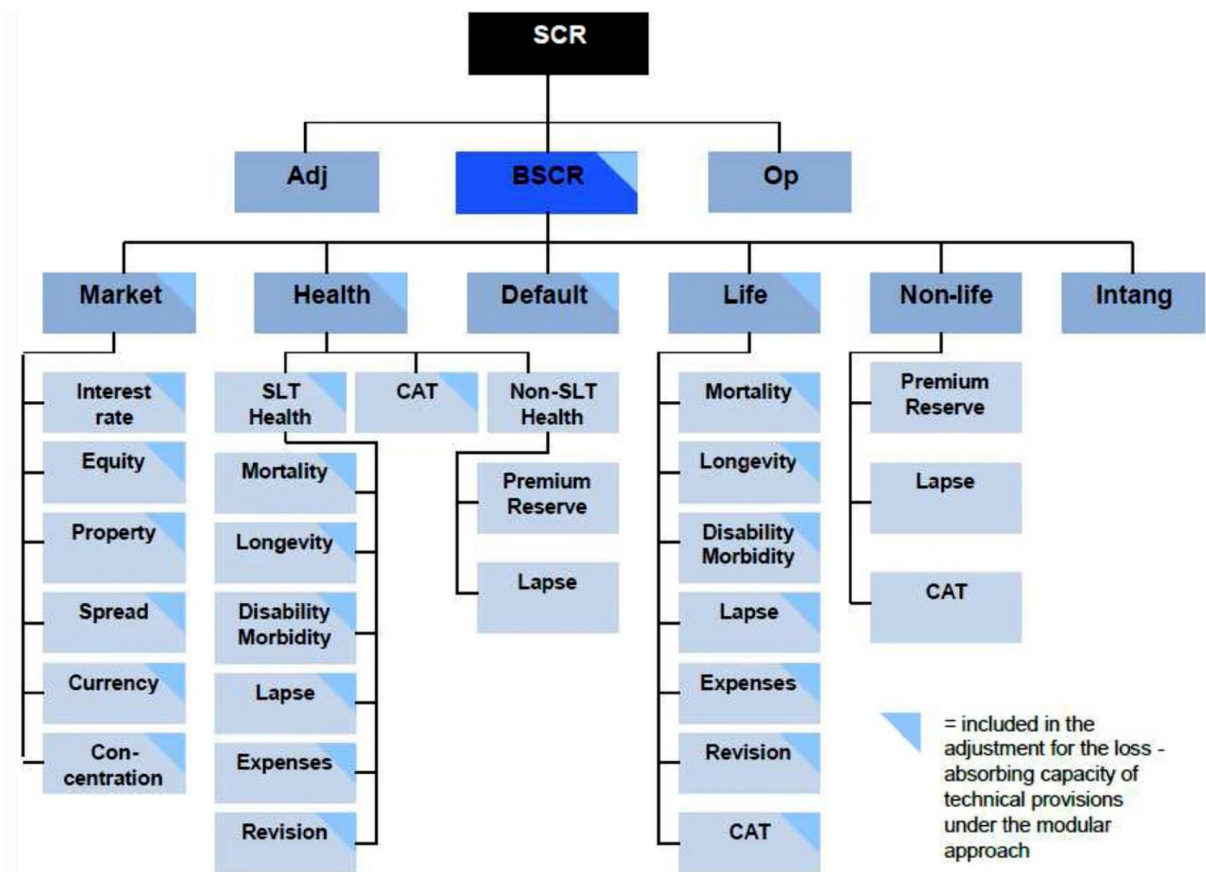
Source: Scherer, M., Stahl, G., The standard formula of Solvency II: a critical discussion, 2020

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[55] Global Insurance Market Report, International Association of Insurance Supervisors (IAIS), 2020, p.8

The Croatian insurance regulatory authority HANFA has as well given high priority to the companies' risk management framework providing guidelines for identifying, measuring and monitoring the risks to which the insurance companies are exposed to during the course of conducting their business. The regulator is advising insurers to take into account and specifically manage underwriting risk, market risk, credit risk, operational risk, liquidity risk, concentration risk, strategic risk and reputation risk.[56]

The European supervisory authority (EIOPA) has also extensive requirements in respect of risk management and capital the insurers have to adhere to, and which also favours the creation of larger entities in the market.[57] Considering the wide range of risks insurance companies are facing in the course of their business as well as the specificities their business model requires including the high costs of setting up minimum structures, two themes arise:

- Diversification and

- Size

In the capital regime of the Solvency II Framework the effects of diversification allow for a real and tangible effect in respect of actual capital requirement for the insurance company, which will be discussed in the next chapter. But the familiar saying "*Don't put all your eggs in one basket*" can suffice as an introduction to that idea.

Furthermore, the business model of insurance itself is relying on the effects of scale, not only to balance out the volatility in the risk portfolio, but also to absorb the costs of the structure. Running an insurance business requires significant investments into the organisation, for example into IT, sales and marketing, which can only be adequately absorbed if a certain size can be reached. The costs of developing an IT system or ensuring the organisation is in full compliance with laws and regulations is oftentimes not linearly correlated with the size of the business.

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[56] Jakovčević, D., Žaja, M., M., Underwriting Risks as Determinants of Insurance Cycles: Case of Croatia, in: World Academy of Science, Engineering and Technology, International Journal of Economics and Management Engineering, Vol:8, No:5, 2014, p. 1.252
[57] EIOPA, Frankfurt: https://www.eiopa.europa.eu/rulebook/solvency-ii/article-2225_en

A study on market structure and efficiencies of European insurance companies has demonstrated that higher returns with increasing size can be observed for a great majority of insurance companies in the European Union. This source of efficiency gain for the insurer, that goes across asset classes and business segments, has encouraged mergers & acquisitions activities in a liberalised EU-market environment. This development led to an increase in firm size as well as market concentration.[58]

As the business of insurance companies is around accepting risk transferred to them, they do have some advantages in bearing that risk. Based on their experience and data available to them, they are in a good position to adequately assess the probability of the loss, hence the expected loss, and therefore at pricing the risk. They are also well placed to advise the customers on risk-reducing measures, which might result in a lower insurance premium for the policyholder but also reduces the risk of the insurer. Finally, the insurer can pool the risks by managing a large and diversified portfolio of risks. In such a portfolio, the losses on an individual policy are uncertain, but the claims on the entire portfolio might be rather stable and therefore more manageable.[59]

However, an insurance company also faces some disadvantages in accepting transferred risks. These disadvantages are usually reflected in the prices charged to the policyholders. Insurers, for one, as any other business, have operations and expenses that need to be covered, in this case through the premiums charged to the customers. Second, commonly bad risks are more prone to purchase insurance coverage, which is why insurers have to deal with the issues of adverse selection. Third, irrespective of cultural differences, insurers are facing and dealing with moral hazard, where the owner of the risk might be more reckless after insuring it, and are which is something that has to taken into account by the insurer.[60]

2.3.2. Business model in the insurance industry

Understanding the relevance and need for diversification and size helps in understanding some of the strategic priorities for international insurance companies. Apart from seeking to create

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[58] Fenn, P., Vencappa, D., Diacon, St., Klumpes, P., O'Brien C., Market structure and efficiencies of European insurance companies: A stochastic frontier analysis, Nottingham, 2017
[59] Brealey, R. A., Myers, S. C., Allen, F., Corporate Finance (8th edition), New York, 2006, p.724-725
[60] Also there, p.725-726

shareholder value like any other company, these two themes specifically support the desire to diversify in terms of product lines, customer segments and geographically as well as gaining size by expansion. Both of this can be found by expanding into areas of opportunities, which is one obvious reason as why expanding into the CEE-region is particularly attractive for insurers. However, the regoin also has its pitfalls due to the fragmentation of its markets.

The costs that need to be overcome are not only operational, but also related to national regulatorily specificities and minimum capital requirements, and together with differences in social relations in different countries, they pose certain barriers of entry into new markets for the international investors. In order for the insurance company to be able to provide its services in a local market it is often forced to put its entire organisation on the ground before starting to sell its products to customers. This burdens insurers with high costs on top of the initial investments for starting an operation.

Again, these considerations support a strategic imperative, in particular for international insurers, to attempt reaching minimum volumes of business in order to reap these benefits of scale as well as reap the benefits of diversification.

The value chain of the traditional insurance business model is characterized by accepting risks into the risk carrier through various distribution channels which might have its peculiarities depending on country, culture and social relations. Pooling the accepted risks and utilizing the effects of diversification, the pools are invested on the financial markets or can be reinsured with usually globally active reinsurers. Even the risk tranches can be placed directly on the capital markets via securitisation.[61]

By itself these components of the value chain are either already very cost intensive as they require establishing distribution channels and setting up an underwriting structure, and the risk carrier function is rather capital intensive as insurance regulation demands minimum amounts

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[61] Braun, A., Schreiber, F., The Current InsurTech Landscape: Business Models and Disruptive Potentials, Univerity of St. Gallen, 2017, p. 78

of capital to be held.[62] This is also resulting in significant entry barriers for insurance start-ups, which do not have relevant size to be able to absorb high costs of a structure or earn adequate returns on capital employed. The glue linking all the elements of the value chain and its processes together, requires usually high investments into technology. In recent years however the rise of InsurTechs has shown many opportunities for investors willing to support entrepreneurs in their efforts of disrupting the traditional industry along the value chain.

Figure 4: Roles in the insurance ecosystem (value chain of the insurance industry)
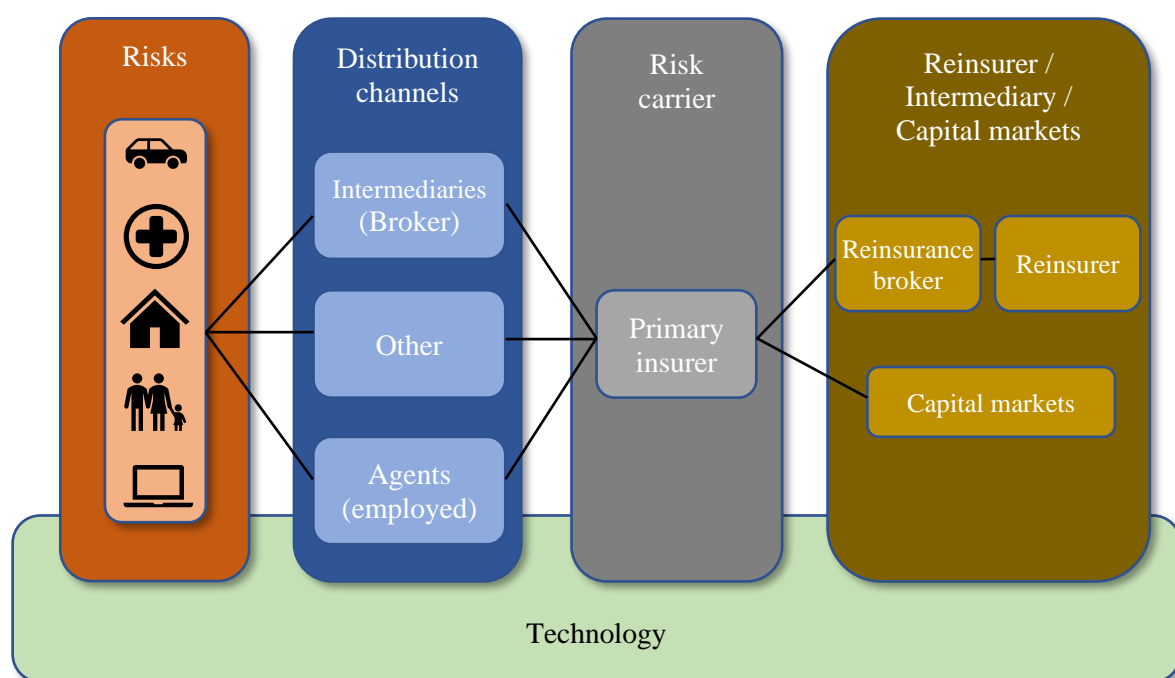
Source: University of St. Gallen, Institute of Insurance Economy[63]

Although the insurance markets of the CEE-region are rather small in size, compared to the developed nations, still an insurance company usually has to set up an entire infrastructure and its processes along the first three elements of the value chain, therefore requiring significant investments into any market, irrespective of size of the business.

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[62] EIOPA, Solvency II, Minimum Capital Requirement mEUR 2,5 for Non Life insurers, mEUR 3,7 for Life insurers, https://www.eiopa.europa.eu/rulebook/solvency-ii/article-2353_en
[63] Braun, A., Schreiber, Univerity of St. Gallen, 2017, p. 78
   Adapted in: Ibriqi, A., Marktanalyse – Digitalisierung in der Versicherungsbranche, Graz, 2019, p. 77

2.4.   Business segments

Two forms of segmentation of the business in the insurance industry, which are rather similar, can commonly be found, either the left one, or the one on the right side:

- Property & Casualty (P&C),

- Life,

- Health
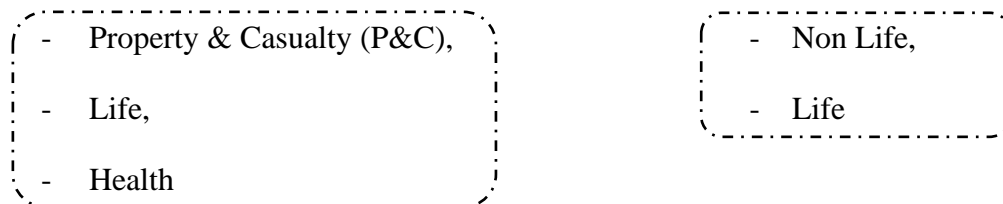
- Non Life,

- Life

The reporting of financial statements on the Croatian market and the reporting to the Supervisory Authority HANFA, based on the Croatian insurance law (zakon o osiguranje), are both using the segmentation into Non Life and Life insurance.[64] Therefore, this will also be applied in this paper. On the Croatian market the split looks the following:

Chart 8: Split Life and Non Life business, gross written premium, Croatia, 2020
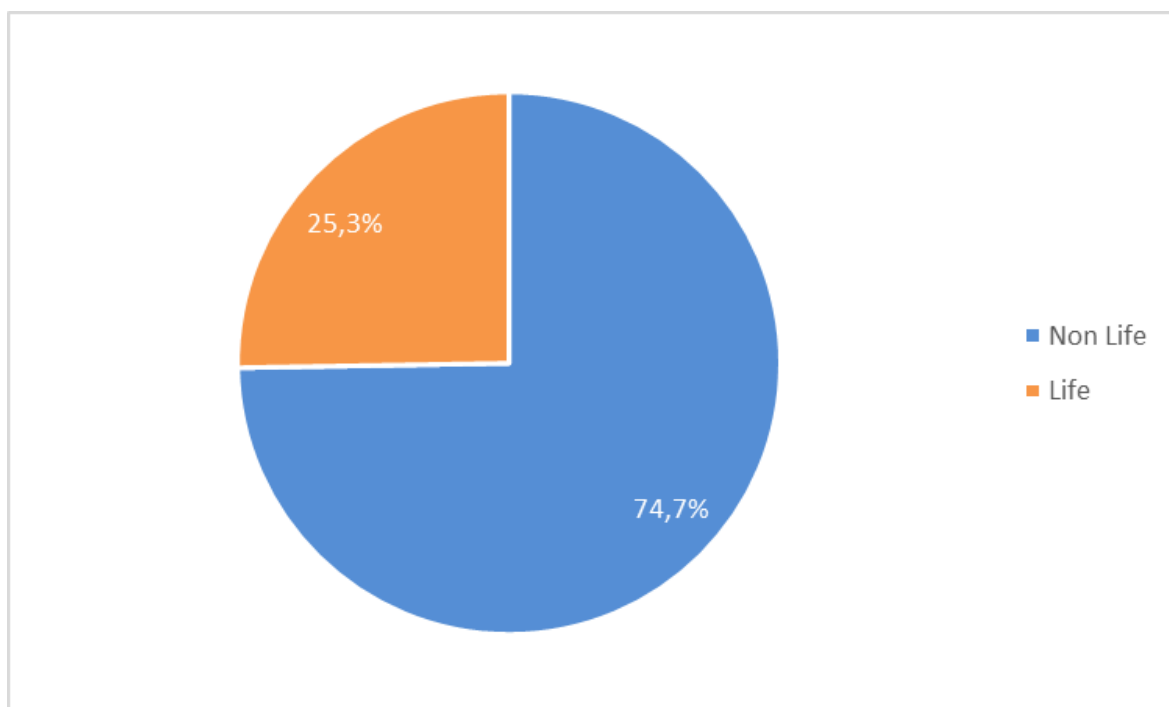
Source: HUO data, Statistical Report, December/2020

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[64] Andrijanić, I., Klasić, K., Tehnika Osiguranja i Reosiguranja, Zagreb, 2002, p. 61

While the share of Life insurance amounts to only one quarter in Croatia, it reaches 34% in the CEE-region. This might be considered as testimony on the maturity of the Croatian insurance market as Life insurance is one of the highest and more complex forms of satisfying clients' insurance demands. Less mature markets are usually very much dependent on the various types of motor vehicle insurance, in particular the types of obligatory insurance.

Life term insurance is triggered by the event of death as the insured event in which case the sum insured is paid out to the beneficiary of the insurance. In this form of insurance, the policyholder is regularly paying a risk premium to the insurer. Another form of life insurance is related to savings, where policyholders are paying to the insurer, which in turn is investing into various asset classes depending on the product and the risk appetite of the customer. In the past, these savings products often came with a guaranteed interest rate, although many years of drastically low interest rates have driven insurers to eliminate these guarantees on new business, and gradually switch their production of new business to policies that are invested in investment funds, where the risk of value fluctuations is borne by the customer. In the life savings insurance, at the end of the maturity the policyholder will receive a lump sum or an annuity, depending on what the customer elects.[65]

In the Non Life insurance there are different types of insurance related to properties like cars, boats, homes and things in general. In case of an insured event where the property is damaged, the policyholder is compensated by the insurer. Liability insurance serves as an insurance for the case the policyholder's behaviour or property is causing a damage to a third person, in which case the insurer is obliged to compensate the damage.[66] It can be a voluntary form, undertaken for commercial reasons, but also legally obligatory form of insurance, where the policyholder is transferring the risk of the insured damaging a third person to an insurer.[67]

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[65] Kurzendörfer, V., Einführung in die Lebensversicherung (3rd edition), Karlsruhe, 2000
[66] Insurance Information Institute, Insurance Handbook: A guide to Insurance, New York, 2010
See also: DIRECTIVE 2009/138/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 25 November 2009, on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II)
[67] Matijević, B., Osiguranje u Praksi, Zadar, 2007, p. 109

Furthermore, the Non Life segment also contains insurance related to people, like accident insurance or health insurance where the insured subject is not a thing but a person.[68] Health insurance often is shown as a part of the Life segment, but since in Croatia it is a part of Non Life, also this paper will use the same classification. In general, health insurance in Croatia and the region is less developed than in Western European countries, however it is regarded as a segment with a greater potential for growth.[69]

In broader terms, also the distinction between compulsory and voluntary insurance is to be made. For example, in many countries medical and health care insurance are nationalised and compulsory, but consumers can voluntarily purchase supplementary coverages (mixed insurance).[70] Another form of compulsory insurance, which however is not provided by the state but by the private sector and therefore very important for the insurers in the CEE-region, is the Motor Third Party Liability (MTPL) insurance, without which the activation of a car is not possible. This form of insurance is required for the use of all motored vehicles on a public road, as well as for boats.[71] In the CEE-region this was for many years the most dominant line of business as customers were not used to purchase other forms of insurance, but also insurance companies weren't used to having other attractive products in their offering. Other forms of compulsory insurance include travel insurance for passengers in public or liability insurance for boat or aircraft owners as well as for professional liability, where applicable.[72]

For the purpose of this research, it is important to understand, that in the past, tariffs for MTPL insurance were regulated in most countries, resulting in prices that were the same throughout the market. While western countries allowed for the free setting of MTPL-prices already decades ago, this process of liberalisation occurred much later in the CEE-region. For example, this process happened only in 2013 for Croatia.[73]

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[68] Bijelić, M., Osiguranje i Reosiguranje, Zagreb, 2002, p. 149
[69] Further to health insurance in CEE and also in Croatia: Sagan, A., Thomson, S., Voluntary health insurance in Europe: Country experience, WHO: Observatory Studies Series 42, Copenhagen, 2016, p. 27-30
[70] Zhang, P., Palma, M., A., Texas A & M University, Compulsory vs Voluntary Insurance, 2018, p. 1 – 2
[71] European Commission https://ec.europa.eu/info/business-economy-euro/banking-and-finance/insurance-and-pensions/motor-insurance_en: See also: Motor Insurance – Directive 2009/103/EC
[72] Insurance about obligatory insurance:
  - Zakon o obveznim osiguranjima u prometu, NN 151/05, 36/09, 75/09, 76/13, 152/14, (from 30.12.2014)
  - Zakon o obveznim odnosnima, NN 35/05, 41/08, 125/11, 78/15, 29/18, 126/21 (from 1.1.2022)
[73] Ćurković, M., Liberalizacija osiguranja od automobilske odgovornosti godinu dana nakon stvarnog početka – rezultati i perspektiva, Osiguranje.hr, 2015, https://www.osiguranje.hr/ClanakDetalji.aspx?16579

2.4.1. Types of insurance

The business segments can be broken down further into lines of business, which are looking already at coverages and therefore getting closer to the definition of products, although now products are often getting bundled and thereby touching multiple lines of business. However, there are various possibilities of clustering insurance, for example in the following ways:

- The nature of the insurance and the question of "what is insured?" and thereby looking at the different forms of coverages, hence products.
- Whether it is an obligatory or voluntary form of insurance.
- Whether it is insurance of people or things.
- Whether it is insurance of physical or legal persons.

The authors Ćurak/Jakovčević distinguish the five main groups of insurance, transport insurance, property insurance, liability insurance, credit insurance and personal insurance.[74] The following figure adds one more distinction of property insurance but also social insurance:

Figure 5: Types of insurance
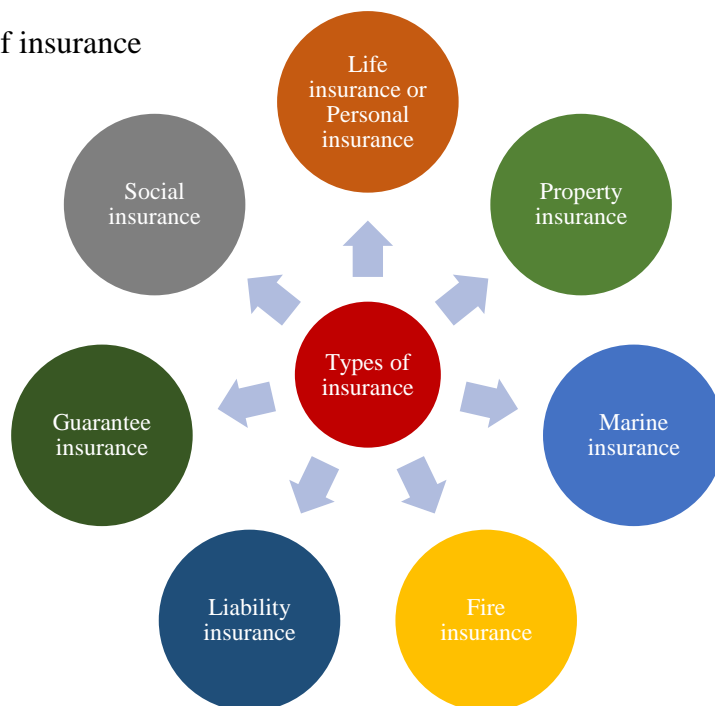
Source: https://www.iedunote.com/types-of-insurance[75]

More here: Radionov, N., Obvezne osiguranje automobilske odgovornost (AO): EU i hrvatsko pravo, Pravni fakultet sveučilište u Zagrebu, 2021

[74] Ćurak, M., Jakovčević, D., Osiguranje i Rizici, Zagreb, 2007

[75] See various other definitions, however with similar types of insurance

Borrowing Maslow's concept of the hierarchy of needs, which is listing the safety needs, including the needs for insurance, almost at the bottom of the pyramid of needs[76], a simplified list of needs for specific insurance coverages might look the following (the types of insurance are aggregated in this figure):

Figure 6: Simplified hierarchy of needs for insurance coverage
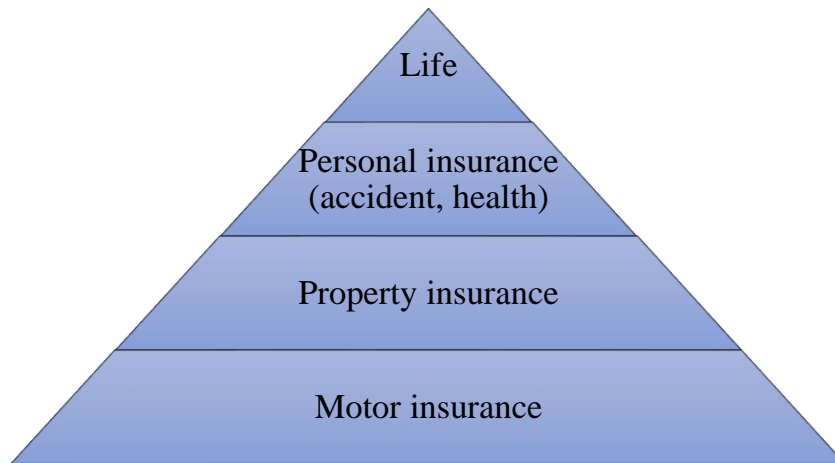
Source: by author, based on various literature on insurance, combined with management experience (2022)[77]

This insurance needs pyramid reflects the behaviour in insurance markets depending on their levels of maturity where in less developed markets the highest share is contributed by motor vehicle insurance and within this segment in particular from the obligatory third-party liability insurance. This is also reflecting the relevance of the usage of cars in people's lives.

Another important step in the development of insurance markets towards market-oriented is the liberalisation of prices related to the obligatory part of the motor insurance, which took place in western economies much sooner than in developing economies.

A sign of further developed markets can then be seen in the spendings on homes insurance, which for example in Croatia is still relatively low with an average spending of EUR 44 per

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[76] Maslow, A. H., Motivation and Personality, 1954
[77] This observation is the result of various discussions with leaders and top managers in the insurance industry.

inhabitant, while in Austria this amounts to EUR 321 or in Slovenia with EUR 124 per inhabitant.[78]

A higher level of personal insurance, especially accident and health insurance, is a further sign of a developed insurance market, however, this is also dependent on state structures of a country, for example when it comes to the public and private health system of a country. At the top of the needs' hierarchy in insurance is the Life insurance, which has usually the highest shares in richer economies, but also other factors like the pension system are influencing its development. Life insurance also serves as the private extension to the obligatory social insurance offered by the state, as the state has to deal with limited financial resources in populations of a growing age. Here, life insurance can take away some of the strain on the state through the offering of various voluntary forms of insurance.[79]

Although life savings products often compete with other savings products offered by banks, the insurance product has a specific additional offering as it also covers various risks, for example, death of the policyholder, debts, education of children or unemployment risks.[80] Within the segment of Life insurance, the unit-linked products, where the policyholder's money is invested into investment funds but also the risk is borne by the customer, are an indicator for an even more developed financial market. Various distinctions in terms of sophistication of these products, referred to as equity-linked products, can be seen, and although initially offered without, guarantees, also those can be more and more seen with often externally purchased guarantees.[81]

Such products also draw on well-developed financial markets, which is probably why these products were initially not widely spread in the developing countries, a tendency that has changed over the past years. Moreover, the business in the region is connected with the banking system, in particular the loan business.

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[78] Pauković, H., Index.hr, 04.10.2020, www.index.hr/amp/vijesti/clanak/hrvoje-paukovic-hrvati-premalo-osiguravaju-imovinu-zaboravljaju-da-je-zivot-rizik/2216814.aspx

[79] Čurković, M., Ugovor o osiguranje života, Zagreb, 2005, p. 9

[80] Jakovčević, D., Lovrinović, I., Impact of Savings on Portfolio Structure of Insurance Companies, in: Zagreb International Review of Economics & Business Conference issue, 2004 p. 57

[81] Dickson, D. C. M., Hardy, M. R., Waters, H. R., Actuarial Mathematics for Life Contingent Risks, Cambridge University Press, 2009, p. 6-7

Understanding this concept will help putting the development of the insurance markets in the CEE-region into context and comprehend some of the bets the international insurance groups are taking on the markets of the region.

2.4.2. Lines of business and groups in Croatia

For regulatory and supervisory purposes but also for the needs of management reporting, insurance businesses are often managed in lines of business, which are closer oriented to the product offerings of the insurer. Since the core territory of this paper is the Republic of Croatia, the table below shows the structure prescribed by the Croatian law on insurance, but also their aggregations into Macro segments (Subgroups or "podskupine"), which are relevant for the analytical part of this research.[82]

These look the following in Croatia:[83]

a) Accident insurance and health insurance, which is including lines of business 1 and 2 (see table below)

b) motor vehicle insurance, which is including (compulsory and voluntary) lines of business 1.02, 2, 3, 7 and 10

c) Marine and transport insurance, which is including lines of business 1.07, 4, 6, 7 and 12

d) Aircraft insurance, which is including lines of business 1.07, 5, 7 and 11

e) Fire insurance and other property insurance, which is including lines 8 and 9

f) Liability insurance, which is including lines of business 10, 11, 12 and 13

g) Credit and deposit insurance, which is including lines of business 14 and 15

h) Life insurance, which is including lines of business 19-25

In respect of analysing available secondary data from other CEE countries, efforts shall be made to obtain data consistent with this structure as much as possible. Here below is now the structure according to lines of business as prescribed by the Croatian regulatory authority.

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[82] Zakon o osiguranje (insurance law Croatia), NN 30/15, 112/18, 63/20, 133/20, in force from 10.12.2020
[83] HANFA, pravilnik o rasporedu vrsta rizika po skupinama i vrstama osiguranja odnosno reosiguranja, 2009

Table 7: Lines of business, Croatia (original in Croatian language, translated into English)

Line of busines (Croatian)	Line of business (English)	Macro
01. osiguranje od nezgode	Accident insurance	A&H
02. zdravstveno osiguranje	Health insurance	A&H
03. osiguranje cestovnih vozila	Road vehicles insurance (Casco)	Motor
04. osiguranje tračnih vozila	Insurance of rail vehicles (Casco)	Motor
05. osiguranje zračnih letjelica	Aircraft insurance (Casco)	Marine
06. osiguranje plovila	Marine insurance (Casco)	Marine
07. osiguranje robe u prijevozu	Transport insurance	Marine
08. osiguranje od požara i elementarnih šteta	Fire and other natural perils insurance	Property
09. ostala osiguranje imovine	Other property insurance	Property
10. osiguranje od odgovornosti za upotrebu motornih vozila	Liability insurance for the use of motor vehicles	Motor
11. osiguranje od odgovornosti za upotrebu zračnih letjelica	Liability insurance for the use of aircrafts	Marine
12. osiguranje od odgovornosti za upotrebu plovila	Liability insurance for the use of vessels	Marine
13. ostala osiguranje od odgovornosti	Other Liability insurance	Liability
14. osiguranje kredita	Credit insurance	Financial
15. osiguranje jamstva	Warranty insurance	Financial
16. osiguranje raznih financijskih gubitaka	Insurance of various financial losses	Financial
17. osiguranje troškova pravne zaštite	Legal expenses insurance	Financial
18. putno osiguranje	Travel insurance	A&H
19. životno osiguranje	Life insurance	Life
20. rentno osiguranje	Annuity insurance	Life
21. dopunsko osiguranje uz životno osiguranje	Supplementary life insurance	Life
22. osiguranje za slučaj vjenčanja ili rođenja	Marriage or birth insurance	Life
23. životno ili rentna osiguranje kod kojih osiguranik na sebe preuzima investicijski rizik	Life or annuity insurance where the risk is borne by the policyholder (funds)	Life
24. tontine	Tontine	Life
25. osiguranje s kapitalizacijom isplate	Insurance with capitalisation	Life

Looking further, the legislator and the regulator prescribe the following types of risks in the lines of business shown above, which is also important in understanding the various financial products of insurance and relevant in understanding differences in market maturity (see Supporting Hypothesis 2). These are listed below, together with some observations in respect of these products on the Croatian market and their relevance: [84]

01. Accident insurance:

⇨ includes insurance against accidents at work and occupational diseases which, in the event of death or loss of health due to an accident, cover the following:

- payment of agreed cash benefits, damages or reimbursement of costs in a lump sum,
- instalment payment of agreed cash benefits,
- a combination of the payments referred to in the above indents,
- payments following the injury, impaired health or death of a passenger; and includes:

01.01.Insurance of persons against the consequences of an accident during and outside the regular occupation,

01.02.Insurance of persons against the consequences of accidents in motor vehicles and in special activities,

01.03.Insurance of children and schoolchildren from the consequences of an accident and special insurance of young people from the consequences of an accident,

01.04.Insurance of guests, visitors to events, excursionists and tourists from the consequences of the accident,

01.05.Insurance of consumers, subscribers, users of other public services, etc. from the consequences of an accident,

01.06.Other special insurance against the consequences of an accident,

01.07.Compulsory insurance of passengers in public transport against the consequences of an accident,

01.08.Other accident insurance.

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[84] HANFA, pravilnik o rasporedu vrsta rizika po skupinama i vrstama osiguranja odnosno reosiguranja, 2009

<u>02. Health insurance:</u>

⇨ includes insurance in case of illness, injury and other accidents, cover the following:

- costs of treatment, costs of supply of medicines and medical-technical aids,
- payment of agreed cash benefits and
- a combination of payments from the above indents; and includes:

02.01. Compulsory insurance of reimbursement of expenses in case of injury at work and occupational disease,

02.02. Supplementary insurance of the difference above the value of compulsory health insurance health services,

02.04. Supplementary health insurance with a larger scope of rights and a higher standard of health services covered by compulsory health insurance,

02.06. Private health insurance,

02.99. Other voluntary health insurance.

Furthermore, there is a distinction between compulsory [85] and voluntary health insurance, which includes the following types of insurance. [86]

- supplementary health insurance
- additional health insurance
- private health insurance

A supplementary health insurance policy allows the policyholder to receive a compensation of the retention which has to be covered in the compulsory health system. However, apart from these incremental benefits, the private health insurance offers is not comparable in services with for Western EU countries like Austria or Germany, which is in line with the private health care elements of the respective countries. Of course, an opportunity might arise in case of a health care reform, which is also the something the international insurance groups are closely monitoring and eager to exploit.

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[85] See further: Zakon o obveznom zdravstvenom osiguranju (NN 150/08)
[86] See further: Zakon o dobrovoljnom zdravstvenom osiguranju (NN 85/06, 150/08)

03. Road vehicle insurance:

⇨ includes insurance that covers any damage or loss:

- costs of treatment, costs of supply of medicines and medical-technical aids,
- self-propelled land road vehicles other than rail vehicles,
- land road vehicles without own drive; and includes:

03.01.Casco insurance of self-propelled road motor vehicles,

03.02.Casco insurance of road vehicles without own drive,

03.99.Other comprehensive insurance of road vehicles.

This line of business was in the past, especially in times of regulated prices for Motor Third Party Liability (MTPL), very closely connected to this product, which resulted in profitability levels that often were inadequate.

04. Insurance of rail vehicles:

⇨ includes insurance that covers any damage or loss of vehicles on the railways:

04.01.Casco insurance of rail vehicles.

05. Insurance of aircrafts:

⇨ includes insurance that covers any damage or loss of aircraft or other air vehicles:

05.01.Casco insurance of aircraft

05.02.Casco aircraft insurance.

Since the aircraft and airline industry is rather small in Croatia, so is the relevance of this business segment.

06. Marine insurance:

⇨ includes insurance that covers any damage or loss of sea, river and lake vessels:

06.01.Casco insurance of ships and boats in maritime navigation,

06.02.Casco insurance of ships and boats in river navigation,

06.03.Casco insurance of ships and boats in lake navigation,

06.04.Casco insurance of ships under construction,

06.05.Casco insurance platforms,

06.99.Other casco insurance of vessels.

Marine insurance is an important business segment for insurance due to the long and attractive coastline of Croatia with many boats and charters being registered and operated in Croatia.

07. Insurance of goods in transport:

⇨ includes insurance that covers any damage or loss of goods, including luggage, regardless of the form of transport:

07.01.Insurance of goods in maritime transport,

07.02.Insurance of goods in air transport,

07.03.Insurance of goods in land transport,

07.04.Insurance of goods during storage,

07.99.Other insurance of goods in transport.

08. Insurance against fire and elemental damages:

⇨ includes insurance that covers any damage to property (except damages listed under: 03, 04, 05, 06 and 07) due to the hazards of: fire, storm, natural disasters other than storm, explosion, atomic energy and ground movement:

08.01.Insurance against fire and natural disasters outside industry and trades,

08.02.Insurance against fire and natural disasters in industry and trades,

08.99.Other insurance against fire and natural disasters.

<u>09. Other property insurance:</u>

⇨ includes insurance that covers any damage to property (except damages listed under 03, 04, 05, 06 and 07) caused by hail or freezing, theft or robbery, as well as other activities other than those listed under 08:

09.01. Insurance against machinery breakdown,

09.02. Insurance against burglary and robbery,

09.03. Insuring glass against breakage,

09.04. Household insurance,

09.05. Insurance of buildings under construction,

09.06. Insurance facilities under assembly,

09.07. Insurance of movie activities,

09.08. Insurance of things in mining pits,

09.09. Insurance of IT equipment,

09.10. Insurance goods in refrigerators and freezers,

09.11. Insurance of crops and plants,

09.12. Animal insurance,

09.99. Other property insurance.

<u>10. Liability insurance for the use of motor vehicles (Motor Third Party Liability):</u>

⇨ includes insurance that covers all types of liability for the use of self-propelled land vehicles, including the liability of the carrier:

10.01. Compulsory insurance of owners or users of motor vehicles against liability for damages to third parties,

10.02. Voluntary insurance of owners or users of motor vehicles against liability for damages to third parties,

10.03. Carrier's liability insurance for goods received for road transport,

10.99. Other motor third party liability insurance.

In most emerging markets this compulsory form of insurance has been the most important segment of the business for insurers. As will be shown later, MTPL (Auto Odgovornost, AO)

accounts for the largest part of the business in Croatia. Until 2013 the market, although formally liberalised, saw only market offerings of the regulated tariffs, which was also very profitable for the insurers. This business segment and its development before and after the liberalisation of prices started, has a very important impact on profitability of the market and individual insurers as well as strategies of the players. Understanding the development of this business segment is critical for putting the development of the individual markets into context, where its share provides some indication of market maturity and dependency on an obligatory product. This will be discussed in the chapter on the Croatian market.

11. Liability insurance for the use of aircrafts (Aircraft liability):

⇨ includes insurance that covers all types of liability for the use of aircraft or other aircraft, including the liability of the carrier:

11.01. Compulsory insurance of aircraft owners or users against liability for damages to third parties,

11.02. Insurance of aircraft owners or users against liability of all kinds (including the liability of the carrier for goods received for carriage in air transport).

12. Liability insurance for the use of vessels (Marine liability):

⇨ includes insurance that covers all types of liability arising from the use of sea, river and lake vessels, including the liability of the carrier:

12.01. Liability insurance for owners or users of seagoing ships (including liability of the carrier for goods received for transport),

12.02. Liability insurance of owners and users of river and lake vessels (including liability of the carrier for goods received for transport),

12.03. Compulsory liability insurance for owners or users of motorboats for damage to third parties,

12.99. Other liability insurance for the use of the vessel.

<u>13. Other liability insurance:</u>

⇨ includes insurance that covers all types of liability, except for the liabilities listed under 10, 11 and 12:

13.01. Ensuring the contractual liability of construction contractors,

13.02. Ensuring the contractual liability of the contractor of assembly works,

13.03. Liability insurance for film producers,

13.04. Liability insurance for manufacturers,

13.05. Liability insurance in railway transport,

13.06. Warranty guarantee for manufacturers, sellers and suppliers,

13.07. General liability insurance,

13.08. Liability insurance of project and other companies for damage to facilities due to incorrect technical documentation,

13.09. Liability insurance for project and other companies,

13.10. Liability insurance for lawyers,

13.11. Liability insurance of notaries,

13.12. Liability insurance of audit firms,

13.13. Freight forwarder liability insurance,

13.14. Liability owner or user liability insurance,

13.15. Liability insurance of ship repairmen,

13.16. Liability insurance for security and detective activities,

13.17. Liability insurance from performing real estate management activities,

13.18. Liability insurance from performing medical, dental and pharmacy activities,

13.19. Liability insurance of bankruptcy trustees,

13.99. Other liability insurance.

With the further development of the emerging markets towards market-oriented economies, the segment of liability insurance is destined to grow as businesses will face larger exposures towards liability risks.

14. Credit insurance:

⇨ includes insurance that covers:

- risk of non-payment (or late payment) due to insolvency or other events (actions or facts),
- export credits and other risks related to exports, trade and investments in foreign or domestic markets,
- loans with installments,
- mortgage and Lombard loans,
- agricultural loans, and
- other credits and loans:

14.01.Insurance of export receivables,

14.02.Insurance of other types of receivables,

14.03.Home loan insurance.

Recent years have seen a surge in credit insurance, primarily sold via banks and linked to the loans they are providing to their customers. With this kind of insurance they are transferring a significant portion of the risk to the insurers while also receiving high commissions, which generally is leaving the insurers with minimal profitability.

15. Warranty insurance:

⇨ includes insurance that covers and directly or indirectly guarantees the fulfilment of the debtor's obligations:

15.01.Deposit insurance,

15.02.Guarantee insurance.

16. Insurance of various financial losses:

⇨ includes insurance that covers:

- occupational risks,
- insufficient income (in general),

- bad weather,
- lost profits,
- unforeseen costs of a general nature,
- unforeseen operating expenses,
- loss of market value,
- absence of rent or income,
- indirect operating loss, other than the loss referred to in the above indents,
- other non-operating losses,
- other financial losses:

16.01. Insurance of financial losses due to interruption of work due to fire and some other dangers,

16.02. Insurance of financial losses due to interruption of work due to machine breakdown,

16.03. Providing various events due to atmospheric precipitation,

16.04. Insurance against damages due to the purchase of counterfeit foreign means of payment,

16.05. Insurance of the danger of cancellation of tourist trips,

16.99. Other insurance of financial losses.

17. Insurance of legal expenses:

⇨ includes insurance that covers the costs of lawyers and other costs of court proceedings:

17.01. Ensuring the costs of legal protection and the costs of court proceedings

18. Travel insurance:

⇨ includes insurance that covers risks arising from travel outside the place of residence:

18.01. Tourist insurance,

18.02. Travel health insurance,

18.03. Provision of assistance during the trip, outside the place of residence or residence,

18.99. Other insurance of tourist risks.

19. Life insurance:

⇨ includes insurance that covers the following risks:

19.01.Life and term insurance (mixed insurance),

19.02.Term insurance,

19.03.Endowment insurance,

19.04.Endowment insurance in case of death,

19.05.Critical illness insurance,

19.99.Other life insurance.

These forms of Life insurance consist of the risk as well as the savings forms of life insurance. In case of the savings life insurance, this usually comes with a guaranteed interest rate on the savings part that is paid by the policyholder.

20. Annuity insurance:

⇨ includes insurance of periodic income during a certain period or for the whole life:

20.01.Insurance of personal life annuity,

20.02.Insurance of personal annuity with a certain duration,

20.99.Other annuity insurance.

21. Supplementary life insurance:

⇨ includes insurance of risks: death, partial or complete incapacity for work, hospital stay due to an accident or due to diseases:

21.01.Supplementary accident insurance in addition to life insurance,

21.02.Supplementary health insurance with life insurance,

21.99.Other supplementary insurance of persons in addition to life insurance.

22. Marriage or birth insurance:

⇨ includes insurance that covers the risk of marriage or giving birth before predetermined age:

22.01.Wedding or birth insurance.

23. Life or annuity insurance where the risk is borne by the policyholder:

⇨ includes investments in connection with changes in the value of investment coupons or other securities of investment funds or insurance that is related to the change in the value of the unit of assets of the coverage fund:

23.01. Life and death insurance (mixed insurance) in which the insured assumes the investment risk,

23.02. Death insurance in which the insured assumes the investment risk,

23.03. Life insurance in which the insured assumes the investment risk,

23.04. Life insurance where the insured assumes the investment risk with a guaranteed payout,

23.99. Other life insurance where the insured assumes investment risk.

Over the past several years, this form of savings insurance has seen some sort of revival after previously peaking right up until the start of the financial crisis from 2008 which saw high production values in Unit Linked insurance in Croatia dramatically dropping. Now, with the extremely low interest rates where insurance companies face difficulties in delivering any returns, this form of life insurance, which is closer to investing in investment funds, has again become a big priority for insurance companies. It releases the insurer from the burden of the costly guarantees in the low-interest rate environment for margin on the invested funds while transferring the risk to the clients.

24 Tontine

⇨ includes insurance where the policyholders agree to jointly capitalize their contributions and divide such capitalized assets among those insured who reach a certain age, ie between the heirs of the deceased insured, and includes:

24.01. Tontine

25 Insurance with capitalization of payments

⇨ based on actuarial calculations and represents the insurance with which the insured receives in exchange for a one-off that is, the payment of premiums in instalments, payments in a certain amount over a certain period:

25.01. Insurance with capitalization of payment.

Table 8 shows the insurance premiums by these lines of business now introduced, recorded in 2020 in the Croatian insurance market in HRK.

Table 8: Gross written premium, by line of business, Croatia, 2020

Nr.	Line of business	Premium	Share in %
01	Accident insurance	512.007.843	4,89
02	Health insurance	634.270.480	6,06
03	Road vehicles insurance (Casco)	1.304.833.369	12,46
04	Insurance of rail vehicles (Casco)	2.439.750	0,02
05	Aircraft insurance (Casco)	11.573.779	0,11
06	Marine insurance (Casco)	171.075.435	1,63
07	Transport insurance	33.971.229	0,33
08	Fire and other natural perils insurance	727.978.991	6,95
09	Other property insurance	824.665.424	7,87
10	Liability insurance for the use of motor vehicles	2.595.800.881	24,78
11	Liability insurance for the use of aircrafts	4.493.861	0,04
12	Liability insurance for the use of vessels	37.667.179	0,36
13	Other Liability insurance	469.572.538	4,48
14	Credit insurance	255.817.334	2,44
15	Warranty insurance	13.809.544	0,13
16	Insurance of various financial losses	121.428.667	1,16
17	Legal expenses insurance	5.251.677	0,05
18	Travel insurance	100.957.977	0,97
19	Life insurance	2.211.940.183	21,11
20	Annuity insurance	14.460.611	0,14
21	Supplementary life insurance	125.446.288	1,20
22	Marriage or birth insurance	3.855.241	0,04
23	Life insurance where risk is borne by policyholder	291.750.810	2,78
24	Tontine	0	0,00
25	Insurance with capitalisation	0	0,00
	Non Life Total gross written premium	**7.827.615.968**	**74,73**
	Life gross Total written premium	**2.647.453.136**	**25,27**
	Total gross written premium	**10.475.069.105**	**100,00**

Source: Data from HUO

Chart 9: Share of main business segments (macro lines of business), Non Life and Life, Croatia, 2020
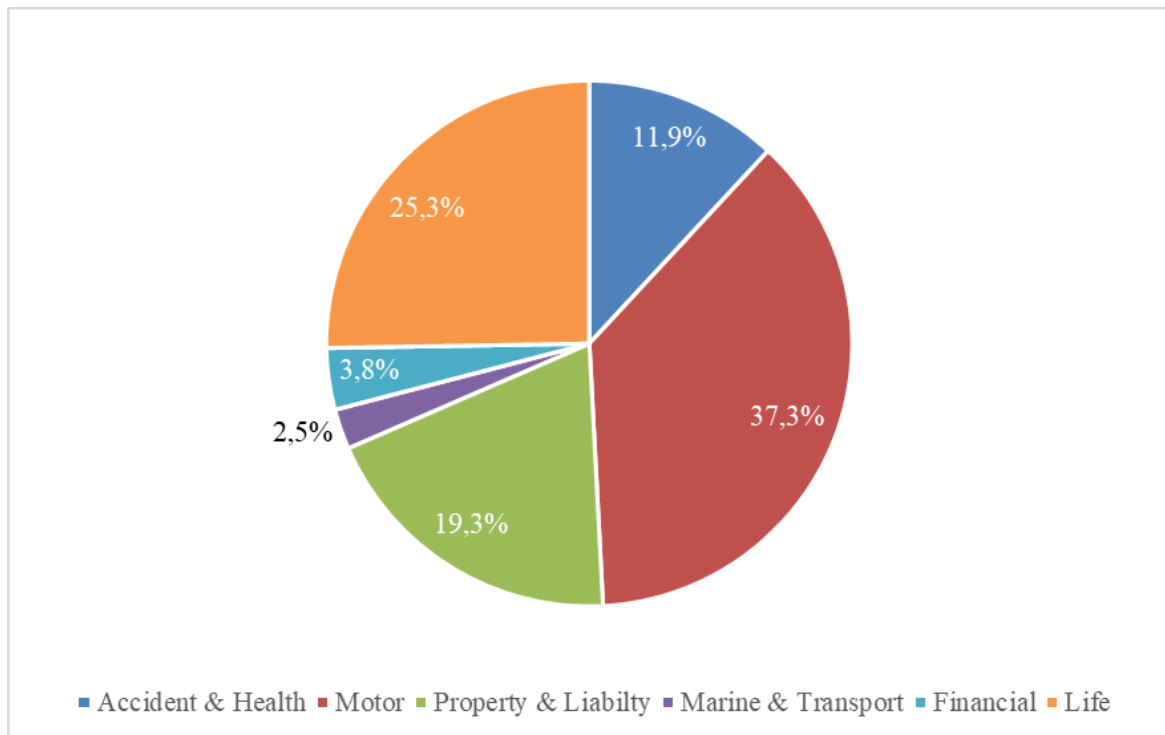
Source: by author, data from HUO (2022)

Chart 9 above shows, that, while the Life business accounts for only one quarter of the market volume, the insurance business generated around cars is still the dominant segment. This becomes even more relevant when looking at the profitability of the different segment, as especially Motor Third Party Liability (MTPL) has delivered strong results for the industry, leading to some severe form of dependence over many years. Furthermore, during the transition to a market-oriented insurance market, MTPL is even more vital as for one it allows for a stable source of income but also serves as an entry point to the customer when aiming to also offer and sell other insurance products.

In the chapter focused on the Croatian insurance market, the relevance and development of MTPL throughout the years will be closer examined.

2.5.   Key indicators

This chapter will first touch upon key performance indicators which are used to manage insurance businesses and is therefore helpful in understanding investors' motives when assessing insurers' strategies. The second part will give an overview over the market development impact indicators which are relevant for this research and will be used for the econometric model.

2.5.1. Key indicators for the insurance business

Insurance companies are producing the immaterial good "insurance protection" through the deployment of its production factors. The insurance industry is characterised by commonly receiving the premium in advance, whereas a significant portion of its costs in the forms of the claims is to be paid out to the beneficiaries of the insurance at a later stage. Due to this specificity of the insurance industry and the investment component in the Life insurance, insurance companies in essence have a second product offering apart from insurance protection, which is around their activities of asset management.[87]

Before the next chapter introduces the relevant market development impact indicators, first, the single most important parameter – gross written premium – requires explaining. Gross written premium is the revenue generated by an insurance company from the underwriting of insurance risks and therefore in its aggregation gives information about market size and market shares as well as other economic and financial indicators, which are described later on.

A definition for GWP is:

> "Gross Written Premium (GWP) — the total premium (direct and assumed) written by an insurer before deductions for reinsurance and ceding commissions. Includes additional and/or return premiums. Written does not imply collected, but the gross policy premium to be collected as of the issue date of the policy, regardless of the payment plan."[88]

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[87] Farny, D., Buchführung und Periodenrechnung in Versicherungsunternehmen (4th ed.), Wiesbaden, 1992, p.16
[88] International Risk Management Institute, https://www.irmi.com/term/insurance-definitions/gross-written-premium

<u>Gross written premium in Croatia</u>

Apart from the definition above, there are differences and nuances how GWP is recorded in different countries. Since this research is conducted for Croatia, this definition shall be looked at in more detail. The Croatian insurance market records GWP not in accordance with this definition and even different for the Non Life and Life business, respectively. As prescribed by the Croatian Supervisory Authority HANFA GWP is recorded the following way:[89]

- Non Life: In this segment GWP is recorded at inception or renewal upon which the entire annual premium is recorded immediately, irrespective of invoicing or payment patterns. This definition more resembles the "production" of that given period and therefore might lead to distortions during a year, but on an annual level and across an entire market, the distortion is considered negligible.

- Life: In this segment, the paid premium is serving as GWP, which is therefore following a very different definition than applied for the Non Life business. This results in payment dynamics influencing GWP, however, throughout a year or many years, and across a market, the distortion is also considered negligible.

Although there are different definitions applied in different countries, the disturbance created by these differences is not material as the main analysis is focused on an econometric model with relative numbers, for example GWP related to Gross Domestic Product, and looking at time series where in itself consistent definitions are applied. Therefore, as a general guidance for this research, the numbers as made available by local regulators, are applied.

<u>Profitability and dividends</u>

As most of the international insurance groups in scope for this paper are stock-listed companies, they abide by the standard key financial parameters and performance indicators which are relevant for all such companies with listed shares, net profit and dividends. Despite high uncertainty in the insurance business, the core business as well the financial part of it, it is

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[89] HANFA, Pravilnik o minimalnim standardima, načinu obračuna i mjerilima za izračun tehničkih pričuva prema računovodstvenim propisima, 2019

expected that insurers are able to generate relatively stable streams of cash flows. This requires them to achieve size and benefit from diversification effects, both on the asset and the liability side of the balance sheet.

Below are listed a few value drivers that are influencing net profits and dividend capacity.

Combined ratio

This is a very important measure of profitability for the Non Life (P&C) business of an insurer as it puts all the expenses of running the business as well as the claims paid out or incurred in for that insurance business against the premiums earned from its policyholders in any given year. It is comparable to a cost-income ratio of banks. It does not take into account income generated from investing the premium received and is therefore a measure of the operational profitability of the Non Life business. It effectively tells the reader whether the premium charged to the customers is sufficient to cover the claims for insured events and the cost of organising this transfer of risks and its business.[90]

Figure 7: Exemplary illustration of Combined Ratio
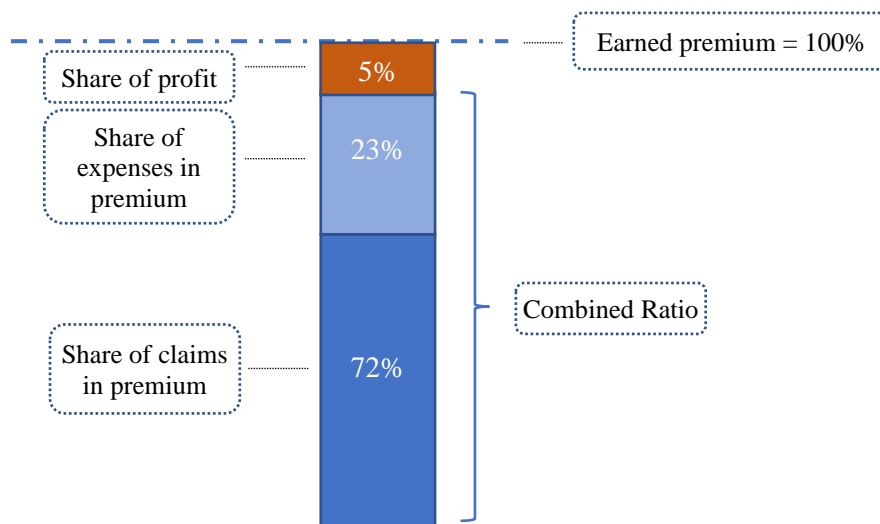
Source: by author (2022)

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[90] McKinsey, 2020, https://www.mckinsey.com/industries/financial-services/our-insights/how-insurers-can-improve-combined-ratios-by-five-percentage-points

Interestingly, combined ratios also have a relationship, more indirectly and over the long-term, with the development on financial markets.[91] And as much as it is an indicator of the profitability of the Non Life business of an individual insurer, it can also be an indicator of market profitability. A part of Combined Ratio is the Claims Ratio, the relationship of claims to premium, which is providing the most important conclusion about the technical result of the insurer in a given period.[92] Non Life Combined Ratios for selected large insurance markets are shown in Chart 10.

Chart 10: Non Life profitability of selected jurisdictions: Combined Ratio
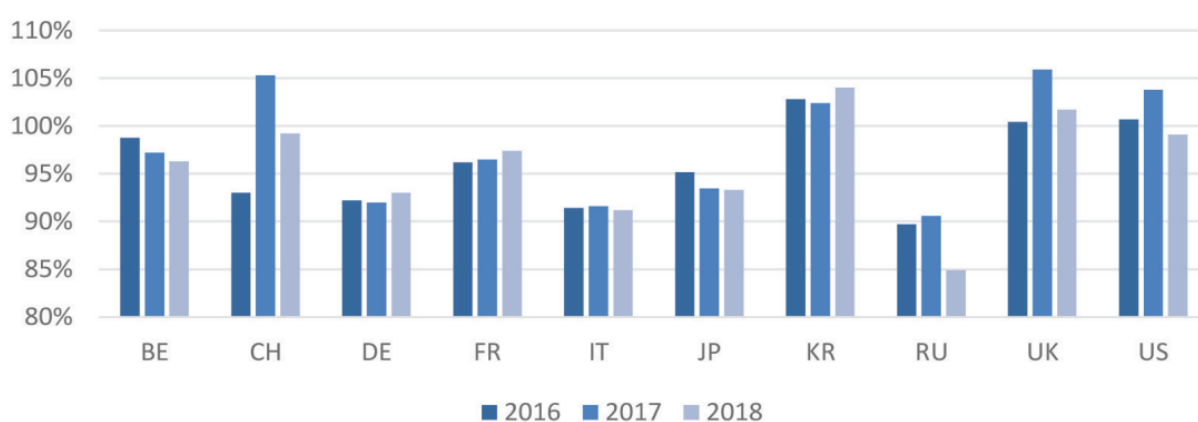
Source: Global Insurance Market Report, IAIS, International Association of Insurance Supervisors, 2020

In particular the CEE's market profitability of the Non Life business segment is highly attractive for insurance investors with combined ratio's well below 100% and in certain larger economies (for example Czech Republic or Slovakia) even below 90%, which can be seen also in the results of the large international insurance groups active in this region.[93]

Life Value of New Business

As the Life business is characterised by fairly projectable and long-term cash flows, generated by premium inflows, underwriting and claims payments but also a high proportion of the

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[91] More here: Swiss Re, Sigma No 4/2018, p. 21
[92] Bijelić, M., Osiguranje i Reosiguranje, Zagreb, 2002, p. 34 (claims ratio in % = amount of claims/premium x 100)
[93] Compare annual reports Allianz group, Generali CEE Holding, Vienna Insurance Group, Uniqa International

investment side of the business, profitability is measured with the discounted cash flow method. The Value of New Business represents the discounted value of all expected after-tax cash flows after financial costs, hence the economic value, generated by new business written in a given period (yearly production).[94] If a specific generation of new business is generating a positive value and earning its cost of capital, then it is profitable business. However, the value created can also be negative or zero.[95]

That same concept is applied when looking at the value of an entire portfolio, where all contracts in force are discounted to the present value, giving the Value in Force. Together with the economic value of economic assets of a company this gives the Embedded Value, which is also relevant when looking at the value of insurance companies, which is then only missing the value of the future business.[96]

An indicator which is illustrating the close link of insurance markets and financial markets is offered below in Chart 11, looking at financial margins of life savings products by comparing the guaranteed interest rates for policyholders with the achieved yields on financial markets.

Chart 11: US Life insurance market spreads (2006 – 2018)
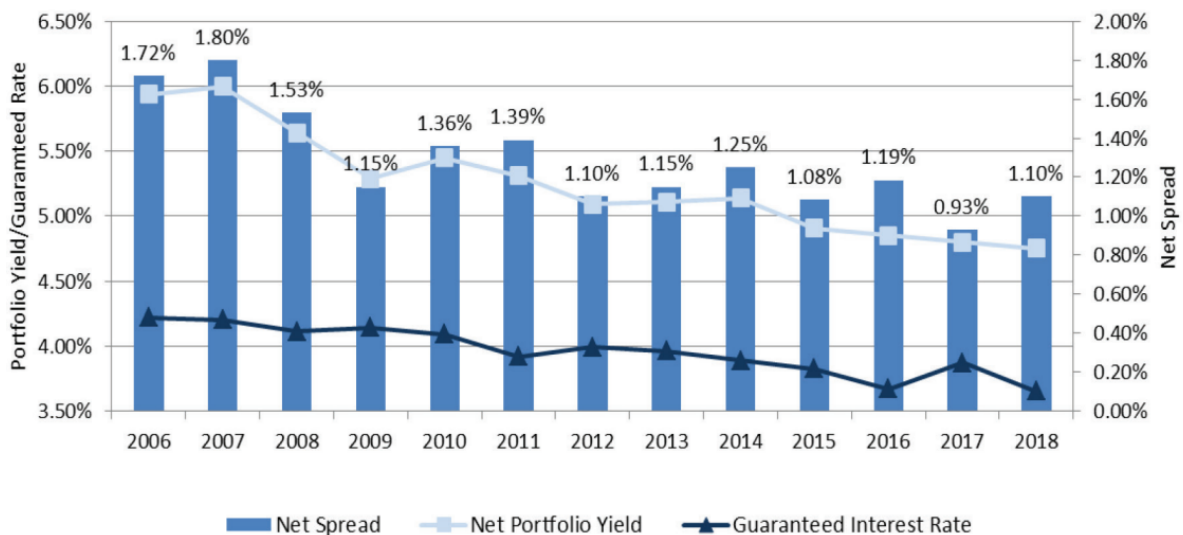
Source: Global Insurance Market Report, IAIS, International Association of Insurance Supervisors, 2020, p. 10

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[94] Assicurazioni Generali, 2020 Own Funds and Life New Business Supplementary Information, 2020, p. 40
[95] Tremblay, F., Embedded Value calculation for a Life Insurance company, 2006, p. 21
[96] American Academy of Actuaries (Life Financial Reporting Committee), Embedded Value Reporting, 2009, p.3

From this it becomes also obvious where a significant risk of insurers is inherent, as durations and interest rates would need to be carefully managed to immunize a portfolio against asset-liability risks, which however might not always be possible in the course of businesses and markets.[97]

2.5.2. Key indicators for the insurance industry

This chapter describes the market development impact indicators applied in the analytic part of this dissertation – with the relative factors of insurance penetration and density, and their development over time and in the countries of the region – being the focus here. The econometric model will later test and evaluate the relations and causalities of these variables on the engagement of international investors. Furthermore, the following chapters on the Croatian as well as the CEE-insurance markets will discuss in more details existing findings and literature in respect of these parameters and insurance markets.

Market share

Market shares are expressed as shares in gross written premium in any given market or region. Although the development of the market share of individual companies is of less interest here, the development of the aggregated market shares of international companies shall be relevant for the analysis.

Number and share of players

Similarly to the concept of market shares, the development of the number of players as well as the share of international players will be looked at, which will provide valuable insights into effects of market entries, exits and consolidation.

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[97] See more: Asset Liability management: International Actuarial Association, Gilbert, C., IAA Risk Book, Asset Liability Management Techniques and Practices for Insurance Companies, 2016

Insurance penetration

The insurance penetration rate is given by the ratio of insurance premiums in the market and Gross Domestic Product (GWP/GDP) and expresses the share of the insurance industry in the total economy. As both items are measured in local currency, fluctuations in exchange rates play no role here.[98] Therefore it serves as an indicator for comparison of the relevance of the insurance sector over time or between different countries.

Depending on the level of granularity the researcher is looking for, penetrations can be measured separately for Life and Non Life insurance, whereby the Life insurance penetration shows the percentage of Life premiums related to GDP while the Non Life insurance penetration does the same for the Non Life market.[99] Traditionally, the CEE region has been more lagging behind in the Life penetration.

Insurance density

The insurance density rate is calculated by relating gross written premium to the entire population (GWP/number of inhabitants) and therefore indicating the amount of money (currency) spent per capita on insurance products per year. As population figures are fairly stable over the short term, this is also a useful parameter for the development of the insurance sector across time and countries.[100] Throughout different countries and regions, these numbers are vastly dispersed with well developed countries showing much higher insurance premium per capita than emerging markets.

Share of specific lines of business

From market statistics it is evident that more mature markets have a different market structure than emerging or developing markets. In the latter and less developed insurance markets, usually motor vehicle insurance is the dominating form of Non Life insurance, especially the

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[98] Pavić Kramarić, T., Galetić, F., The Role of the Overall Economic Development on the Insurance Market Growth – Evidence of the European Union, Journal of Applied Finance & Banking, vol. 3, 2013, p. 160-161 Further: Gross Domestic Product (GDP) measures a country's economy with the total value of all goods and services produced excluding the ones consumed for their production.

[99] Saurav Dash et al, Insurance market penetration and economic growth in Eurozone countries: Time series evidence on causality, Indian Institute of Technology Kharagpur, 2017, p. 53

[100] Also Pavić Kramarić, T., Galetić, F., p. 160-161

obligatory part, without which the owner of a car cannot utilise the vehicle. In more developed markets the non-motor share steadily grows and so does the share of Life insurance. As most international investors in the CEE region are originally coming from western economies where they have their largest footprints, this paper examines their role in diversifying the national insurance markets into more product lines. Hence, the share of Motor Third Party Liability would be a parameter expected to decrease over time in a developing market or the share of Life insurance to increase, although this might also be influenced by other factors like financial crises. Therefore, this dissertation will examine for example the share of MTPL in the total insurance market as such market development impact indicators.

2.6.   Forces in the insurance sector

Like any other industry already in existence for several hundreds of years, also the insurance sector is facing several pressures from different sides. The last two decades have been shaped by several financial and subsequentially economic crises, whereby in particular the banking crisis of 2008 had significant spill over effects into the insurance industry. The attempts of the European Union to harmonize the regulatory framework and supervision of the financial industry starting with the banking sector, which was already initiated a several years earlier (Basel I-III)[101] was a precursor of what was to follow for the insurance industry. Global efforts to strengthen consumer rights, together with a change in consumer behaviour and expectations, had further impact on insurance companies as well. Technological innovation is another force having the power to reshape industries and therefore is also putting pressure on the partially old structures of insurance companies.

Although constant transition and evolvement is at the core of any economic activities, currently the following three building blocks are among the most significant forces reshaping the insurance industry:

-    Regulation and supervision

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[101] Bank for International Settlements (BIS), https://www.bis.org/basel_framework/index.htm

- Technological innovation

- Changes in Consumer behaviour

2.6.1. Regulation

The insurance industry is one of the pillars of the financial industry, next to banking and capital markets. Given their massive accumulation of assets and relevance for financial stability it is a highly regulated and supervised industry, to levels only comparable to the banking system. Insurance is embedded in the European System of Financial Supervision and regulated by the European Insurance and Occupational Pensions Authority (EIOPA), which is based in Frankfurt.

Figure 8: European System of Financial Supervision

Source: Libertas International University[102]

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[102] Samodol, A., Lecture on Finance, Libertas International University, 2021

While EIOPA is the EU insurance supervisory authority, the local regulators are still in place and supervise the local entities but with stronger collaboration and coordination across the Union. However, EIOPA is not the only authority increasing the regulatory demands on insurance companies. In recent years, around the mantle of consumer protection, additional regulatory demands have challenged the insurance sector. Within the force of regulation, in particular the European Union driven elements around the following themes stand out:

- Capital requirement and risk management (Solvency II)

- Insurance directives around consumer protection (IDD)

- General Data Protection Regulation (GDPR)

- International Financial Reporting Standards (IFRS)

Solvency II

As the European Union aspired to move closer to a single market the topic of unionwide supervision of financial services became more and more relevant.[103] The process of development and implementing the EU-wide Solvency II framework on capital requirement and risk management has taken more than fifteen years for becoming a law in the form of DIRECTIVE 138/2009/EC (SOLVENCY II DIRECTIVE) which formally entered into force in 2016 but insurers have begun their preparations much sooner.[104]

The Solvency II framework allows for a supervision which is risk-based and forward-looking, standing on the three pillars, 1) quantitative requirements, 2) qualitative requirements and supervisory rules and 3) reporting and disclosure.[105] It introduced more adequate measures of calculating the risk capital required to hold for running an insurance company and a fair valuation of the assets and liability of an insurer. It also changed the way large and international insurance groups are supervised within the European Union as it tasked the supervisory

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[103] Eling, M., Schmeiser, H., T. Schmit, J. T., The Solvency II Process: Overview and Critical Analysis, in: Risk Management and Insurance Review, vol. 10, issue 1, 2007, p. 69-85
[104] Istrate, C., Badea, D., Financial management of insurance companies in the context of the new regime Solvency II, in: Proceedings of the Int. Conference on Business Excellence, 2017, vol. 11, issue 1, 625-636
[105] More to this: EIOPA, Solvency II Single Rulebook

authority where the international group is domiciled with the supervision of the entire group. Nonetheless, local companies of that group are still supervised by their local regulators.[106]

Further fuelled by the effects of the financial crisis in 2008 and the failings of banks but also a large American insurance group (AIG), regulators intended to impose further strict principles of risk management onto insurers and change the principles of supervision. Despite the descriptive measures of calculating the solvency capital requirement now based on certain parameters which are depending on the business and portfolio of the insurer (both assets and liabilities) by applying a standard formula, insurers have also been given the option of developing their own internal model, which would need to satisfy a regulatory approval process. In reality, mainly the larger and international companies have the resources required for developing such internal models and therefore taking even further advantage of their own risk management techniques and portfolio diversification.

As discussed in a previous chapter, diversification has direct implications on the capital requirement of insurance companies. It is therefore embedded in the business strategy of these companies, and not only part of the capital management strategy. The Solvency II framework is regulating the process of evaluating the solvency of an insurer via the Solvency Capital Requirement (SCR) by considering all the risk categories and risks of the map described earlier, including the operational risks of running the business.

The concept of this risk capital or sometimes also referred to as economic capital can for example already be traced back to "Theory of Risk Capital in Financial Firms" which presented an early guide to integrating capital structure, performance management and strategic planning for banks, insurance companies and other financial institutions. With the publication of the BIS capital guidelines for banks, most financial businesses have been required to review their capital adequacy regime.[107]

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[106] Ministry of Finance, Austria, https://www.bmf.gv.at/en/topics/financial-sector/finance-captital-markets-eu/solvency-ii.html
[107] Merton, R. C., Perold, A., Theory of Risk Capital in Financial Firms, 1993

This solvency requirement in form of equity capital is the buffer for developments and instances significantly deviating from the expected loss according to the probability distributions the company is operating with through the course of its business, whereas the expected amounts to be paid out to the policyholders in form of benefits is held in provisions. This cushion serves as a guarantee for the stakeholders in case of unpredictable losses. Its calculation demands a fair assessment of the company's risk profile and requires significant efforts from the side of the insurer but also from the regulatory side. The SCR should give a security of a 99,5% probability that the insurance company will be able to meet all of its obligations over the course of the following year. This amount of SCR is therefore the level of regulatorily required capital an insurer has to cover with its own funds.[108]

Insurance directives around consumer protection

The European supervisory authority EIOPA is also responsible for rolling out further regulation initiated by the European Commission which was motivated by strengthening consumer protection in financial services and standardising consumer rights across the single market of the European Union. The Insurance Distribution Directive (IDD)[109] came into force in October 2018 and impacted the entire value chain of distributing all insurance products. Despite increasing transparency and information for customers and strengthening education in insurance sales, it also resulted in additional administration and expenses for insurers, but also for brokers and agencies selling insurance products.[110]

Joint efforts by all European Supervisory Authorities[111] to clarify and simplify the language used when communicating product elements to customers resulted in the Packaged Retail and

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[108] Wanat, St., Konieczny, R., Estimation of the Diversification Effect in Solvency II under Dependence Uncertainty, Cracow, 2017, p. 93-94

[109] EIOPA, Directive (EU) 2016/97 – Insurance Distribution Directive (IDD), https://www.eiopa.europa.eu/insurance-distribution-directive_en

[110] EIOPA, Consumer Protection Department, Report on the application of the Insurance Distribution Directive (IDD), 2022, p. 25

[111] Joint Committee of the European Supervisory Authorities (ESMA, EIOPA, EBA), Final Report following consultation on draft regulatory technical standards to amend the PRIIPs KID

Insurance-based Investment Products (PRIIPs)[112] and the Key Information Document (KID) with guidelines protecting retail customers when investing into banking, asset management or insurance products with an investment risk.

General Data Protection Regulation (GDPR)

With the implementation of European Union's data protection law, many industries, in particular those managing vast amounts of often sensitive data of a large customer base, have had to make significant investments into IT systems and processes in order to comply with these new regulations.[113] So was the effect on the insurance industry and all its participants across the entire value chain, whether small or large entities.

But also here, similar to the demands created by the insurance directives created around consumer protection (IDD), there is an advantage for large international groups as they can transfer their experience across countries where they are active under the same rules.

International Financial Reporting Standards

Accounting standards have moved more towards appropriately capturing the peculiarities of the insurance business in balance sheets and profit and loss statements (see IFRS 4), but the changes coming along with IFRS 17[114] coming into force from 2023 might well change the picture of insurance compared to previous standards. With this new standard, balance sheets will experience more volatility as they will be based upon discounting expected cash flows and very well known measures, even like premium, will change as well. Apart from its implications, this is another force that is putting a strain on insurance companies and their administrative organisations and requires them building massive know-how and new skills in actuarial and accounting fields.[115]

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[112] Regulation (EU) No 1286/2014

[113] Regulation (EU) 2016/679, www.gdpr.eu

[114] International Accounting Standards Board (IASB) and https://www.ifrs.org/issued-standards/list-of-standards/ifrs-17-insurance-contracts/

[115] Longoni, P., IFRS 17 Insurance Contracts and Firm Value, 2019,

2.6.2. Technological innovation

Fuelled by the COVID-19 pandemic many industries have experienced a push towards more digitalisation. The same can be observed for the insurance sector. Even more so, the rise of FinTechs and InsurTechs over the last five years with technological advancements in Machine Learning, Robotisation and Artificial Intelligence or simply the embedding of the insurance service seamlessly into the sales process of the core product has proven a threat for insurers on the one hand, while becoming an opportunity on the other hand. By partnering with technology focused start-ups traditional insurers are able to capture some of the innovation for their own benefit instead of purely allowing the disruption of their own business model. A strategic move many of them see as necessary judging by the strategies deployed in respect of partnering or investing in FinTechs and InsurTechs.[116]

These innovations allow insurers to automatize and digitalize their processes, offer many new used-based insurance services like pay-as-you-drive for Motor vehicle insurance[117] or draw from the benefits of smart and connected houses or devices in general.[118]

Furthermore, already for some time now the big (mostly American, but also Chinese) tech giants have cast an eye on the financial industry by making their own case studies and have been testing their own offers for insurance, as we have seen for example from Amazon in the UK or India.[119] An entrance into insurance, in whatever form, by one of these players, like for example Amazon, Google, Facebook, Apple, Microsoft, Tencent or Alibaba would seriously threaten the traditional insurance companies. However, the high levels of regulation and supervision, which is also rather fragmented across the globe, might be an obstacle for such dramatic strategic moves. Moreover, these tech companies are used to extraordinary high levels

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[116] McKinsey & Company, Insurtechs are increasingly ripe for insurer investments and partnerships, 2021

[117] Boucher, J.-P., Pérez-Marín, A. M., Miguel Santolino, M., Pay-as-you-drive insurance: The effect of the kilometers on the risk of accident, in: Anales del Instituto de Actuarios Españoles, 2013, p. 135-154

[118] Deloitte, The Insurer's playbook on Smart Home, 2017

[119] Reuters, https://www.reuters.com/world/uk/amazon-start-offering-insurance-uk-businesses-broker-2021-09-27/ or Property & Casualty, https://www.propertycasualty360.com/2020/07/27/amazon-is-now-selling-auto-insurance-in-india/

of profitability, which seem to be unachievable for traditional insurers at the moment, making it less attractive for them deploying their reources in such business.

But tech giants or start-ups are not the only threat arising from technology as for example car manufacturers are making moves into insuring their customers directly and offering services of assistance often provided by insurance companies. In such scenarios, traditional insurance companies might be reduced to becoming white labels providers for the bigger names selling the cars or other products in the best case, while Tesla is testing the market for organising the insurance service even standalone.[120]

All these threats and scenarios do not begin to adequately capture the impact of the possible rise of self- driving cars, as then a very important line of business for insurance companies, MTPL, especially in CEE, would significantly change.

These changes arising from technology are quite dramatic and often come with massive investments into IT and innovation, so that the sheer size of a player allows for more resources to be deployed in such activities, therefore hinting again towards a benefit of larger players. However, as with innovation it is different, as here also the smaller, faster and braver company can gain significant advantages.

2.6.3. Changes in consumer behaviour

The intense changes in technology touched upon above, the domination of platforms and all the consequences these bring to our lives and businesses also enable corporations to interact in different ways with their customers, often including them in previously internal processes. The customer experiences consumers gain with the likes of Apple or Amazon also create different

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[120] Bart, E., Car manufacturers are challenging traditional auto insurers: Who will win the tech race?, 2020
  https://us.milliman.com/en/insight/car-manufacturers-are-challenging-traditional-auto-insurers-who-will-win-the-tech-race
  See also: https://www.businesswire.com/news/home/20210929005843/en/Automakers-are-about-to-shake-up-the-auto-insurance-industry

expectations in other industries.[121] This is then the place where start-ups aim to find their place or traditional firms need to upgrade their business models in order to secure their own future. This is particularly challenging for an industry like insurance that has been around for hundreds of years and is known for standardized products not really bending to the individual wishes of their customers. These changed consumer behaviours impose significant changes for the insurance companies, while at the same time having to comply with new regulation deemed to protect these same customers and being threatened by newcomers to the industry.

Looking at the forces from the perspectives of capital requirement, regulation and technology changes to which insurers are exposed to as well as market pressures and the nature of the business model itself, the size of an insurance company matters. As elaborated earlier, the law of the large number is essential in the insurance business, but also the challenges the sector is currently experiencing seems to favour larger companies, which serves as a good takeaway from this chapter and sets the scene when looking at the CEE-region and the strategies of the international insurers active in it.

As was also demonstrated in a study on Financial Stability of Insurance Companies in Selected CEE Countries, the company size of an insurer positively effects its soundness, meaning financial health and stability. This seems to confirm that larger insurers tend to be financially sounder than their smaller counterparts.[122] Furthermore, an analysis on the efficiencies of insurance markets in Hungary, Croatia and Poland concluded that inefficiency of insurers mainly arises from scale inefficiency and not from managerial inefficiency which is again hinting towards the necessity and drive for growth within insurers' strategies.[123]

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[121] Sandhu, A., Chen, S, Rochlani, A., Tay, H. J., Thamrin, B., Singapore Fintech Association, Oliver Wyman, Insurance Redefined: A roadmap for insurers and Insurtechs, 2020, p. 3

[122] Pavić Kramarić, T., Miletić, M., Kožul Blaževski., R., Financial Stability of Insurance Companies in Selected CEE Countries, in: Business Systems Research, Vol. 10, No. 2, 2019, p. 173-174

[123] Pervan, M., Pavić Kramarić, T, Ćurak, M., A Comparative Analysis of the Efficiency of Life and Non-Life Sectors in selected CEE-countries, in: Ekonomski Vjesnik Vol. 34, 2021, p. 288

3. SELECTED COUNTRIES OF THE CEE-REGION

This chapter explores the definition for and origins of the widely used term Central Eastern European (CEE) area and briefly introduces those countries selected for the purpose of this dissertation.

The CEE-region is often mentioned as an emerging market and described as a region full of opportunities with the potential for extraordinary growth. Most CEE countries have already joined the European Union and therefore share several common EU-institutions, yet it remains to be seen when their economic development will catch up with the western economies. However, it is not a homogenic region but consists of a multitude of countries and there is no clear consistent definition of which geographic region and specific country this term encompasses. Hence, the definition of the CEE region and its countries is rather imprecise and political institutions, corporations and consultants are using slightly diverging definitions.[124]

The term CEE has its foundation in the former Eastern Bloc (Ostblock) and includes countries previously joined together in the Warsaw Pact following World War II with the former Soviet Union at its center. As an exception to this, usually the successor states of ex-Yugoslavia, which was not a member of the Warsaw Pact, are often considered as part of the CEE region. The three Baltic states of Estonia, Latvia and Lithuania are part of this region in a generally accepted view; those countries elected not to join the Russian-dominated Commonwealth of Independent States (CIS) as opposed to most of the former republics of the Soviet Union. Depending on the definition, the range of the term CEE encompasses from 11 up to 22 countries, however with vast diversity in the sense of size, population, geography, economy or social relations and culture.[125]

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[124] Jaklič, A., Obloj, K., Svetličič, M., Kronegger, L., Evolution of Central and Eastern Europe related international business research, in: Journal of Business Research 108, 2020, p. 431

[125] Schuh, A., Die Forschung zum Wirtschaftsraum Mittel- und Osteuropa: Welche Rolle spielt die regionale Perspektive für die Unternehmensführung?, Vienna University of Business and Economics, 2018, p. 2

The CEE countries can also be segmented and selected according to their membership with or accession status to the European Union (EU) with the first countries joining the EU on 1st May in a large first wave 2004 (Estonia, Latvia, Lithuania, Czech Republic, Slovakia, Poland, Hungary and Slovenia), followed by the two countries that joined on 1st January 2007 (Romania and Bulgaria) and finally, Croatia, which joined on 1st July 2013. According to the World Bank 2008 analysis, the 10 countries that joined the EU in 2004 and 2007, respectively, completed already the transition to advanced market economies.[126] Apart from the Baltic states, Slovakia and Slovenia have so far adopted the EU common currency,[127] with Croatia expected to replace the Kuna with the Euro in 2023.

The definition for Central and Eastern European Countries (CEECs) applied by the Organisation for Economic Co-operation and Development (OECD) encompasses the countries Albania, Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Slovak Republic, Slovenia, and also the three Baltic States Estonia, Latvia and Lithuania.[128]

The French National Institute of Statistics and Economic Studies includes Bulgaria, Croatia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovenia, Slovakia, Czech Republic, thereby missing Albania.[129] Interestingly, both definitions do not include other former Yugoslavian states like Serbia, Bosnia & Hercegovina, Macedonia and Montenegro.

In their 2019 paper on insurance in CEE, the international audit and consulting company Deloitte, lists Poland, Czech Republic, Slovakia, Hungary, Romania, Bulgaria, Croatia, Slovenia, Serbia, Latvia, Lithuania and Estonia as the CEE countries.[130] The global strategy consulting house McKinsey on the other hand in their paper from 2013 only considered the

[126] Alam, A., Casero, P., A., Khan, F., Udomsaph, C., Unleashing Prosperity: Productivity Growth in Eastern Europe and the Former Soviet Union, World Bank, Washington, 2008, p. 42

[127] More to convergence, see: Forgó, B., Jevčák, A., Economic Convergence of Central and Eastern European EU Member States over the Last Decade (2004-2014), 2015

[128] OECD, https://stats.oecd.org/glossary

[129] French National Institute of Statistics and Economic Studies, (Insee) https://www.insee.fr/en/metadonnees/definition/c2055

[130] Deloitte, CEE insurance M&A outlook, 2019

selected CEE countries of Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, Slovakia and Slovenia.[131]

The political and economic upheavals of the past century have drastically changed the landscape of many domestic insurance markets. Throughout the Communist Bloc and in many other socialist-oriented states the function of insurance was nationalized and a monopoly established while the businesses were transferred to state companies or organisations, which often were part of the Ministry of Finance. The reversal of these policies started with the beginning of the Nineties when in several of these countries formerly state-owned insurance organisations were sold to private investors or international insurance groups and new private companies were formed. Also, since many of these countries have joined the European Union, its Third Life and Non Life Insurance Directives have obliged them to end monopoly positions in their countries. Nevertheless, the state still remains a player, whether directly or indirectly, in the insurance industry of many of these countries.[132]

This means, the CEE-region is mostly comprised by states that were under Soviet influence (except former Yugoslavia) after World War II and were consequently opened up with the fall of the Berlin wall in 1989 and the end of the Cold War. Since that time, the region has undergone significant development and its economies transformed from a communistic model with decades of state economic control to a capitalistic model. However, differences between the countries remain, whether it is in the adoption of currency, economic structure or social relations.

Therefore, privatizations and foreign investments as well as market liberalisations and M&A transactions followed by introduced competition have been very important drivers of this market and economic transformation. In all of this, international investments have been a key driver for this development towards advanced market economies with a vast influence on the economic development of the states in this region and also on the political landscape, but also vice versa.

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[131] McKinsey Global Institute, A new dawn: Reigniting growth in Central and Eastern Europe, 2013
[132] Carter, R., Lucas, L., Ralph, N., Reinsurance, 4th edition, 2000, p. 22 and p.41

The state also played a very dominating role in the development of the Yugoslavian Insurance market and its successor states, which in this case led to a peculiar development of events. In the 1940s, following World War II, the state insurer Državni Osiguravajući Zavod (DOZ) was formed to take on and conduct all insurance business in the country. Later on, in the 1960s the monopoly was abandoned and more than hundreds of regional insurance organisations set up throughout Yugoslavia. Following unsatisfactory performance of the business as well as national interests during 1968 the entire insurance system was again restructured with eleven insurance and reinsurance companies being established in each of the respective republics (seven insurers, two insurer/re-insurers, two re-insurers).[133]

For the purpose of this paper, we will orientate ourselves by specific criteria and select countries of this CEE-region which should fulfil at least the following three conditions:

- It shall be a member state of the European Union, irrespective of the date of joining.

- The larger international players from Austria, Germany and Italy are all together present on these insurance markets.

- These countries host developed insurance markets of relevant size and with solid availability of data.

Based on these criteria, the following eight countries shall be taken into the scope of analysis and be considered as the selected CEE countries for the purpose of this research, shown also in the chart below:

- Bulgaria

- Croatia

- Czech Republic

- Hungary

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[133] Pye, R., B., K., The Evolution of the Insurance Sector in Central and Eastern Europe and the former Soviet Union, (William Davidson Institute Working Paper Number 336), 2000, p. 9
More to this: Rajičić, B., Property and Personal Insurance, 1997, p. 75-90

- Poland

- Romania

- Slovakia

- Slovenia

Figure 9: Map of Central Eastern Europe region with the selected countries considered for this research

Source: by author (2022)

Below follow some short introductions of the selected CEE countries:[134]

Bulgaria

With origins reaching back to Asian Turkic tribes and Slavic people Bulgaria gained its independence from the Ottoman empire in 1908 only to fall under Soviet dominance after World War II. Located along the Black Sea with a population of 6,9 million Bulgaria joined the European Union in 2007 and the NATO already in 2004. Its GDP amounts to USD 68,5 billion with a GDP per capita (PPP) of USD 22.400.[135]

Croatia

When the Austro-Hungarian empire came to an end, the kingdom of Croats, Serbs and Slovenes was formed, which was known as Yugoslavia from 1929. Following World War II Yugoslavia became an independent federal state under the leadership of Josip Broz (Tito) with six socialistic republics. Being one of them, Croatia declared its independence in 1991, but a bitter war with Serbia continued for several years. Croatia was the latest country to join the European Union in 2013 and the NATO already in 2009. Its GDP amounts USD 60,7 billion with a GDP per capita (PPP) of USD 26.500, which is the second lowest one of the countries selected herein. Its population is estimated at 4,2 million with a however decreasing trend as many Croats are finding work abroad.

Czech Republic

As the result of a turbulent history as a former part of the Austro-Hungarian (like others on this list) and after Nazi-German occupation during World War II, the communist country Czechoslovakia peacefully divorced in 1993 into the two countries Czechia and Slovakia with a population of the former of 10,7 million people and went on to join NATO in 1999 and the EU in 2004. With a GDP of USD 250 billion it is one of the largest economies in the CEE region and with a GDP per capita (PPP) of USD 38.300 also one of the wealthiest.

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[134] CIA, The World Factbook (for reasons of consistency a single source)
[135] GDP per capita used as PPP (purchase power parity)

Hungary

Before becoming an integral foundation of the Austro-Hungarian empire, Hungary often served as a defence wall against the Ottoman Turkish empire. The country fell under Moscow's communist dominance after World War II and started liberating its political system and economy from 1990, joining NATO in 1999 and the EU in 2004. Hungary inhabits a population of 9,7 million and produces a GDP of USD 163,3 billion and a GDP per capita (PPP) of USD 31.000.

Poland

After existing as a separate state from the 10th century, Poland found itself divided among Russia, Prussia and Austria at the end of the 18th century. It regained its independence with the end of World War I but was occupied by Germany with the start of the second World War before falling under Soviet influence. This era ended in 1989 and after transforming its economy, it became one of the largest in Europe and the largest CEE-market with a GDP of USD 595,7 billion and a population of 38,2 million and a GDP per capita (PPP) of USD 32.200. Poland joined the NATO in 1999 and the EU in 2004.

Romania

The country gained independence at the end of the 19th century and fell into the Soviet sphere after previously participating in the German invasion of Russia in World War II. For more than 30 years it was ruled by dictator Nicolae Ceausescu who erected a brutal police-state but was finally overthrown in 1989. Romania joined the NATO in 2004 and the EU in 2007. Its population amounts to 21,2 million and its GDP to USD 249,5 billion, with a GDP per capita (PPP) of USD 28.800.

Slovakia

Although bound together in one country with Czechia for many decades, the two countries found themselves in different positions during their history. For a thousand years they were part of the Hungarian Kingdom and remained under the Hungarian part of the rule within the Austro-

Hungarian empire, while Czechia was under Austrian rule. During World War II Slovakia became though a separate state allied with Nazi-Germany. Following Germany's defeat, Czechoslovakia was re-established under the communist Soviet rule. Slovakia, separated from Czechia since 1993 and acceded to both EU and NATO in 2004. It has a population of 5,4 million with a GDP of USD 105,4 billion and a GDP per capita (PPP) of USD 30.300.

Slovenia

The country shared some of the history with its fellow Yugoslavia republic Croatia, however gained its independence much quicker following a war with Serbian forces which lasted only a for few days. It joined both EU and NATO in 2004. In terms of population it is the smallest one on this list with 2,1 million inhabitants and a GDP of USD 54,2 billion, but with a GDP per capita (PPP) of USD 36.500 it is the second richest.

Following the fall of the Iron Curtain, most CEE countries have become richer relative to Western Europe with some countries more than others integrating into the West in both a political and economic sense. Despite differences among the countries, the transition to market economies brought democracy and market capitalism in large parts of the region. Although, the countries did not develop in synchronisation, they did undergo similarly the three phases of firstly the economic shock, followed by the boom years and finally the post-financial-crisis years. Interestingly however, almost all countries of the wider region experienced quite dramatic declines of population numbers, arising from outward economic migration to Western European Countries.[136]

The dissertation will now continue with entering the insurance markets, first of Croatia in more detail, and then of the CEE-region. But before that, Table 10 below will provide some key parameters for these selected countries.

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[136] Grieveson, R., (coordinator), Gligorov, V., Havlik, P., Hunya, G., Pindyuk, O., Podkaminer, L., Richter, S., Vidovic, H., Looking Back, Looking Forward: Central and Eastern Europe 30 Years After the Fall of the Berlin Wall, The Vienna Institute for International Economic Studies, 2019, p. 1-8

Table 9: Key parameters for the selected CEE-countries, 2020

Country	Population (mn)	Surface (km^2)	GDP (bn EUR)	GDP/capita
Croatia	4,03	56.594	48,7	12.080
Bulgaria	6,93	110.370	61,3	8.845
Czech Republic	10,70	78.866	226,0	21.124
Hungary	9,75	93.030	128,5	13.183
Poland	38,27	312.679	496,3	12.971
Romania	19,29	238.391	213,4	11.065
Slovakia	5,46	49.035	92,1	16.868
Slovenia	2,10	20.273	46,9	22.386

Source: Econometric model of the dissertation[137]

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[137] See data sources of Econometric Model, except surface data from European Union

4. THE CROATIAN INSURANCE MARKET

This chapter enters the core region of this dissertation and after some introductory thoughts positions Croatia's insurance industry within the financial sector before providing a short overview of the market. Then it offers a brief description of its past and analyses its development over the recent years. It continues by taking a closer look at the international companies that are and have been active on the Croatian insurance market and examines their respective strategies. As a further preparation before testing the hypotheses of this dissertation it then goes on to analyse the results of these international investors and their impact on the insurance market and the entire industry in Croatia.

The main parameters this chapter focuses on, have already been referred to in previous chapters when looking at gross written premium (for turnover), profitability, as well as shares of specific lines of business and products.

Within the course of thirty years the Croatian insurance market saw its opening up and rise of the first private insurers, the arrival of several international insurers and the entrance of Croatia into the European Union which brought along European regulation and increased demands from regulators. Similar developments occurred in the entire financial sector and specifically also in the banking industry.

This evolution brought structural changes to the market and a wider dispersion of gross written premium among the insurers and the drop of the market share of the market leader from 80% to below 30% and also saw its privatisation.

Despite all of its development towards market economics, the Croatian financial and insurance market still has its specifics. However, the development of the insurance sector is lagging behind and was stagnating for many years compared to the other financial markets players in Croatia. Some arguments even point towards the Croatian insurance sector being "functionally,

organisationally and technologically underdeveloped."[138] While the sold insurance products are heavily geared towards Non Life insurance, the life savings insurance is not as well developed as it might be expected. The market is characterized by its focus on third party liability insurance for motor vehicles, whereas Life insurance's share is rather low. Risk management was rather weak in pre-Solvency II times. And for many years unfair competition led to overly competitive market behaviour while unsatisfactory claims management left many clients disillusioned about the insurance industry.[139]

As established in previous chapters, insurance has a strong relationship with the wider economic development. Also in Croatia, the insurance industry is intertwined with the country's economy although there is still room for development as we will see throughout the analysis. The insurance sector is a vital pillar of the Croatian financial system as the second most important institutional investor contributing around 7% of the total assets of Croatian financial institutions and around 11,5% of the GDP. The role of insurers in particular as providers of long-term funding to the public sector and banks is fundamental for the Croatian economy. With an annual premium per capita of about EUR 280 as compared to EUR 1.650 in the EU there seems to be potential for growth for the insurance industry when compared with other EU countries. From joining the European Union in 2013, the Croatian insurance companies came into a better position to exploit Croatia's access to the largest financial services markets and expand their investment and client reach.[140]

The final phase of insurance market liberalisation started from 2013 with the free formation of prices for Motor Third Party Liability, the largest segment of the whole sector and the source of the largest parts of the profits generated by the industry. This market disruption brought further change to the insurers, forcing them to strengthen their organisations and develop also other product segments, similar to other countries.

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[138] Jakovčević, D., Dumičić, K., Anđelinović, M., Measuring recent changes of insurance gross premiums distribution using ten inequality measures: case study of Croatia, in Economic Research, 2017, p. 663
[139] Also there: Jakovčević, D., et al, 2017, p. 663 – 664
[140] Anđelinović, M., Samodol, A., Pavković, A., Asset Allocation and Profitability of Croatian Insurers in the Pre-Solvency II Period, Economic Review Vol. 47, 2018

4.1.   The insurance sector within Croatia's financial system

The financial system of Croatia resembles pretty much those of other member states of the European Union, with numerous depository and non-depository financial institutions like banks, savings banks, building societies, open and closed investment funds, open and closed pension funds and insurance companies as well as leasing and factoring companies. Although the pension funds do have the characteristics of investment funds in terms of their investment proposals, the nature of their business is more comparable with insurance companies.[141] In fact, two of the large players in the obligatory pension insurance industry are the result of joint ventures between the banking and the insurance sectors, with Allianz Zagreb and Zaba on the one hand and Croatia osiguranje and Privredna Banka Zagreb on the other hand.

Whereas the credit institutions (banks, savings banks, building societies) are supervised by the National Bank of Croatia (HNB: Hrvatska Narodna Banka), the other institutions, in particular pension funds and insurance companies as well as the capital market are regulated by the Croatian Financial Markets Authority (HANFA: Hrvatska Agencija za Nadzor Financijskih Usluga).

The financial sector is dominated by the banking industry as they are holding the majority of all the assets in a financial system that amounts to 160% of the Croatian economy's GDP. Interestingly, when looking closer at the banks operating on the territory of the Republic of Croatia, a dominance of international banks with a share of 90% of the assets, emerges. The shareholder structure of these banks with foreign ownership originates to a large extent from the European Union, most of the Croatian business units belonging to large groups from Italy (Zaba, PBZ,) and Austria (Erste, Raiffeisen), but also from Hungary (OTP) and Russia (Sberbank).[142] This is already confirming the importance of international investors for the Croatian financial system as this relevance reaches further into the insurance and pension

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[141] See more: Javorović, M., Ostojić, G., Osiguranje i država, Zagreb, 2005, p. 226 – 242

[142] Brlečić Valčić, S., Samodol, A., Valčić, M., Coevolution of banks and capital markets in the modern view of effective parts of the financial system architecture, Ekonomski Vjesnik 2/2019, p. 312

industry and even into distribution agreements among international banks and international insurers.

Table 10 below breaks down the different classes of financial institutions into a total of 242 individual participants (without investment funds 108), although these numbers of 2020 are already the result of a consolidation process occurring over the previous years.

Table 10: Categories of financial institutions in Croatia

	Category of financial institution	**Number 2020**	**Share %***
1	Banks	20	18,5%
1b	Branch office of international banks	1	0,9%
2	Savings banks, building societies	3	2,8%
3a	Investment funds, open (UCITS)	96	
3b	Investment funds, alternative (AIV)	38	
4	Investment companies	6	5,6%
5a	Pension funds, obligatory	12	11,1%
5b	Pension funds, voluntary (open)	8	7,4%
5c	Pension funds, voluntary (closed)	20	18,5%
6	Insurance companies	15	13,9%
6b	Branch office of international insurers	4	3,7%
7	Leasing companies	15	13,9%
8	Factoring companies	4	3,7%
	Total financial institutions	**242**	
	Total financial institutions (without funds)	**108**	**100%**

Source: HNB, HANFA, HUO data[143]

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[143] HNB tablica B2, HANFA Godišnje izvješće 2020, HUO Godišnje izvješće 2020
  *without investment funds

Looking at the two categories as banks and non-bank providers of financial services in terms of their shares in total assets in Croatia, it emerges that banks are the largest contributors with a share of 67,6%.

Chart 12: Total assets, financial sector, banking and financial services
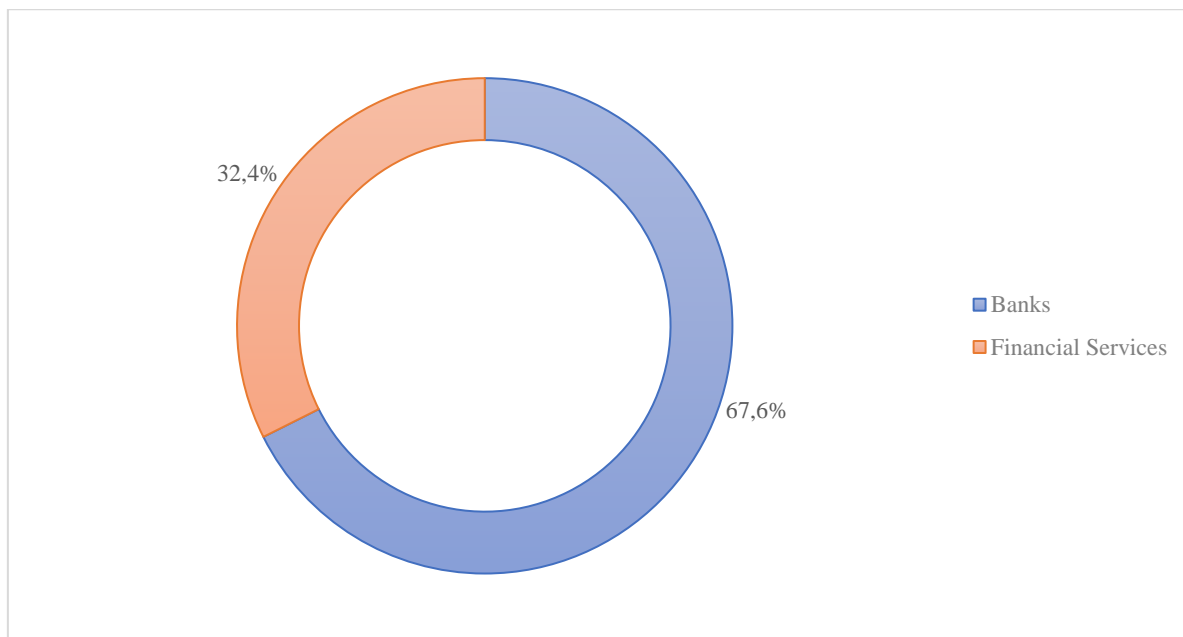
Source: by author, data from HANFA and HNB (2022)[144]

Chart 13: Asset structure of financial services sector
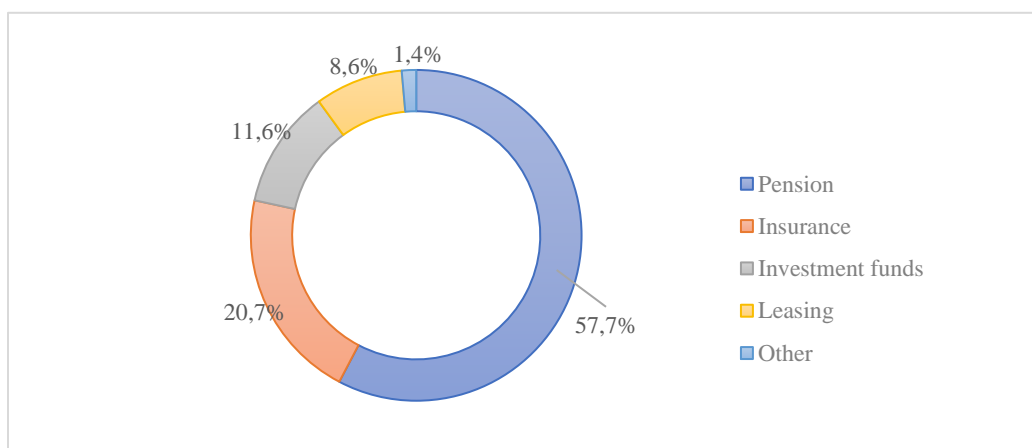
Source: by author, data from HANFA, Annual Report (2022)

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[144] HANFA, Odabrani pokazatelji sektora financijskih usluga (Standardni prezentacijski format), 2021

Chart 14 below shows the development of asset structures of the financial services providers (investment funds, leasing companies, insurance companies, pension funds, others including factoring companies and investment companies), which is excluding banks and showing the pension funds holding the largest share among these institutions in front of Croatia's insurance companies.

Chart 14: Share of assets of financial services providers sector in Croatia, HY 2021
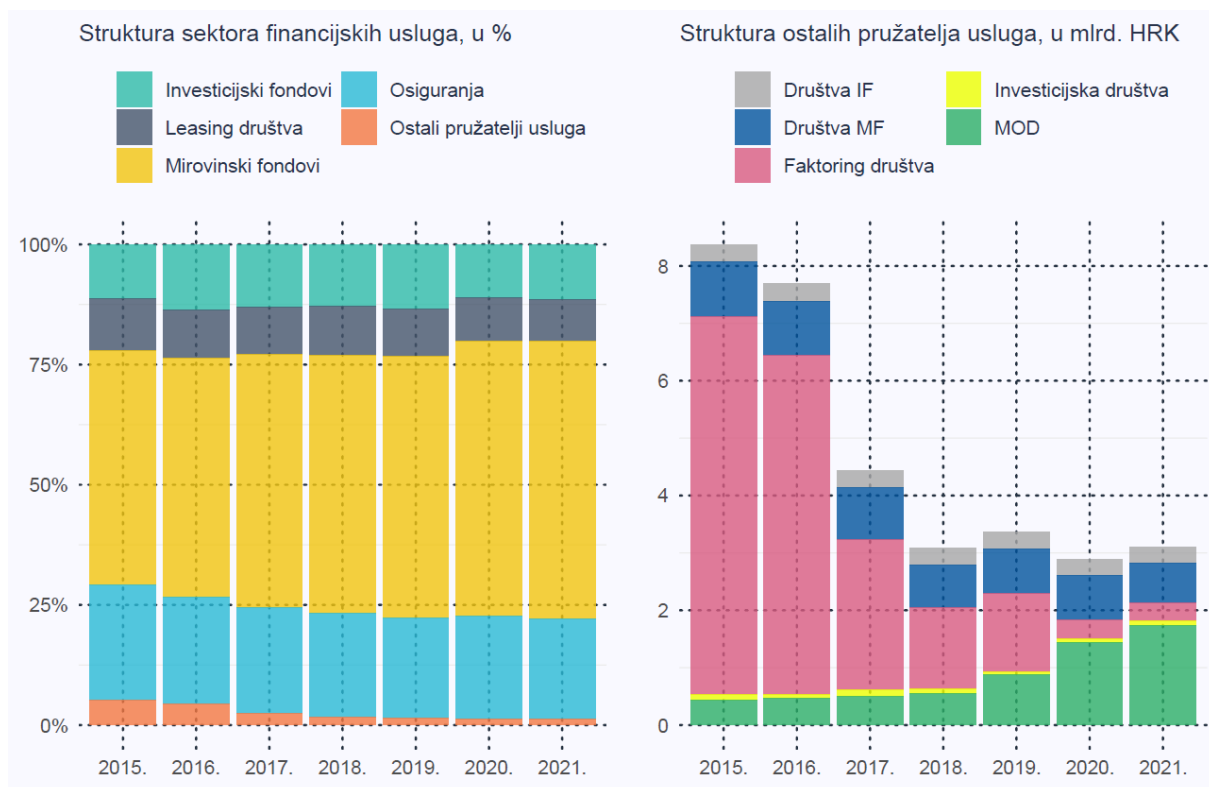
Source: HANFA[145]

The charts confirm a dominant share of the pension funds industry among the non-banks financial institutions, even further growing their share in total assets, while for example the assets of factoring companies are drastically decreasing. The insurance sector remains stable in its asset contribution of slightly above 20% in Croatia.[146]

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[145] HANFA, Financijska Stabilnost, Broj I, Zagreb, September 2021
[146] Insurance at 20,7% per September 2021 (HANFA)

The following Charts 15 and 16 show in more detail the development and the growth rates of the assets of the non-banks financial institutions, confirming the previously mentioned stable development of the insurance sector with positive growth rates every single year and a CAGR of 6,8% between 2005 – 2020.

Chart 15: Development of assets of non-banks financial institutions, 2007-2020
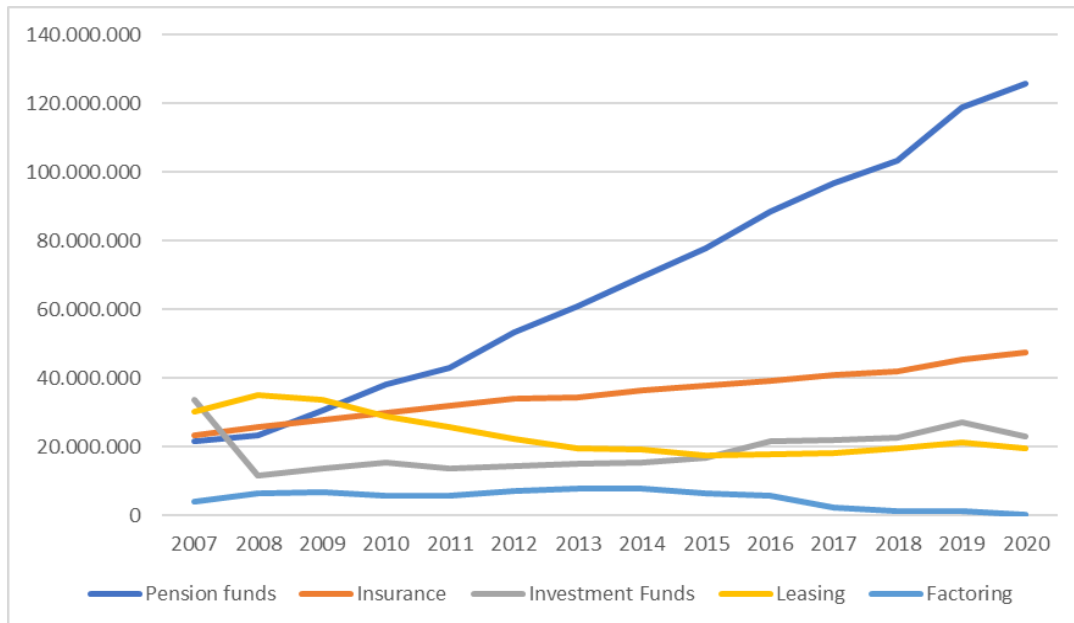
Source: by author, data from HANFA (2022)

Chart 16: Growth rates of assets of non-banks financial institutions, 2007-2020
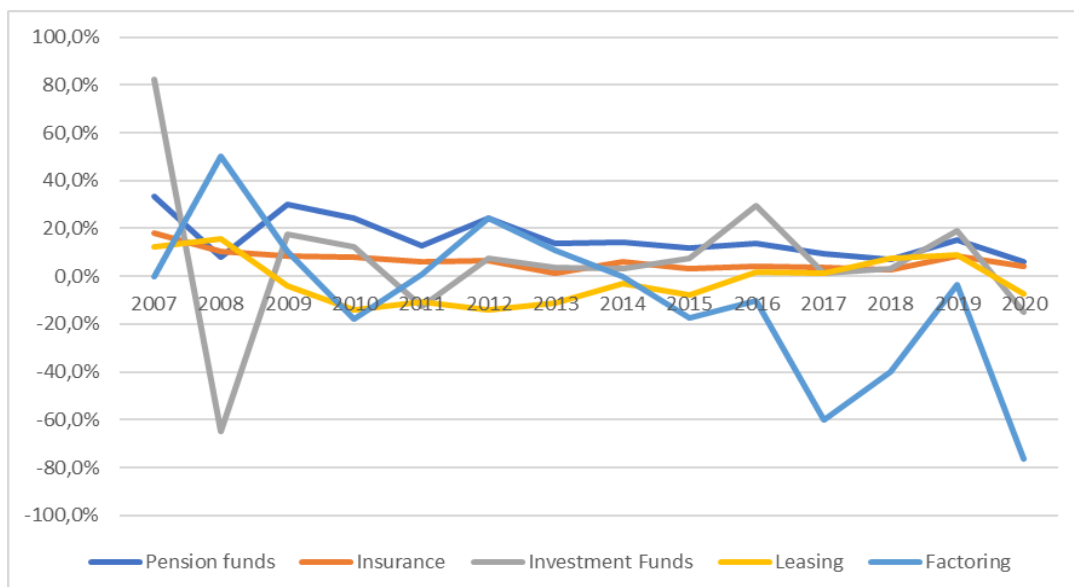
Source: by author, data from HANFA (2022)

4.2. Historic development of the Croatian insurance market

This chapter describes the history of the development of the Croatian insurance market, which also serves as an example for the other countries in the region, as some of the crucial steps certainly followed with similar patterns.

Although the insurance principles have a history of thousands of years, the modern market in Croatia is relatively young. Dominated by state-owned companies in former Yugoslavia and then the state insurer Croatia osiguranje holding almost a monopoly, it was only in the 1990s that a modern insurance market started to develop. But only shortly before that, it was organised as a joint stock company starting to exist as a legal entity, and not as an Insurance Institute, in the market. Previously, from 1969, Croatia's predecessor operated as the Insurance Institute Zagreb ("Osiguravajući zavod Zagreb") and was renamed into Croatia in 1970. For the duration of a few years since 1962 the insurance market was organised into 142 independent state insurance institutes, with territorial monopolies, and 35 of them operating on the territory which is now the Republic of Croatia.[147]

The opening of the market was enabled with the legislation that liberalised the Croatian insurance market in Croatia but also regulated its participants and therefore allowed for new companies to be set up and for the first time initiate a real market competition. The number of insurers rose quickly, despite Croatia being a small market, throughout the Nineties to 24 insurance (and one reinsurance) companies at the beginning of the new millennium which also made a tighter state supervision of market activities necessary.[148]

This fast rise of market participants beginning in the Nineties was driven by local entrepreneurs like Gojko Ostojić or Jako Andabak as pioneers of the Croatian private insurance markets, and by international, often Austrian, companies who set up their Croatian operations. The resulting number of insurers in a relatively small market also led to a very competitive market

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[147] Petranović, V., Osiguranje i Reosiguranje, Zagreb, 1984, p. 39 – 40
[148] Ostojić, G., Utjecaj Fiskalne Politike na Industriju Osiguranja, Zagreb, 2015, p. 133 – 135

environment, distinct also by their market behaviours. These levels of competition also contributed to improving the fitness of the sector in terms of organisations and solidity of its companies as a whole. This also resulted in a large number of small players which were even operating in a small market, making it impossible to reach relevant size and achieve economies-of-scales effects, which meant they were not only aspiring business results like market share and profitability but often were focused on remaining afloat and surviving. In times however, the competition was very severe and different players were competing with different tools, also leading to market competition behaviour on the edge of regulatory intervention.[149]

However, discussing with various insurance managers throughout the region, this form of intense and on-the-edge market behaviour was not exclusive for the Republic of Croatia as during the transition to a market-oriented insurance market it came to similar patters also in the other CEE countries.

The younger local private companies and the international players rose in market positions and they increased their market share on the expense of the market leader Croatia osiguranje which had to face a decrease of its market share to now below 30%, from more than 80% less than 30 years earlier.

The development of the Croatian insurance market, in terms of total premium, as well as a share of GDP can be seen below in Chart 17. Interestingly, the share of the insurance industry as part of the Croatian economy, despite minor oscillations, remains relatively constant – and does not increase its share – throughout the years. The increase in 2020 back to 2,8% of GDP arises despite a stagnation of the insurance market. The increase of the share of insurance in the total economy hints towards the economic impact of the COVID-19 pandemic being more severe on the overall economy than on the insurance industry.

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[149] Also there

Chart 17: Gross Written Premium, in mnHRK; share of GWP in GDP[150]
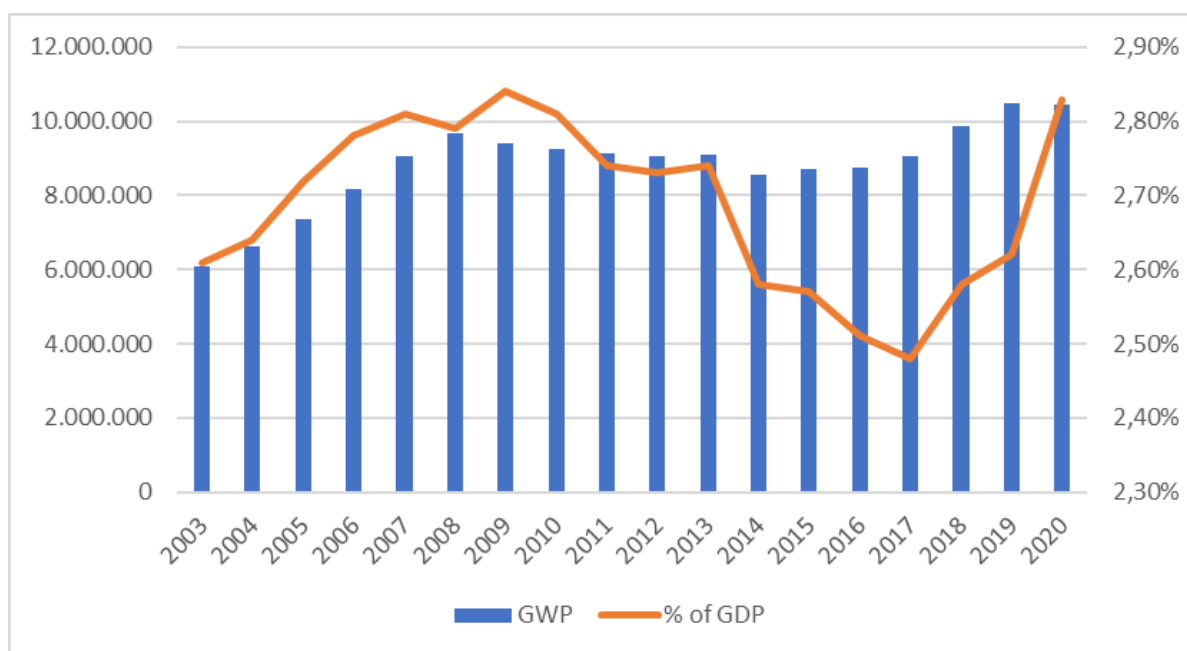
Source: by author, data from HUO, Annual report 2020 (2022)

Overall, the growth of the insurance market is within a corridor of growth of GDP growth and matching it over the years. Part of this growth in the recent years however is generated outside of the territory of the Republic of Croatia as the Agram group (Euroherc and Adriatic) are recording premium from Austria and Italy as well as Allianz from Slovenia, within this report. Euroherc osiguranje d.d. started a few years ago their operations in Austria via a branch office which is resulting in recognizing the premium also in the Croatian company. A similar model was set up with Adriatic osiguranje d.d. and their presence as an insurer in Italy. Therefore, the growth we see here is influenced by non-Croatian, hence international, premium.

The development of the premium per capita in Chart 18 below is showing a moderate growth throughout the years 2004 – 2020. The impact of the liberalisation of motor vehicle insurance prices is visible in a decline of Non Life premium in 2014. In recent years, Croats are spending again more on their Non Life insurance in average, however Life insurance is stagnating and even decreasing in recent years.

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[150] including GWP generated by foreign branches of Croatian companies (eg Euroherc, Adriatic, HOK)

Chart 18: Insurance premium spent per capita, Non Life, Life, Total, in HRK, 2004-2020
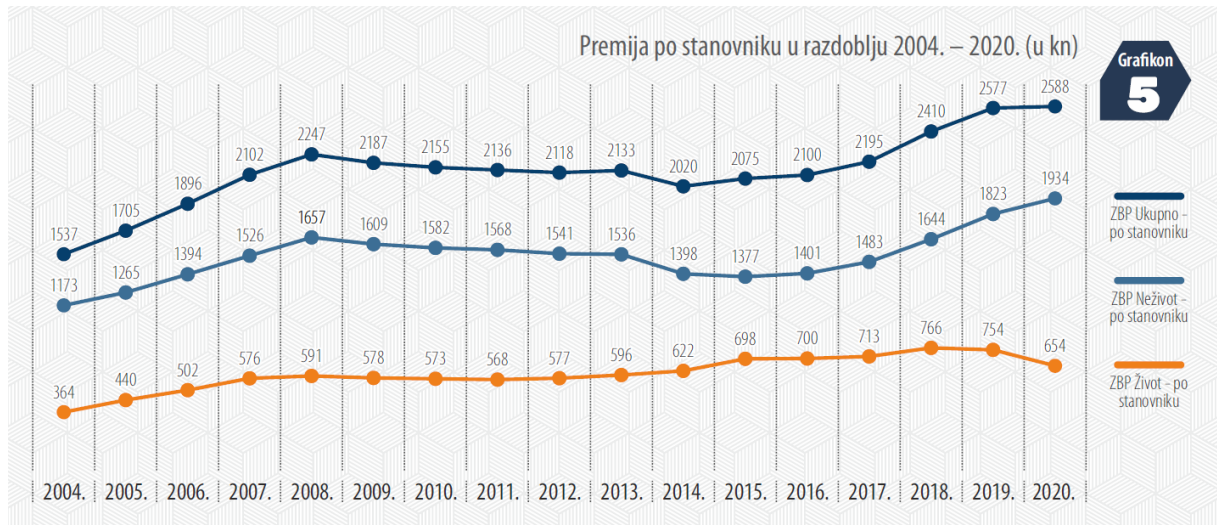
Source: HUO, Annual Report 2020

During the history and development of the Croatian insurance market after its opening and liberalisation at the beginning of the Nineties, there can several important milestones be identified, some of them being driven by international investors or at least being relevant also for Croatia's international relations:

1) Entry of first international insurance companies/investors in Croatia, in the early beginnings through "not-regulated" cross-border policies, mainly from the Austrian neighbours Wiener and GRAWE at the end of the 1980s.

2) First formations of private insurance companies following step 1 through the entrepreneurial insurance pioneers at the beginning of the 1990s.

3) Ongoing M&A activities, mainly carried out by international corporations.

4) Access of Croatia to the European Union in 2013 and the subsequent liberalisation of the previously price-regulated market for Motor Third Party Liability, the most important segment of the Croatian insurance market.

5) Privatisation of the state insurance company and market leader Croatia osiguranje in 2014, acquired by a Croatian investor (Adris) despite heavy interest also from international investors.

All of these steps have been crucial in the development and continuous evolvement of the Croatian insurance industry. The involvement of the international investors throughout most of these steps has very significant.

The importance of step 1 cannot be underestimated as the engagement of international players significantly helped in educating market participants and future entrepreneurs as well as boost a previously underdeveloped market.

Step 3 is largely driven by international investors, and we shall take a look at this in the following chapters.

Step 4 also has been driven by the international companies as they were underrepresented in the biggest and most lucrative segment of the market, MTPL.

Step 5 could have been an international investor as well, but for various reasons that did not happen. However, this was a transaction that was also relevant for the international relations of Croatia as investors from abroad were interested, whether from Poland, Austria, Slovenia, Italy or Germany. In particular, Slovenian investors (Triglav Zavarovalnica) saw their chances diminished due to Croatian's Agrokor just being in the process of taking over Slovenia's Mercator. Political tensions between Slovenia and Croatia arose, yet another test for their international relations and a case where political dimensions impacted the business realities.

Figure 10: Illustration of important steps in the development of Croatian insurance market after the opening of the market
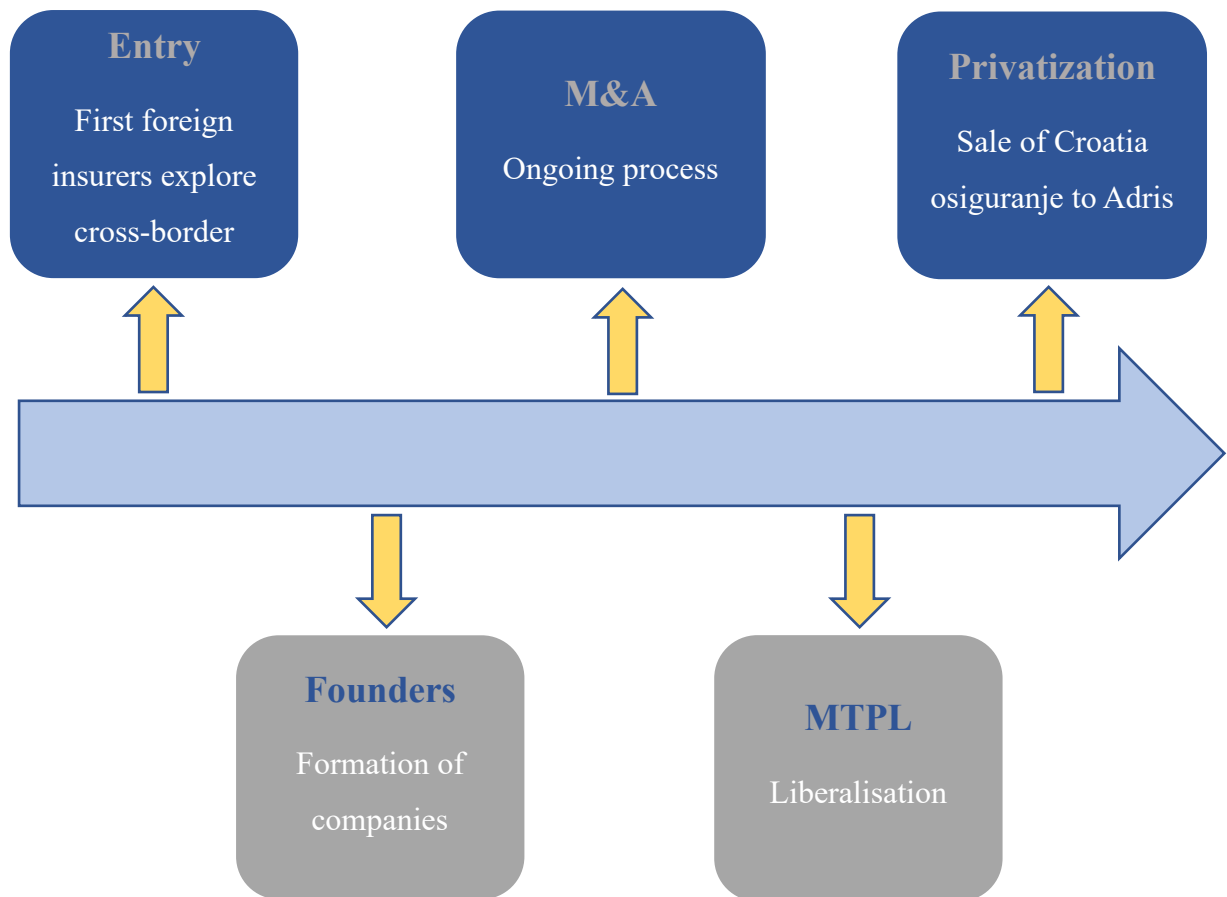
4.3.   The Croatian insurance market

This chapter will look at three dimensions/parameters to understand the Croatian insurance market: premium/market shares, product mix and profitability. The size of the Croatian insurance market was about bnHRK 10 (bnEUR 1,34) for the year 2020 following a decline of about 2,6% compared to the year before. Table 11 shows the market shares by individual insurance companies according to total gross written premium.

Table 11: Total gross written premium, by companies, territory of Croatia, in mHRK

	Insurance company	Gross written premium			Market share	
		2019	2020	change	2019	2020
1	Croatia osiguranje d.d.	2.697,4	2.673,9	-0,87%	26,11%	26,66%
2	Euroherc osiguranje d.d.	1.032,9	1.071,2	+3,70%	10,03%	10,68%
3	Allianz Hrvatska d.d.	1.238,5	1.023,0	-17,40%	12,03%	10,20%
4	Wiener osiguranje VIG d.d.	921,0	973,1	+5,66%	8,95%	9,70%
5	Adriatic osiguranje d.d.	741,6	800,5	+7,95%	7,20%	7,98%
6	Generali osiguranje d.d.	799,7	749,7	-6,26%	7,77%	7,48%
7	Uniqa osiguranje d.d.	612,4	566,1	-7,57%	5,95%	5,64%
8	Triglav osiguranje d.d.	488,3	549,5	+12,54%	4,74%	5,48%
9	Grawe Hrvatska d.d.	451,4	434,0	-3,85%	4,39%	4,33%
10	Agram Life osiguranje d.d.	387,4	388,2	+0,21%	3,76%	3,87%
11	Merkur osiguranje d.d.	271,0	247,8	-8,56%	2,63%	2,47%
12	HOK osiguranje d.d.	229,3	233,4	+1,82%	2,23%	2,33%
13	Sava osiguranje, branch	138,6	164,1	+18,39%	1,35%	1,64%
14	Wüstenrot životno d.d.	49,6	44,9	-9,50%	0,48%	0,45%
15	Generali Zavarov., branch	44,2	37,9	-14,37%	0,43%	0,38%
16	OTP osiguranje d.d.	45,6	33,2	-27,10%	0,44%	0,33%
17	Izvor osiguranje d.d.	65,6	24,5	-64,21%	0,67%	0,25%
18	Hrvatsko Kreditno osig.d.d.	12,0	13,1	+8,81%	0,12%	0,13%
19	Ergo osiguranje d.d.	63,2	0	-	0,61%	0%
20	Ergo životno osiguranje d.d.	0,6	0	-	0,01%	0%
	Total	**10.293,3**	**10.028,2**	**-2,58%**	**100%**	**100%**

Source: Hrvatski Ured za Osiguranje (HUO, Croatian insurance association)

During 2020 there were 16 insurance companies and two foreign branches active on the Croatian insurance market, which is the result of some consolidation occurring over the past many years. For example, during 2019 the number was still at 20. When taking into account that several companies are under common ownership, 14 distinct insurance groups emerge as active on the market, with some of them being rather small in comparison to the market. In Table 12 below this results in the companies Euroherc osiguranje d.d., Adriatic osiguranje d.d. and Agram Life osiguranje d.d. being grouped to Agram group (also appearing as Agram concern), Izvor osiguranje d.d. and the Croatian branch of Generali Zavarovalnica d.d. (Slovenia) shows as part of Generali group as they were absorbed by Generali osiguranje during 2020. Furthermore, the 2019 takeover of the Ergo companies by Sava group (Croatian branch of Slovenian company) is reflected in the comparative numbers of 2019. These aforementioned transactions of consolidation are only those which happened in the past couple of years, while there were several more mergers and acquisitions, which will be addressed later.

Table 12: Total gross written premium, by groups, territory of Croatia, in mHRK

	Insurance company	Gross written premium			Market share	
		2019	2020	change	2019	2020
1	Croatia osiguranje d.d.	2.697,4	2.673,9	-0,87%	26,11%	26,66%
2	Agram koncern (group)	2.161,9	2.260,0	+4,53%	20,99%	22,53%
3	Allianz Hrvatska d.d.	1.238,5	1.023,0	-17,40%	12,03%	10,20%
4	Wiener osiguranje VIG d.d.	921,0	973,1	+5,66%	8,95%	9,70%
5	Generali group	912,6	812,1	-11,01%	8,87%	8,13%
6	Uniqa osiguranje d.d.	612,4	566,1	-7,57%	5,95%	5,64%
7	Triglav osiguranje d.d.	488,3	549,5	+12,54%	4,74%	5,48%
8	Grawe Hrvatska d.d.	451,4	434,0	-3,85%	4,39%	4,33%
9	Merkur osiguranje d.d.	271,0	247,8	-8,56%	2,63%	2,47%
10	HOK osiguranje d.d.	229,3	233,4	+1,82%	2,23%	2,33%
11	Sava group	202,4	164,1	-18,93%	1,97%	1,64%
12	Wüstenrot životno d.d.	49,6	44,9	-9,50%	0,48%	0,45%
13	OTP osiguranje d.d.	45,6	33,2	-27,10%	0,44%	0,33%
14	Hrvatsko Kreditno osig.d.d.	12,0	13,1	+8,81%	0,12%	0,13%
	Total	**10.293,3**	**10.028,2**	**-2,58%**	**100%**	**100%**

Source: data from Hrvatski Ured za Osiguranje (HUO, Croatian insurance association)

It is visible that the market is dominated by a few larger players with several smaller companies present, which shows the effect of a consolidation process happening over the past years. The five largest companies are holding a market share of 77%. The numbers above do not contain business that is written outside of the market of the Republic of Croatia, whether directly through a Croatian entity or via foreign subsidiaries or branches. For example, Agram group or Croatia osiguranje do have relevant business volumes outside of Croatia, primarily in Austria, Italy and former Yugoslavia countries.

The two largest insurers are Croatian-owned companies whereas from the aforementioned 14 groups active in Croatia, 11 are part of international corporations.

Chart 19: Market share, by total gross written premium, insurance groups, 2020
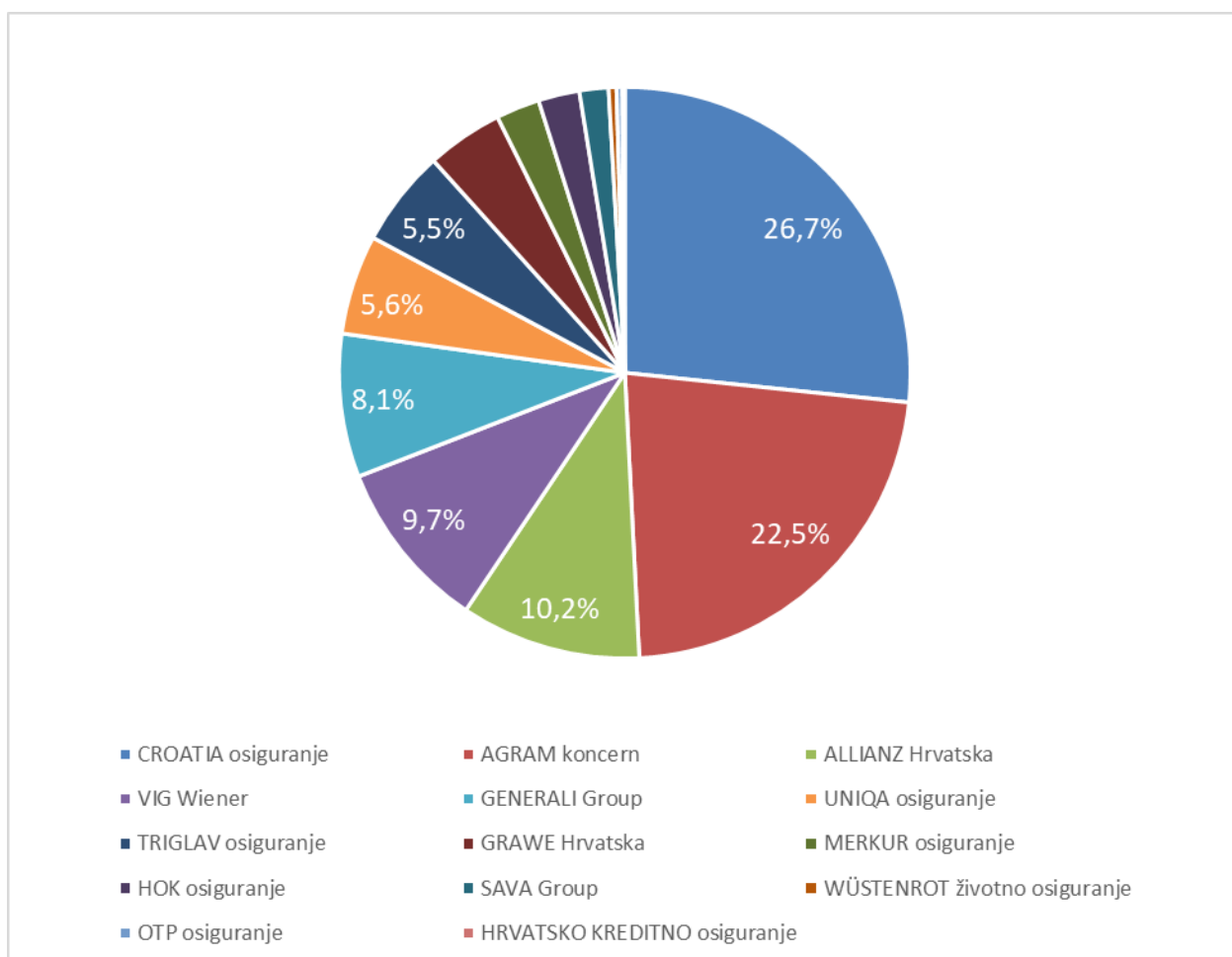
Source: by author, data from HUO (2022)

Almost three quarters (73,2%) of the insurance premium is generated in Non Life business lines, whereas only one quarter (26,8%) are premiums related to Life insurance. With a share of more than one third, insurance related to motor vehicles, third party liability and material damage (MTPL and Kasko), is still the largest business segment for the insurers active on the Croatian market.[151] Other forms of Non Life insurance (for example, household, accident, healthcare) are still relatively underrepresented in Croatia. This development will become relevant in the following chapters.

In detail the distribution of the insurance market by business lines / products looked the following for the year 2019, as shown in Chart 20.

Chart 20: Structure of total gross written premium 2019 (motor broken down into MTPL and Kasko)
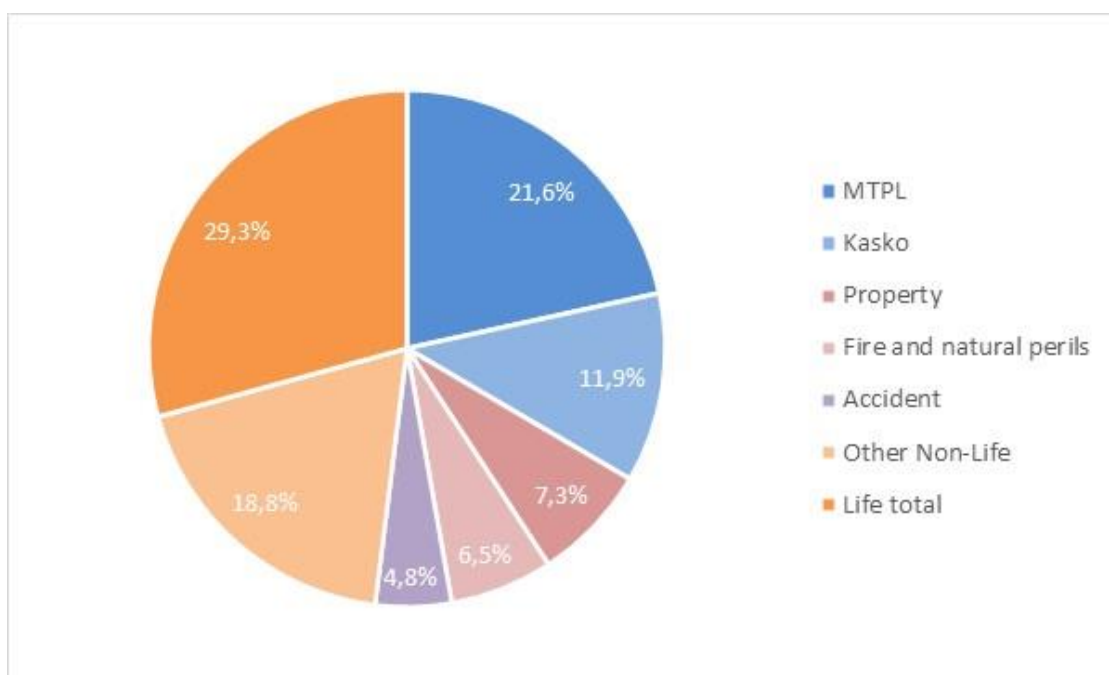
Source: by author, data from HUO, Annual Report 2019 (2022)

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[151] HUO, data from Annual Report 2019, p. 31

Another parameter deserving attention, is profitability. Chart 21 shows the profitability before taxation for the year 2020, by insurance group.

Chart 21: Profit before taxes, Croatian insurance companies, HRK, 2020
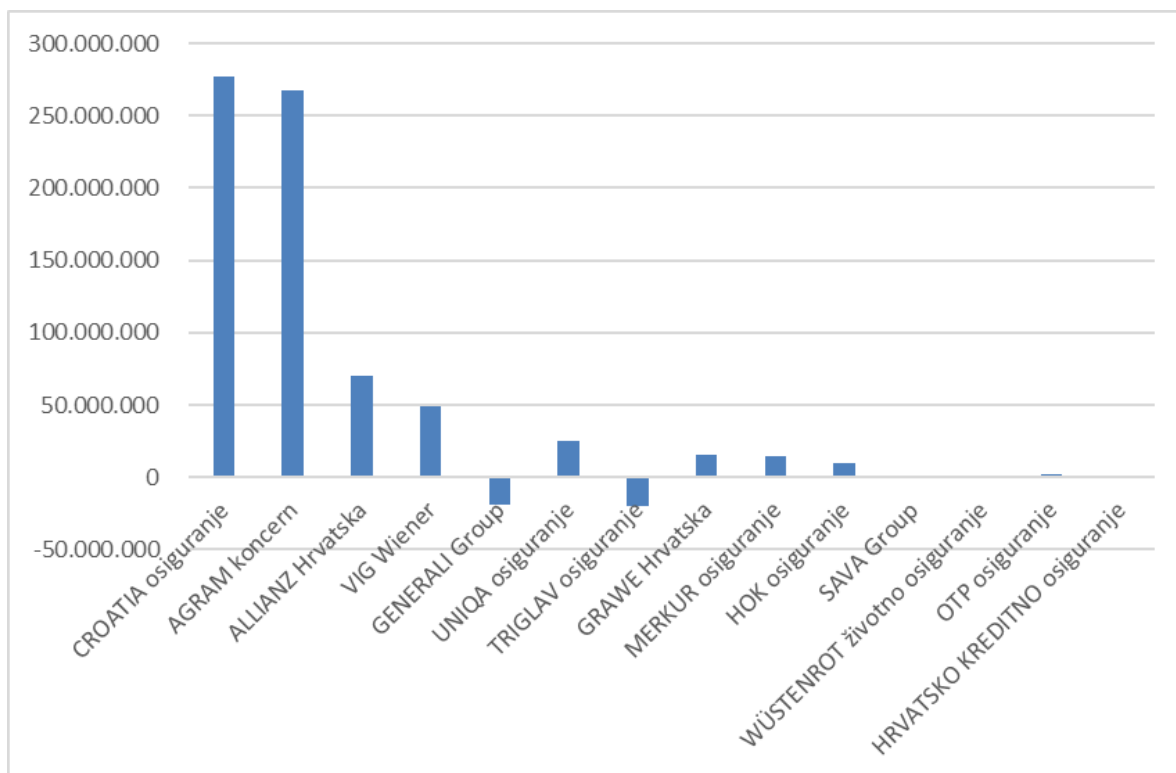
Source: by author, data from HANFA (2022)[152]

It appears that the top two players are also by far the strongest in terms of profitability and are delivering the largest part of the market profitability. Overall, all insurers are showing positive results on the Croatian market, except for the foreign groups Generali (Italy) and Triglav (Slovenia), which recorded losses in 2020.

The following chapters will serve to understand the development of the market in terms of financial deepening and availability of financial products as well as the various steps relevant in this process.

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[152] HANFA, data from PRIVREMENI NEREVIDIRANI PODACI ZA TRŽIŠTE OSIGURANJA, na dan 31. prosinca 2020.

4.4.   Products on the Croatian insurance markets

Croatia's insurance market, initially a motor insurance dominated market like many of the other emerging markets, saw the share of motor insurance drop over the course of the past twenty years, partially due to the drop of MTPL-prices following its market liberalisation, but also because of the growth of other lines of business, previously not in the focus of the insurers.

Chart 22: Development of the share of selected lines of business (MTPL, Life, Health, Credit insurance) 2004 – 2020
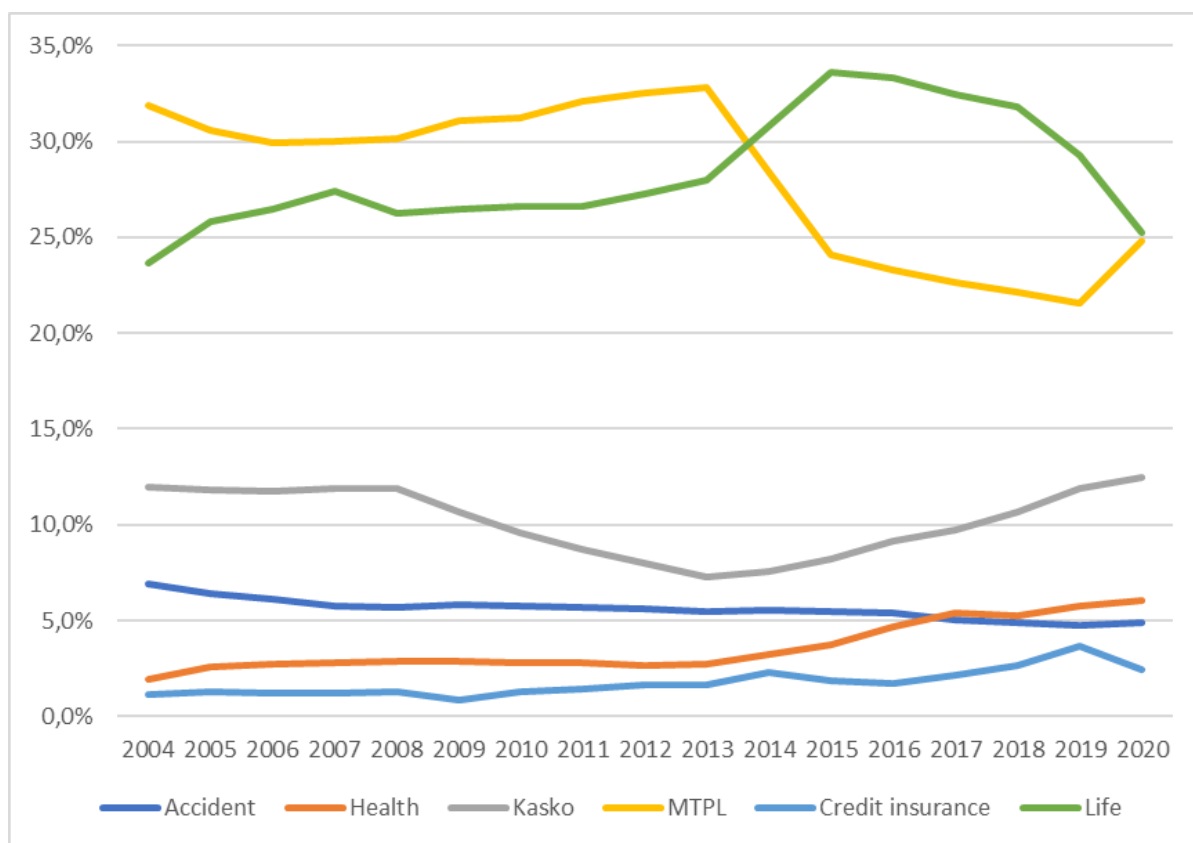
Source: by author, data from HUO, Annual Report 2020 (2022)

Chart 22 shows the development of the previously dominant line of business, MTPL, increasing its share right up until the start of the process of liberalisation of its prices. This is quite remarkable as in a market where all companies operated with the same price offerings the share of this product line even further increased up until 2013. The increase of the gross written

premium in MTPL up until 2013 therefore is also a result of the increase in insured vehicles, while other lines of business remained stagnant. An attempt for an explanation can be offered, as to given the high profitability this line delivered with claims ratios below 50%, the insurance companies where focused on harvesting the profits from this obligatory insurance line as much as possible and were less motivated to develop other business lines in voluntary products. Voluntary insurance business, whether Accident, Health, Property or Life insurance requires a different approach to the business, in terms of sales, claims management or customer communication compared to insurance products the customers are required by law to buy – in a market with identical prices.

This development not only less incentivized the insurers on the Croatian market to not dedicate themselves to voluntary products lines, it also made them dependent on the profitability generated by MTPL.

The transition to free prices in MTPL started to change this from 2013 onwards. Prices for MTPL fell and insurance companies entered into price wars, giving up on some of their profits and volumes. This effect lasted more than six years before a reversal in the trend became visible, although the significant increase of the MTPL premium in 2020 might also be partially impacted by some of the foreign business (in Austria and Italy) done by some of the market players.

A visible side effect from these changes in the MTPL business segment, were a further move towards market consolidation on the one hand and a switch of focus in many insurers also on other lines of business.

In the short-term, Life insurance saw significant increases. However, Croatia's market records high shares of single premium business in the Life segment, a business much closer to deposits offered by banks than to insurance business and with lower margins and a higher strain on solvency capital requirements. Single premium sold is about 28% of the Life gross written premium in Croatia and this kind of business, largely generated in distribution agreements with

banks, is not as stable as regular business. Furthermore, in low interest rate environments its profitability is also more difficult to maintain.

Over the course of several years, the share of health business increased as well, given higher priorities by several insurers, in particular by international players seeking to replicate the health business from abroad. Still a challenging business segment, due to the lack of a developed private or public/private health system and due to the fact that the largest competitor of the private insurers in this business segment is the state, which in the form of its health insurance institution HZZO (Hrvatski Zavod za Zdravstveno Osiguranje) is offering the same services as the private counterparts to all its clients, which are already part of the compulsory social health system, despite not being required to abide by the same regulatory demands as other insurers.

The development of the Casco business segment is related to the story of MTPL. As pointed out previously, the price liberalisation of MTPL didn't happen until 2013. However, legally a distinction of tariffs was already possible from the year 2008, but no insurer obtained regulatory approval for a change of their MTPL prices. In anticipation of the MTPL liberalisation, prices started to drop – below the levels of profitability – in the Casco segment for motor vehicles. This pre-liberalisation is visible in the chart above with the share of Casco dropping right up until 2013, after which insurers where again forced to repair their Casco business segment in order to compensate for some of the lost profitability from MTPL and increase the prices, again leading to a higher share of that segment in a trend that is still continuing.

Also visible in the chart above is an increase of a previous smaller line of business, credit insurance, where banks are outsourcing some of the risks from their loan activities. This business segment is generating high volumes, in particular since a lot of it is single premium business that needs to be earned over the duration of a loan contract, while delivering the larger part of the profits to the distributing bank. Predominantly, the volumes in this line of business are generated by foreign insurers in distribution agreements with international banks.

4.5.　Key Players of the Croatian insurance market

This chapter will shortly introduce the insurance companies active on the Croatian market, local players as well as international ones, including some of the international investors that have already exited again over the course of the past few years.[153]

Insurance business can be performed in the following ways in Croatia:[154]

1) As a Croatian domiciled insurance company after having received approval from the regulatory authority HANFA to perform insurance business, which represents the format of the majority of the market participants.

2) As a company authorised in another EU member state with the approval to conduct insurance business through Freedom of Services regulation or business establishment (also for Switzerland).

3) As an established branch from a third country with HANFA approval to perform insurance business in Croatia.

The legal form for an insurance corporation can either be a joint stock company, a European SE company, or a mutual insurance company. Insurance companies (or branches) wishing to offer products from the compulsory motor insurance must also be members of the Croatian Insurance Association (HUO, Hrvatski Ured za Osiguranje).

Croatia osiguranje d.d.

- Croatian insurer, shareholder Adris Grupa 66,39%, Republic of Croatia 30,62%, minority shareholders 2,99%

- Former state insurer with monopoly status

- Founded in 1884, privatisation during 2013

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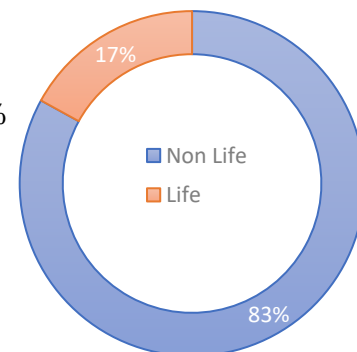
[153] HUO Annual Report 2020, Annual Reports 2020 Insurance companies
[154] Insurance Law (zakon o osiguranju NN 30/15, 112/18, 63/20, 133/20, in force from 10.12.2020), Paragraph 17

- Market share in 1984 still 81,9%, now below 30%

- Active also in other Ex-Yugoslavia states (Serbia, Bosnia & Hercegovina, Slovenia, North Macedonia)

- Composite insurer, offering all product lines

- Acquired Cardif osiguranje (bancassurance activities with Credit Protection insurance) during 2016

- Joint venture with second largest bank Privredna Banka Zagreb in the pension fund business (PBZ Croatia osiguranje)

- Number of employees: 2.278 (including employed sales force)

Euroherc osiguranje d.d.

- Croatian insurer, private shareholders, part of Agram grupa

- One of the early privately formed insurance companies, which however were not sold in the phase when international groups entered or consolidated the market.

- Founded in 1992

- Has also subsidiaries in Bosnia & Hercegovina and an established branch in Austria

- Non Life insurer, historically strong focus on Motor business, especially MTPL

- Number of employees: 1.203 (including employed sales force)
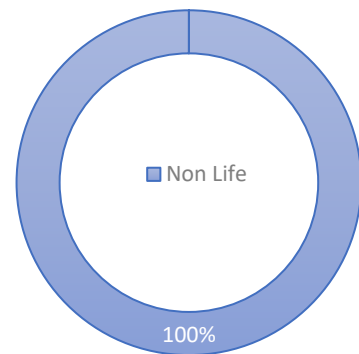
Allianz Hrvatska d.d. (previously Allianz Zagreb)

- Part of German Allianz SE Group

- Cross shareholding with largest bank in Croatia, Zagrebačka Banka (Zaba) and historically strong
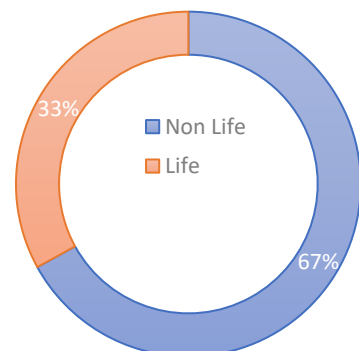
distribution agreement (which partially went to Generali during 2018)

- Allianz acquired Adriatic osiguranje d.d. in 1999

- Branch office Slovenia also part of Croatian operation

- Composite insurer, offering all product lines

- Joint venture with largest bank Zaba in the pension fund business (Allianz ZB)

- Number of employees: 428 (sales force largely in external agencies)

Wiener osiguranje Vienna Insurance Group d.d.

- Part of Austrian Vienna Insurance Group

- Wiener Städtische acquired and merged with Kvarner osiguranje, Aurum osiguranje, Helios osiguranje, Cosmopolitan and Erste osiguranje (from Erste Bank Group)

- Founded in 1995

- Composite insurer, offering all product lines

- Strong bancassurance distribution cooperation with Erste Banka (following already the acquisition of Erste osiguranje)

- Number of employees: 680
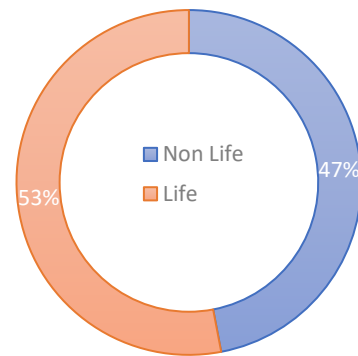
Adriatic osiguranje d.d.

- Croatian insurer, private shareholders, part of Agram grupa

- One of the early privately formed insurance companies, which however were not sold in
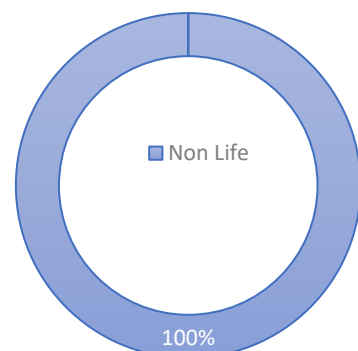
the phase when international groups entered or
consolidated the market.

- Previously Jadransko osiguranje (until YE 2018)

- Previously integrated Mediteran osiguranje (2001) and Atlas osiguranje (2005)

- Also operates substantial business via branch in Italy

- Non Life insurer, historically strong focus on Motor business, especially MTPL

- Number of employees: 852 (including employed sales force)

Generali osiguranje d.d.

- Part of Italian Generali Group, 100%

- Market entry via green-field operation in 2001

- Merged its Life and Non Life companies
  into the acquired Libertas osiguranje during 2006

- Acquired portfolios of Izvor osiguranje d.d. and
  of Adriatic Slovenica/KD Life branch in 2020

- Composite insurer, offering all product lines

- Strong bancassurance distribution cooperations,
  with PBZ from the start of the operations and since 2018 also with
  Zaba (Top 2 banks in Croatia)

- Number of employees: 823 (including employed sales force)
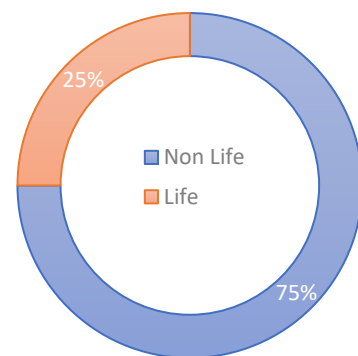
Uniqa osiguranje d.d.

- Part of Austrian Uniqa Group, 100%

- Market entry in 1999
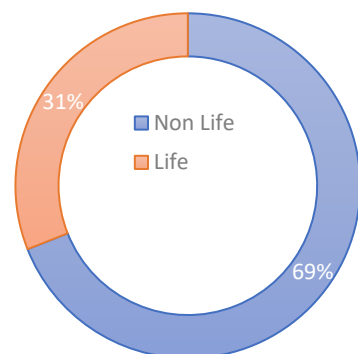
- Acquisition and integration of Basler osiguranje (exit of Swiss-domiciled Basler group, which had acquired Osiguranje Zagreb previously)

- Composite insurer, offering all product lines

- Strong bancassurance distribution cooperation with Raiffeisenbanka

- Number of employees: 557 (including employed sales force)

Triglav osiguranje d.d.

- Part of Slovenian Zavarovalnica Triglav Group, 100%

- Founded in Ljubljana in 1900

- After World War II operated as Slovenian Insurance Institute (similar set up to Croatia osiguranje), from the Nineties as a public limited company

- Former monopolist state insurer in Slovenia (market share in the Nineties of 90%)

- Still majority owned by Slovenian state

- Rebranded from Sava to Triglav in 2001 in Croatia

- Composite insurer, offering all product lines

- Number of employees: 512 (including employed sales force)
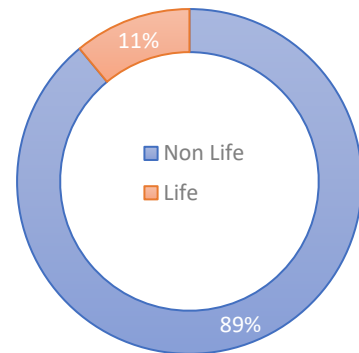
Grawe Hrvatska d.d.

- Part of Austrian Grawe Group, 100%

- Market entry via green-field operation in 1993
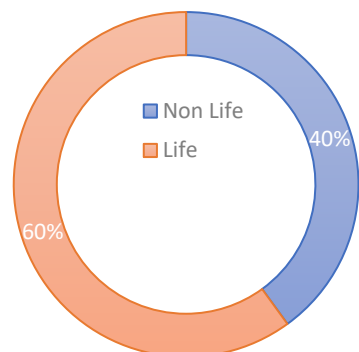
- Acquisition and merger of Adria osiguranje d.d. and Slavonija osiguranje

- Composite insurer, offering all product lines, strong in Life and non-motor Non Life business

- Number of employees: 750 (including employed sales force)

Agram Life osiguranje d.d.

- Croatian insurer, private shareholders, part of Agram grupa

- One of the early privately formed insurance companies, acquired itself Sunce osiguranje and Life portfolios from Agram group, previously also Veritas osiguranje

- Strong in health insurance, operating its own day care clinics (Policlinics)

- Number of employees: 147
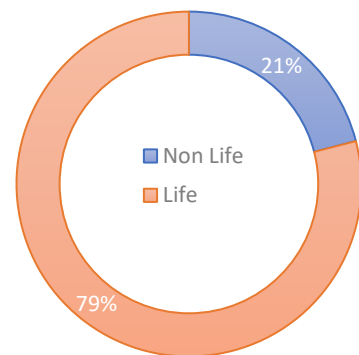
Merkur osiguranje d.d.

- Part of Austrian Merkur Group, 100%

- Among early international market entries in 1996 as green-field operation

- Composite insurer, traditionally focused on Life insurance, not present in Motor business

- Number of employees: 189
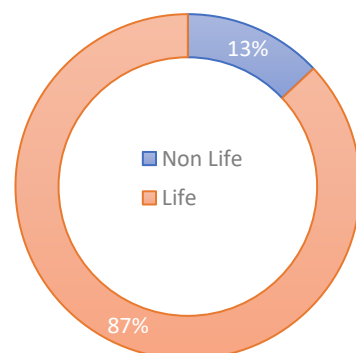
HOK osiguranje d.d.

- Croatian insurer, private shareholders

- Founded in 2001

- Non Life insurer, from 2007 strong focus
  on Motor business, previously niche player in
  lawyer's professional insurance

- Number of employees: 274 (including employed sales force)

Non Life 100%
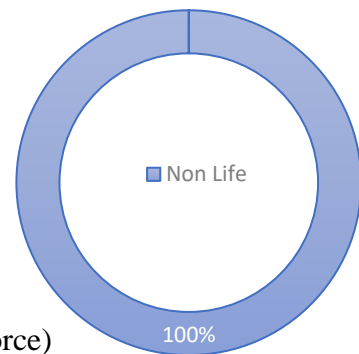
Sava osiguranje, Croatian branch office

- Part of Slovenian Sava Re Group, 100%

- Slovenian state is still a significant
  shareholder of Sava Re

- Initially present via Croatian companies
  Velebit and Velebit Life

- Acquired and integrated Ergo Life and Non Life
  (exit of German Ergo group, which is part of
  Munich Re, in 2019 after a short presence on
  the Croatian market)

- Composite insurer

- Number of employees: 298

Non Life / Life — 17% / 83%
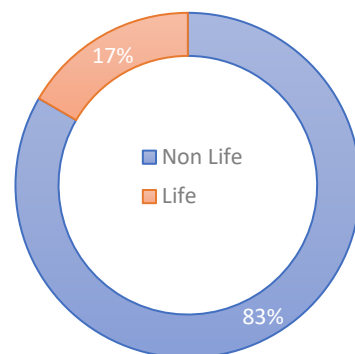
Wüstenrot životno d.d.

- Part of Austrian Wüstenrot group
  (buildings society)

- Part of buildings society group, initially present
  in Croatia, from 2012 also in insurance business

- Life insurer, working with Wüstenrot buildings society

Life 100%
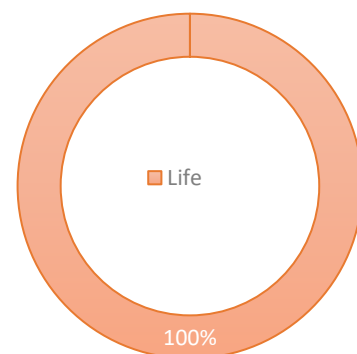
-   Number of employees: 23

OTP osiguranje d.d.

-   Part of Hungarian banking group, which acquired Splitska Banka (from Societe Generale)

-   However, in 2021, acquired by Groupama group (French insurance group)

-   Started operating Life business in 2009 as bancassurance arm of SG group in Croatia

-   Life insurer, bancassurance only

-   Number of employees: 27
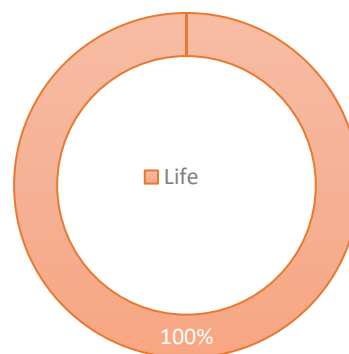
Although the top-2 insurers (Croatia osiguranje and Euroherc osiguranje), or the top-2 groups (Croatia and Agram) are from Croatian origin, most other insurers are part of international groups. Ten of the sixteen insurance companies (including branches) at the year-end 2020 were international, while six are backed with Croatian capital. This is a result of a year-long consolidation process as will be demonstrated later, mostly – but not exclusively – driven by international investors.

Most of the international investors were involved in Mergers & Acquisition activities, only Merkur, Wüstenrot, Triglav and OTP focused only on organic activities. However, some international investors already exited the market again, by putting up their operations for sale, usually to other international groups, as the examples of Swiss Baloise group (Basler), German Ergo (Munich Re), French Cardif and Slovenian KD/Adriatic Slovenica show.

Of the large European insurance groups, Allianz and Generali are present on the Croatian market. AXA (France) or Talanx (Germany) might have evaluated a market entry in the past, but never realised such a move.

4.6. International participants on the Croatian insurance markets

This chapter aims to take a closer look at the development of the international insurers in Croatia. At the end of 2020, the following international insurers were active in Croatia, sorted by size: From the 10 foreign companies, half are from Austria, which, in general, have also been the early movers in terms of market entry. From this overview it already becomes clear that different strategies have been applied by the companies, ranging from aggressive M&A activities to a focus on organic growth.

Table 13: Positions and key strategic steps of foreign insurers in Croatia (part 1)[155]

	Origin	Market share 2020	Market entry	Strategies
Allianz	Germany	10,2%	1999	• Early entry with M&A of Adriatic (with Zaba) • Reciprocal ownership of Zaba (largest bank) • Focus on organic growth
VIG	Austria	9,7%	1999	• Aggressive M&A strategy from 2001 • Acquired/integrated insurers Kvarner, Aurum, Cosmopolitan, Helios, Erste
Generali	Italy	8,1%*	2001	• M&A Libertas (2006) • Long focus on organic growth • Minor M&A with Izvor and AS (2020)

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[155] Information from insurance companies' websites and annual reports
* For 2020 Generali osiguranje d.d. including portfolios of Adriatic Slovenica branch office Izvor osiguranje d.d. after portfolio transfers concluded earlier in 2020

Table 14: Positions and key strategic steps of foreign insurers in Croatia (part 2)[156]

	Origin	Market share 2020	Market entry	Strategic approaches
Uniqa	Austria	5,6%	1999	• Long been focused on bank relationship with Raiffeisen • M&A Basler (2014), which acquired Zagreb osiguranje earlier in 2008
Triglav	Slovenia	5,5%	1967	• State insurer in former Yugoslavia
GRAWE	Austria	4,3%	1993	• First international insurer (Prima osiguranje), from 2000 GRAWE • Focus on organic growth • Strong in Life
Merkur	Austria	2,5%	1996	• Greenfield operation, no M&A, not Motor business
Sava	Slovenia	1,6%	2009	• Branch after integration of Slovenian insurers (Velebit) • M&A Ergo 2019 Germany)
Wüstenrot	Austria	0,5%	2012	• Insurance arm of buildings society
OTP	Hungary	0,3%	2009	• Insurance arm of OTP Bank*

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[156] Also there

* Acquired by Groupama during 2021, therefore now also French market participant in Croatia

Currently there are 10 companies which are part of international groups active on the insurance market, which means almost two thirds of the companies are international. However, when looking at the market in terms of size, hence premium volume, it arises that the international companies currently generate just below half of the market currently. This is obviously driven by the fact that the two largest insurers are still in Croatian ownership, including the former state company Croatia osiguranje.

Chart 23 below shows the development of the international companies as well as the total number of participants on the market over the past years. It is visible that the number of insurers has been decreasing over the past few years. The number of foreign insurers also decreased, however not as much as the total number, leading to a higher proportion of international insurers versus total insurers, which offers to conclude that the international insurers have been a driving force behind the market consolidation.

Chart 23: Development of number of insurers (total vs international)
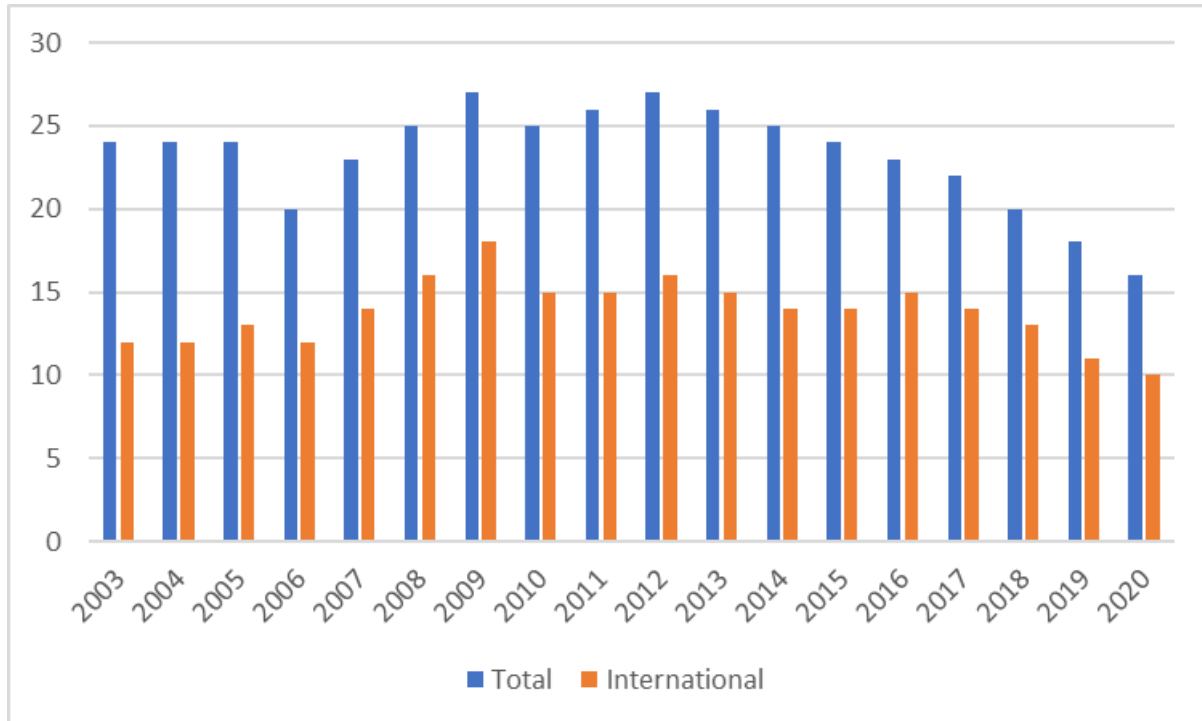
Source: by author, data from HUO, monthly reports December, 2003-2020 (companies and branches) (2022)

Chart 24 below compares the share of international companies in respect to the total insurers as well as the development of the market share cumulatively held by international insurance companies.

It shows that the gap between the share of international insurers and their cumulative market share is gradually but constantly declining. Currently two thirds of the insurers present on the Croatian market are from international origin and jointly they are holding just below half of the market. This may be influenced by the following factors:

- The former state company is still holding a significant market share of almost one third and is held by local investors.
- In fact both large players, Croatia osiguranje and Agram group, together are holding almost half of the market in local hands. As long as these two dominant players remain under Croatian ownership, the share of international investment is somewhat capped.
- Over the past years, Agram group is recording business written in Austria and Italy within this market share statistics and therefore it seems the gradual increase of the internationally held market share is currently reversed.

Chart 24: Share of international insurers in total insurers / market share
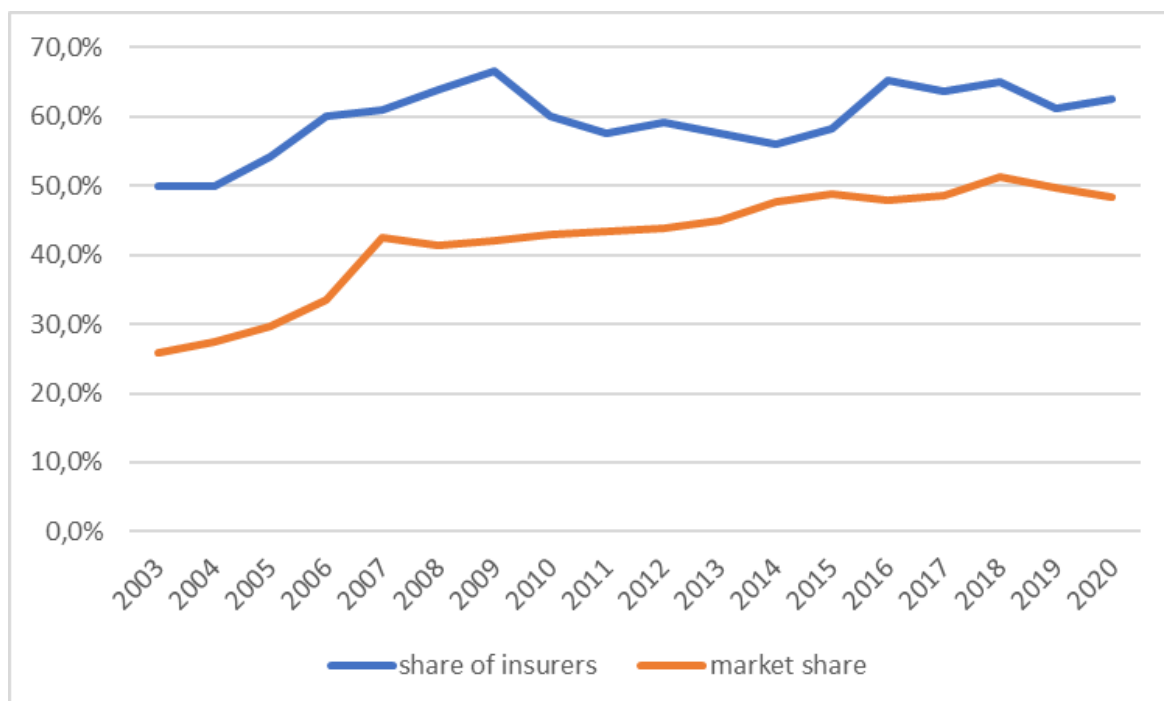
Source: by author, data from HUO, monthly reports December, 2003-2020 (2022)

From this chart we can also conclude that the international insurers have rather entered the Croatian insurance market through smaller M&A and/or green field operations and then gradually increased their position.

From a market share of 25,9% in 2003 the market share of international groups in Croatia increased within a few years to 42,6% by the end of 2007, also fuelled by acquisitions. Then the market share development stagnated for a few years while picking up again in 2014, when in particular the traditional local insurers were struggling in replacing the gross written premium lost in the price reductions following the liberalisation of the MTPL market. The international insurers' market share breached the 50% threshold shortly at the end of 2018, after which it dropped again to 48,4% by the end of 2020.

It is worth noting, that three international insurers that had previously entered the Croatian market, have in the meantime exited the market again, Basler from Switzerland, Cardif from France and Ergo from Germany. Basler osiguranje was sold by its parent company, Baloise, and acquired by Uniqa. The niche insurer in the credit insurance, Cardif, with a bank distribution was bought by Croatia osiguranje when the French parent decided to exit the market. The subsidiary from the German Ergo, which in turn is part of the large and global reinsurer Munich Re, had initially entered the Croatian market with an aggressive strategy but exited the market again after a few years that did not bring the desired results and sold their business to the Slovenian Sava Re group.

The biggest international insurance companies in the Republic of Croatia, Allianz, Vienna Insurance Group, Generali and Uniqa, have two strategic elements in common. All of them have been players in the M&A Arena with VIG acting as a consolidator of several companies, Generali an acquirer of three smaller companies, Uniqa an acquirer of a medium-sized insurer and Allianz an early mover in terms of acquisitions. Furthermore, all of them have strong distribution agreements with international banking groups, which are in force not only in Croatia, but actually in other countries as well or even across the region.

4.7. Effects of international participants on the Croatian insurance markets

As already touched upon in the previous chapter, different strategies have been observed, which have been applied by the international players for their respective entries as well as further management of expansion over the years of their presence. However, overall, there are some similarities across the board.

The international insurers that have largely been focused on growth and therefore constantly increased the international market share have done so by applying the following two elements into their strategy:

- Early entry, which was in particular the case for the Austrian companies as they have started doing business locally even before the formation of a localised company in Croatia.
- The application of M&A activities for outperforming market growth and being an active driver for consolidation. Since the Croatian insurance market is rather small for international insurers, from a strategic point of view, the option to consolidate – once entered the market – is almost without alternative. Except exiting again, which also has been observed already.

The next analysis will now take a look whether the rise of the international insurers has also led to changes in the market, such as product mix.

Due to market maturity the Croatian Non-Life business has predominately been about Motor Third Party Liability insurance, which is an obligatory form of insurance for owners of a motorized vehicle. Prices have been the same for all competitors until 2013, and the business segment has been extraordinarily profitably. Therefore, the companies active in this segment,

mostly (but not only) incumbents and players already active for a longer period, did not have an incentive to focus on the further development of other products on a larger scale.

The development of the product portfolio of the Croatian insurance market significantly changed over the past many years, as is shown in Chart 25. This change was driven by many factors, but also by the entry and rise of the international insurance companies.

Chart 25: Development of share of Motor in GWP
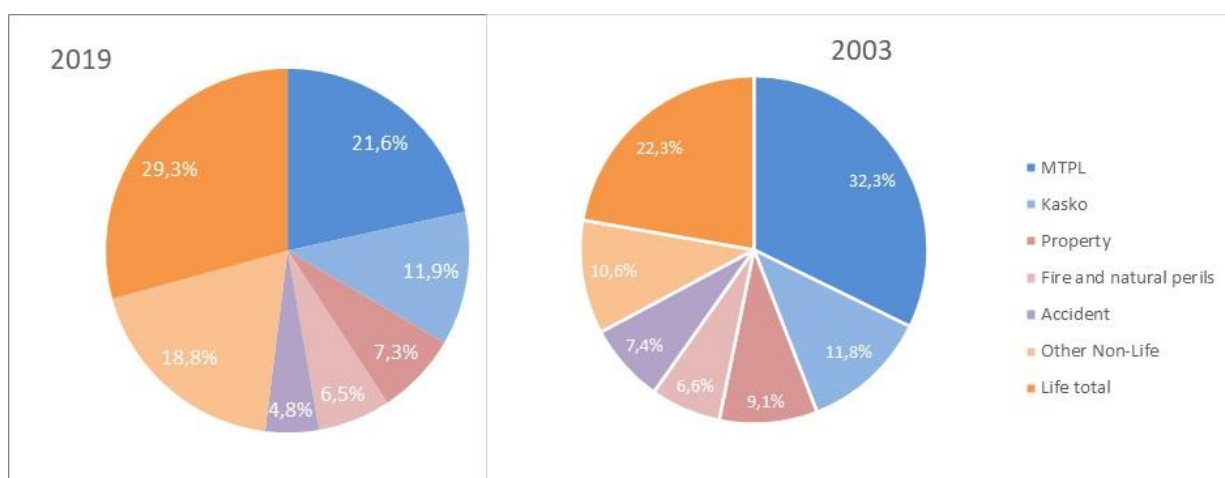
Source: by author, data from HUO, monthly reports December, 2003-2019 (companies and branches) (2022)

In the year 2003 the share of MTPL was still one third of the entire market, whereas in 2019 this part of the business has dropped to 21,6%. Motor business in total has fallen from 44% in 2003 to 33% in 2019. On the other hand, Life insurance has risen from 22% to 29% and the non-motor Non Life business has increased by 3,5-percentage points.

Compared to other countries in Europe, for a relative long time, until 2013, prices have been regulated in MTPL. The fact that no price competition was possible with everybody offering the same prices, the levels of premium remained relatively high. Once competition was possible after the liberalisation process started also for MTPL, premiums dropped, and its share got reduced. At the same time insurers tried to compensate for this lost premium through investing into growth in other product lines, like Life insurance, health insurance or credit insurance. A

driver for this reorientation was the group of international insurers, as for one, they were the drivers of the liberalisation of MTPL prices as they did not have a comparably comfortable strategic position in the important Motor segment like the two dominant local players and without price competition that would be difficult to change. Secondly, the international companies also drove the development in other business segments.

Through these developments and the actions of international insurers but also the market as a whole, the mix in the market portfolio of products changed, with the share of Motor dropping while others increased.

Finally, this part of analysis is looking at the profitability of the market by comparing the market shares for local and international companies in the following parameters:[157]

- Gross Written Premium (the usual market share metric),

- The share in profits of the market.

Chart 26: Profitability comparison international insurers / local insurers
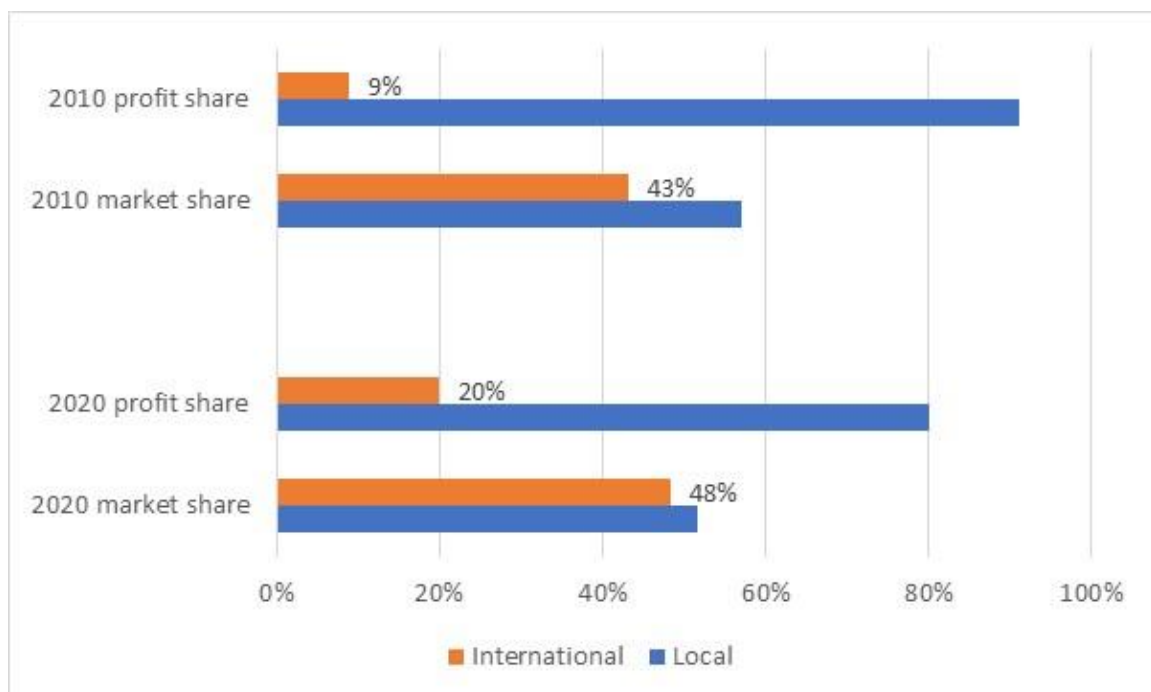
Source: by author, data from HANFA, Annual reports 2010 and 2020 (2022)

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[157] HANFA, data from annual reports 2010 and 2020

In 2010, while the international insurance companies already carried a market share in the sense of premium of 43%, they were able to capture only 9% of the profits in the market. In 2020, they came closer to taking half of the market share (premium), yet still could only generate 20% of the profits of the market. Other years are no different, some even showing negative numbers when all international companies accumulated.

Of course, these numbers are influenced by several market peculiarities. For one, size is important in the insurance industry and the two largest players are able to by far generate the highest profits over the past years. Moreover, many of the international investors suffered one or more years when they accumulated significant losses. This might lead to the conclusion that earlier investments in market entry and expansion, whether in the form of M&A or organic, might have come at a higher cost than anticipated. However, this possibility is not further investigated here.

Overall, and across different economic and insurance cycles, it seems Croatia is a difficult market for international investors to get their adequate share of profitability. Of course, this is a generalization, since also among the international players, there have been those that have consistently delivered strong profits in almost all of the years and there are those, which are continuously financed by their international shareholders.

Looking at these numbers, the Croatian Insurance market generally appears to be attractive but also challenging for international companies. While a few have exited again, the profitability in general lacks behind their local competitors, in particular Agram group and Croatia osiguranje.

Although a general wisdom seems to be that international investors can bring the benefits of their experience from abroad to an emerging market, the example of the Croatian insurance market shows, this is not always the case. The local companies are far more profitable.

However, international vs local is only one of the many drivers for the success of a company in any given market. Others, like soundness of strategy, market timing or management quality are also parameters that influence the success of any company.

One attempt of an explanation might be that insurance is a long term business and as such requires a long term investment horizon with international groups investing into a market while accepting to reap the benefits only many years later. However, the development of the profitability does not support that, as the share of profits remained skewed towards the local players over the observed time period. An important fact here comes back to the nature of insurance and the law of the large number. The two largest players have an advantage of size as well as of the historically developed portfolio whereas the smaller and commonly also younger rivals still have to fight fiercely for growth and profitability. Balancing both parameters seems to have been challenging in the relatively small market of Croatia, which has also been quite competitive.

But, the preliminary and also qualitative analysis in this chapter suggests, that the influence of the international engagement on the insurance market in Croatia cannot be underestimated. It brought intensified competition and consolidation, which forced insurers to become more competitive and improve their business model, strategy and operations from which in turn customers benefitted and it forced the market to increase its focus on non-motor business lines and not only rely on motor business. However, the response of the local companies showed, they were able to keep their strong position on the market.

5. INSURANCE MARKETS IN THE CEE-REGION

This chapter provides a short overview of the insurance markets of these selected countries, reviews various studies on the CEE insurance markets and continues by introducing the key international players of the region and their respective positions in the markets in order to prepare for a closer analysis of their results and impact on the insurance markets and the entire industry in the region.

The analysis of this dissertation also captures some highlights of the involvement of international investors in the region and their strategic developments, in particular during the phases of privatisations of state insurance companies and during phases of liberalisations of the respective insurance markets.

5.1. Further studies on insurance in CEE

The CEE-region as such is no homogenic region, but rather a heterogenic area of different states with their own economies and therefore also with their individual insurance markets, which can differ quite significantly. For example, the economies are different in maturity and size throughout the region as most of them already having joined the European Union. The factor of size and therefore often also economic size is of course relevant when taking a closer look at the insurance markets and their international investors.

These markets do have at least one particular thing in common, all of these countries and their economies have been emerging economies in a transition to an advanced market economy over the past three decades. Therefore, we see a lot of international investors and insurance companies who have been looking out for opportunities of growth in this region and participated with numerous transactions in the CEE insurance market.

Following World War II the former communist countries of this region nationalized the insurance sector and foreign insurers were expelled.[158] The monopoly of the state-owned insurer was the key feature of those markets. In each country one or two state-owned insurers were established, and they were the sole providers of both domestic and international insurances.

Efficient insurance markets have been critical in accompanying the transition to market-oriented economies in the Central and Eastern European region and enable a closer interaction and integration with the global economy, which has also supported economic growth in these countries. International insurers support the development of efficient insurance sectors in providing capacity, capital and know-how and have significant impact in the processes of market liberalisation and consolidation.[159]

The insurance industry is essential for a country's political stability in its contribution to the prosperous economic development of small and medium-sized enterprises by protecting the financial robustness of these companies and allowing them to develop in an efficient market. Insurance helps to reduce the risks for companies, investors and the state associated with investments and is therefore helping in encouraging investment into businesses, which drives domestic production and trade. It also reduces the cost of capital and financing, as without purchasing insurance, raising loan financing might be significantly more expensive or almost impossible, which has been particularly relevant in emerging markets when insurance allowed companies and investors to focus on the long-term and also engage in investments of higher risk. Furthermore, insurance allows people to financially protect themselves against an inability to work or save money for future investments or retirement as well as protect themselves against damage or loss of their property.[160]

Looking at the insurance markets development and its participants, it becomes evident that, although after the breakdown of communism in the region almost no Western insurance

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[158] Kozarevic, S., Peressin, L., Velantinuz, G., Efficiency of the Transition of Insurance Markets in South-Eastern European Communist Countries, South-Eastern Europe Journal of Economics 2, 2013

[159] Baur, E., Birkmaier, U., Rüstmann, M., United Nations, Swiss Re, The economic importance of insurance in Central and Eastern Europe and the impact of globalisation and e-business, Zürich, 2001, p. 2

[160] Also there, p. 3

company had a presence, the picture has changed drastically. Twenty-five years later the presence throughout the region as a whole is staggering, in particular from foreign companies from Austria, Germany, Italy, Netherlands and Belgium. For these insurance groups the expected development of the countries in the CEE-region is vital for their business strategies. Their engagement was based on the conviction that the economies of these countries will eventually converge and provide them with additional growth in the insurance business, which is particularly attractive for international groups facing mature and stagnating home markets.[161]

A study on the development of insurance markets in post-transition economies across 21 countries in Central, Eastern, and South-eastern Europe explored and found the following socioeconomic factors impacting insurance density:[162]

- affordability of coverage,
- comprehension of insurance products,
- trust of the insurance industry, and
- need.

Another study the development of the Non Life insurance markets in the eight CEE countries that joined the European Union in 2004 analysed concentration and polarisation, by examining insurance penetration and density ratios in these markets and showed still significant differences in market polarisation (deviation of penetration and density) between these new EU-countries versus the Western ones (EU-15). Moreover, visible differences among the CEE-countries arose. Market concentration, driven by the usually present former monopolist has also been a common phenomenon in these countries, still seemed to indicate a domination of a few players and some countries with still a high or moderate market concentration.[163]

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[161] Ertl, M., Insurance Convergence and Post-Crisis Dynamics in Central and Eastern Europe, The Geneva Papers, 42, 2017, p. 323-324

[162] Born, P., Bujakowski, D., (Florida State University, Drake University), Drivers of Insurance Market Development in Central, Eastern, & Southeastern Europe, 2019

[163] Wieczorek-Kosmala, M., (University of Economics in Katowice), Non-life insurance markets in CEE countries – part II: Polarisation and concentration, in: Journal of Economics and Management, Vol. 26(4), 2016

Chart 27 below shows the market concentration for Life and Non Life insurance markets of the European Union in 2019, indicating significantly less concentrated markets in the large countries of Germany, France and the United Kingdom. In Croatia, the five largest insurers hold a market share above 70% whereas in Germany the ten largest companies remain below half of the market.

Chart 27: Market concentration per country, (1) Life, (2) Non Life insurance, 2019[164]
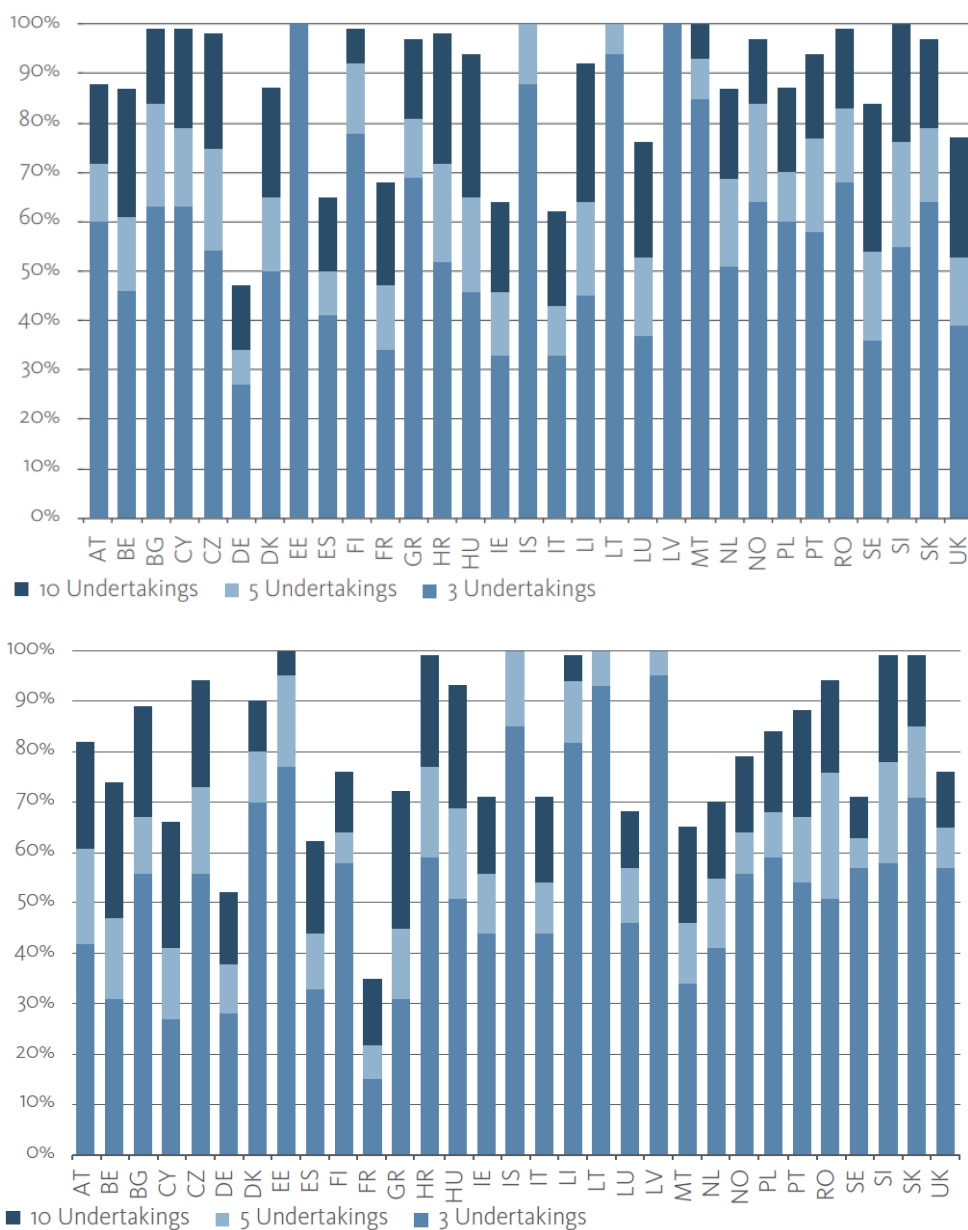
Source: EIOPA European Insurance Overview 2020

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[164] Concentration indicator measures market share (GWP) of the 3, 5, and 10 biggest insurers

Interestingly, a study on the Polish financial system's integration process with European markets is echoing various sentiments already elaborated upon in this paper. During the phase of joining the European Union the number of foreign controlled insurers increased and so did the market share these international insurers held. The foreign capital brought innovation, new know-how and new technologies and led to an overall increase in market profitability. The subsidiaries of the international groups successfully increased their Non Life market share on the expense of previously dominant former monopolist and state insurer PZU, which brought forward more medium-sized companies and reduced market concentration. This study also confirms the positive effects of achieving scale on profitability. From the other side, the transition-fuelled economic growth also increased demand for insurance products which supported insurers' profitability. Furthermore, the study found that the reduction of the share of motor insurance in the portfolio, accompanied by an increase in other lines of business and products, had a positive impact on profitability of insurers.[165]

Another study, on the attractiveness of insurance markets for foreign investments into the countries of Ex-Yugoslavia claims that the main drivers for such are insurance demand and therefore economic growth as well as human capital, with both having positive effects. The examined region (Bosnia & Herzegovina, Croatia, FYR Macedonia, Serbia and Slovenia) was able to attract Foreign Direct Investments (FDI) during 2004-2007, prior to the financial crisis, when insurance groups were attracted by the potential for growth while being able to access cheap sources of financing. The study confirms that international companies are not only able to provide larger underwriting capacities, but they also bring additional know-how and expertise in various areas of the insurance value chain and contribute to increasing levels of insurance density (premium per capita) and raise investment levels into capital markets.[166]

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[165] Kozak, S., Determinants of Profitability of Non-Life Insurance Companies in Poland during Integration with the European Financial System, in: Electronic Journal of Polish Agricultural Universities, 2011 (Vol. 14, issue 1)

[166] Njegomir, V., Stojić, D., Determinants of Insurance Market Attractiveness for Foreing Investments: The Case of Ex-Yugoslavia, Economic Research-Ekonomska Istraživanja, 2010, p. 105-107

5.2.   Overview of the insurance markets in the CEE-region

Before examining the insurance market, a short look at the macroeconomic side in which the insurance markets are embedded in, will be taken. In Chart 28 below, the GDP growth rates of the individual economies are shown with a recorded healthy growth rate of about 4% in the years 2017 and 2018 for the region. The numbers show significant differences and confirm Croatia's underperforming economic development compared to the average of the CEE-region throughout the years.

Chart 28: Changes in real GDP of CEE-region
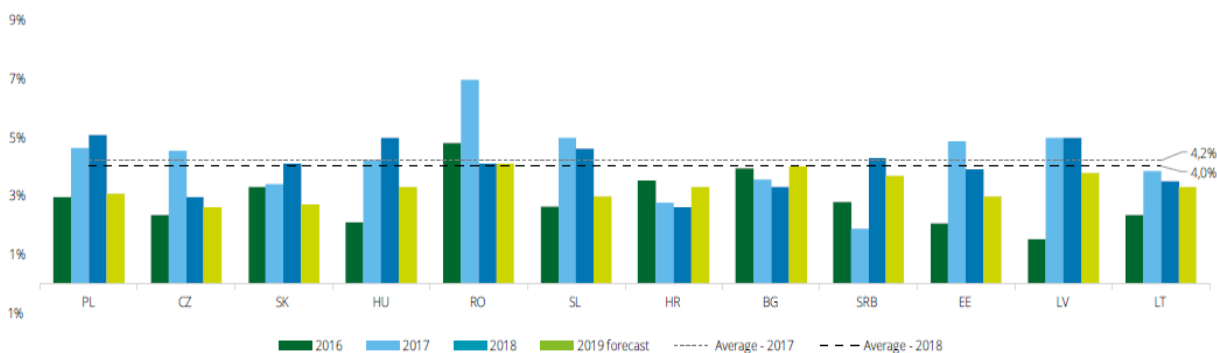
Source: EIU data, Deloitte, CEE insurance M&A outlook, 2019

The size of the insurance market in the CEE region is about bnEUR 36, whereof two thirds are originating from the Non Life insurance business lines and only one third from Life insurance business. The Life business has been actually shrinking in importance as well as in absolute figures during the last decade, which is influenced by the trends following the aftermath of the financial crisis from 2008 as well as the development in specific countries, for example the regulatory changes in Poland, which had significant impact on the Life insurance business.

Chart 29: Insurance market 2018 CEE-region, split Life/Non Life (million EUR)
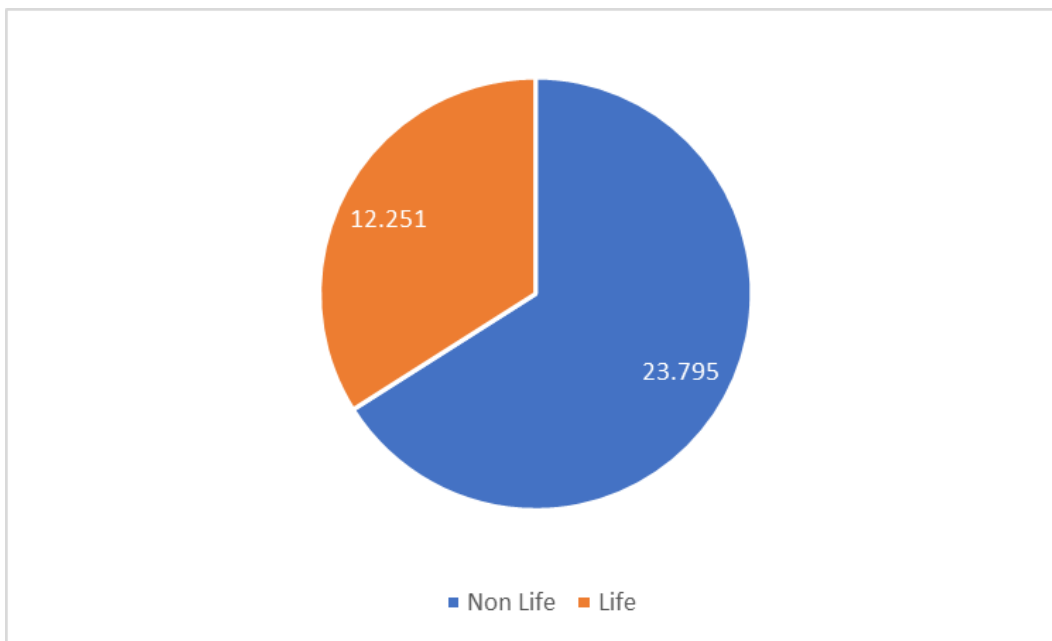
Source: by author, EIU data, Deloitte, CEE insurance M&A outlook, 2019 (2022)

Looking at the shares of individual countries within the CEE region it becomes evident that the markets are vastly different, as, for example, it shows that almost 40% of the CEE insurance market is accounted for in Poland. In Chart 30 the premium development for the period 2010-2018 according to Life and Non Life business is depicted.

Chart 30: Premium development of insurance market, CEE-region, 2010 – 2018
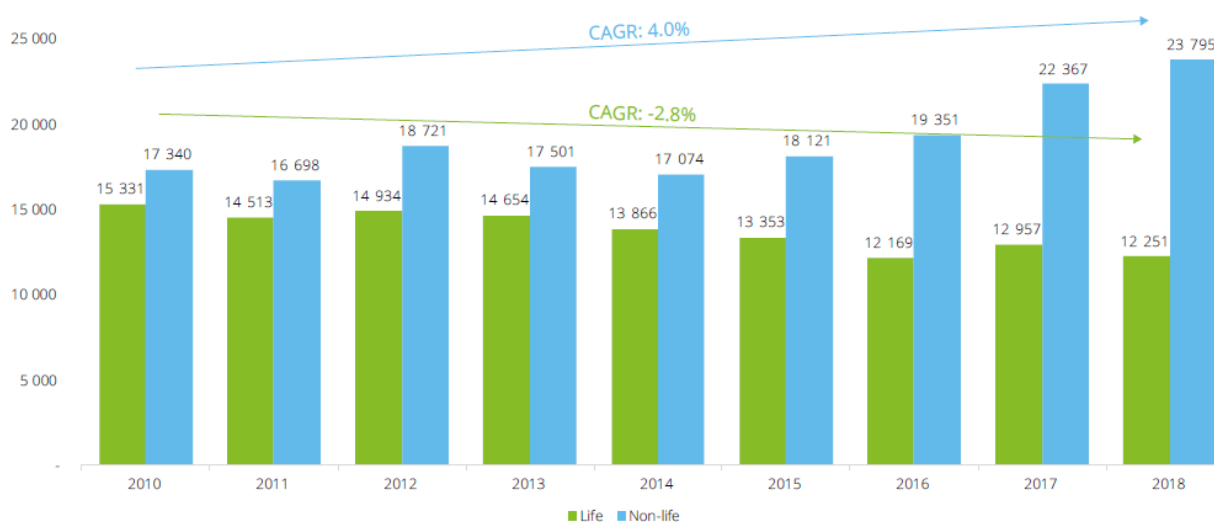
Source: Xprimm https://www.xprimm.com/database, Deloitte intelligence, CEE insurance M&A outlook, 2019

Reviewing at the number of insurance companies active on the individual markets, a generally declining number of participants is observable, which is due to market consolidation.

Chart 31: Number of insurance companies active in the CEE-region, 2020
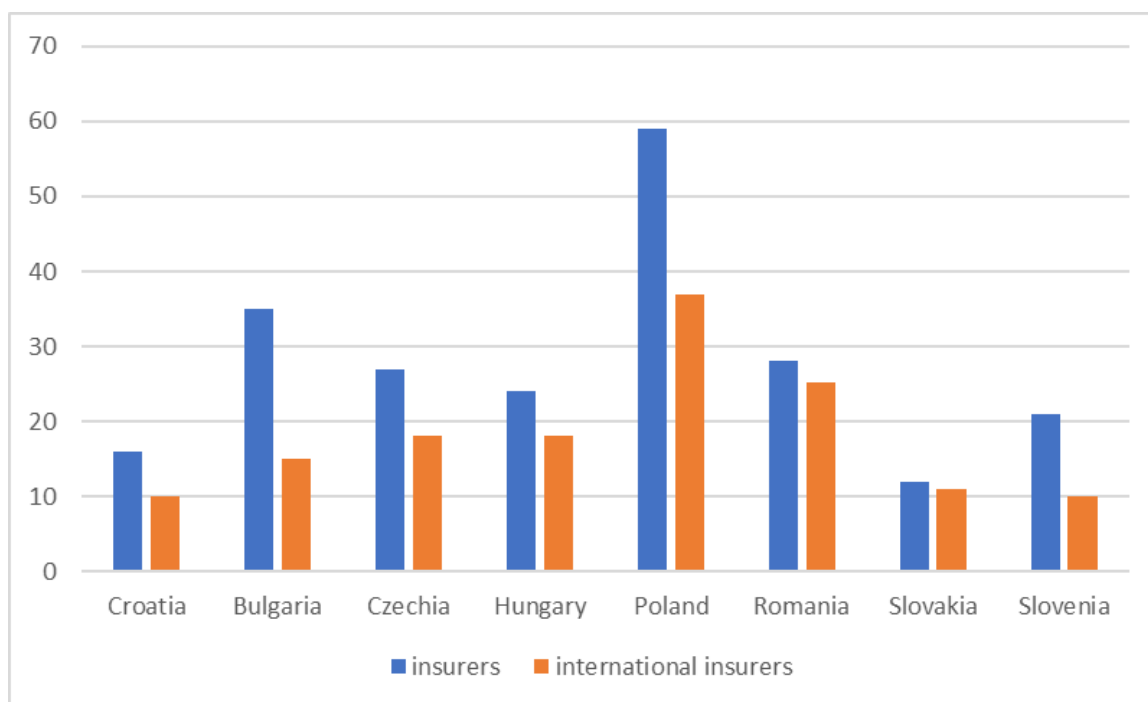
Source: by author, data for econometric model (2022)

Putting this bnEUR 36 market into context, it is double the size of the Austrian insurance market, which is a much more matured and saturated market compared to the growth potential inherent in the numbers of the insurance markets throughout the CEE region. This is of course also one of the reasons why international insurance companies engage and significantly invest into their companies and/or acquisitions in this region and attempt to extract some of the growth potential.

The following Chart 32 gives an indication of market attractiveness by comparing market sizes and their growth rates in terms of revenue (premium) and profitability when insurance companies were struggling with the effects of the financial crisis after 2009. Poland, Slovakia

and the Czech Republic show growth of premium, while Croatia and Romania only increased their profitability in an otherwise stagnating market with Hungary lagging behind in profitability and premium. In respect of sheer market size, Poland and the Czech Republic are the largest and given their levels of profitability, they are the place to be in for the international insurers.[167]

Chart 32: Market growth and profitability
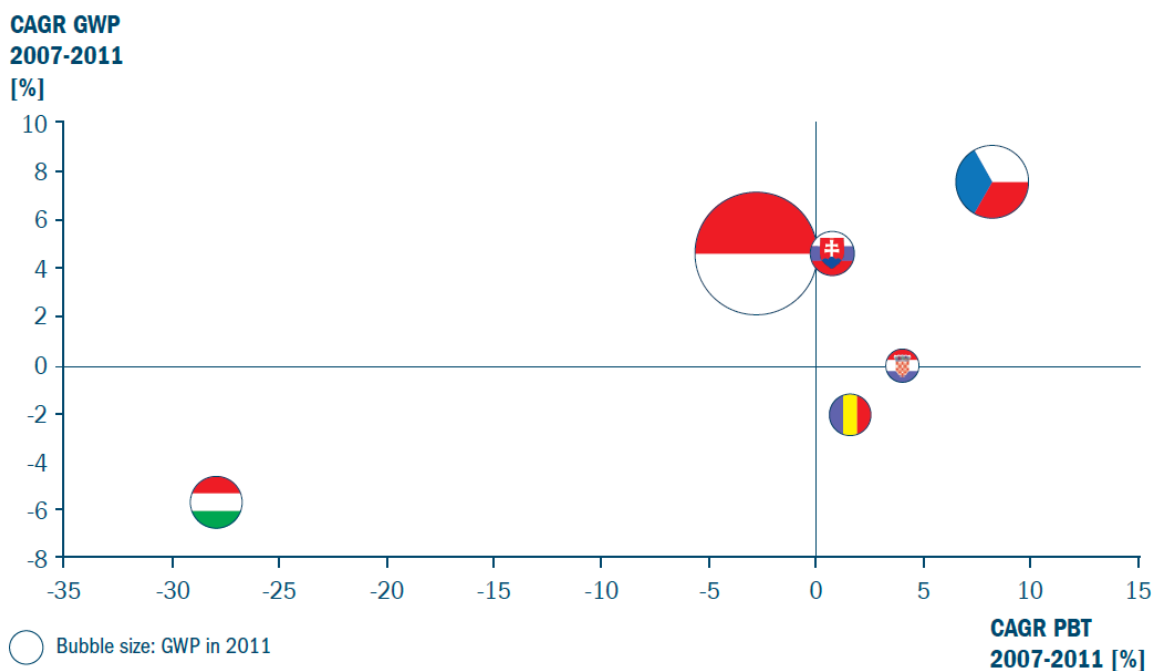
Source: PIU, CSA, HANFA, CAP, SLASPO, MABISZ, Roland Berger

Source: Roland Berger, Efma

The following pages will briefly introduce a few highlights of each of the insurance markets of the selected CEE countries. Looking at the development of Gross Written Premium, Insurance Penetration and Density as well as the dependency on the Motor Third Party Liability (MTPL) segment will provide some initial understanding of the market developments.

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[167] Roland Berger Strategy Consultants, Efma, Insurance in Central Europe, 2013, p. 16

5.2.1. Insurance market Croatia

The Croatian insurance market has already been described extensively, however for reasons of consistency, there are the same parameters as shown for the other countries also for Croatia in this chapter. Croatia has seen its share in GDP (penetration) gradually increasing over the course of the past years 18 years, now amounting to 2,8% of GDP, which leaves Croatia's insurance market only behind the Czech Republic and Slovenia in terms of relevance within the domestic economy. Insurance density was at EUR 342 in 2020 (in the charts are local currencies) which is 30% of the Slovenian density. The market share of international companies is just below 50%, and the dependency on MTPL is again on the rise, with a share of one quarter in 2020 the third highest in this region.

Chart 33: Insurance penetration and density, Croatia, 2003-2020, HRK
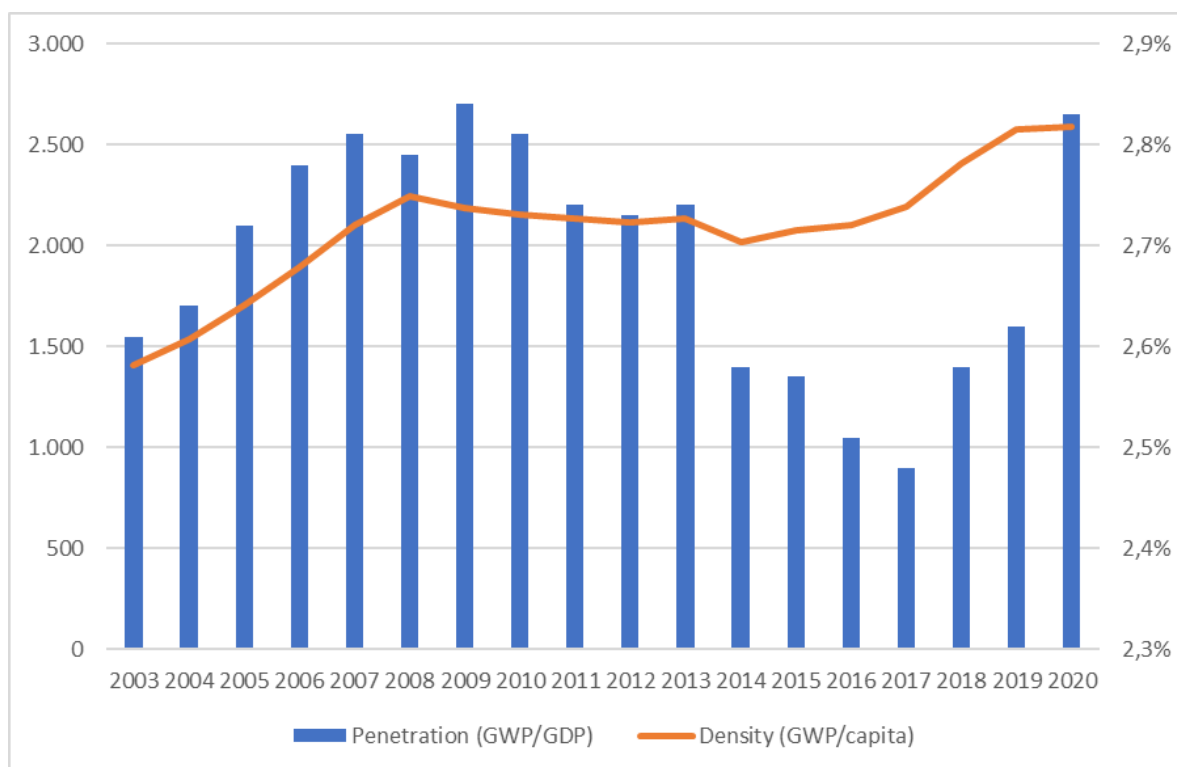
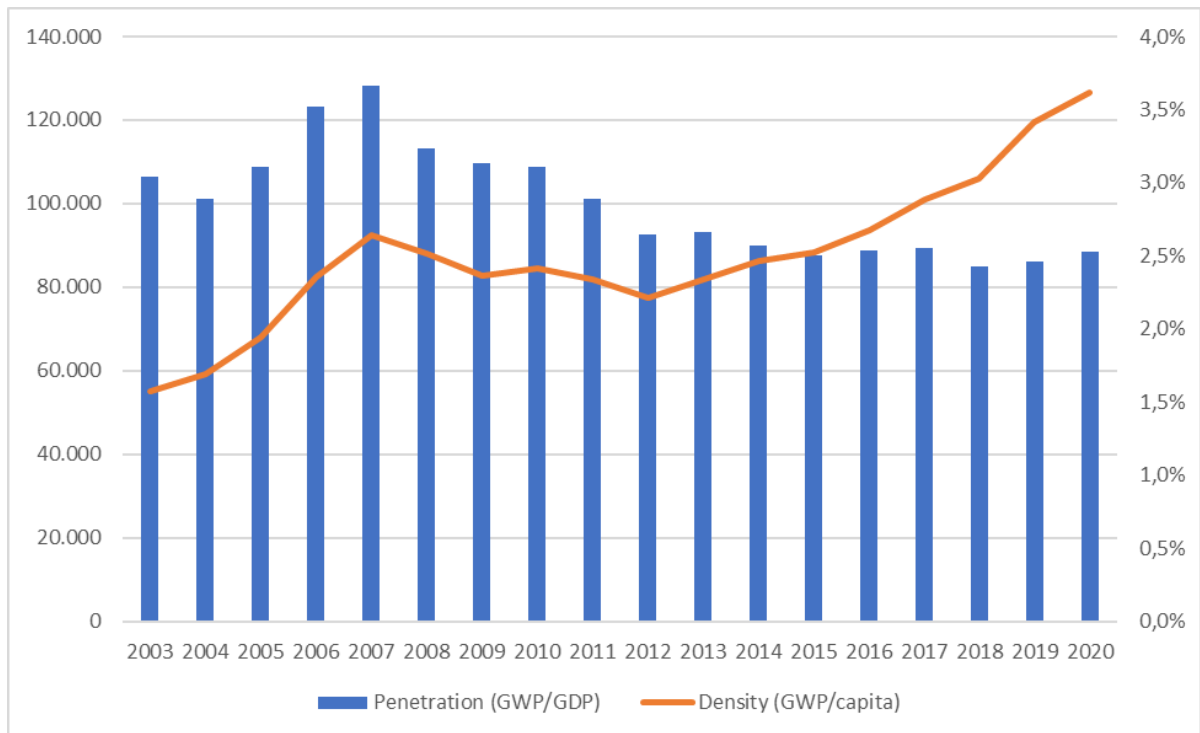Source: Econometric model

5.2.2. Insurance market Bulgaria

The Bulgarian insurance market has seen its share in GDP (penetration) gradually increasing over the course of the past years 18 years, now amounting to 2,4% of GDP. With an insurance density of EUR 213 (in the charts are local currencies) is the second least developed market among these selected CEE countries, yet remains an important market for many international companies. Interestingly, the market share of international companies has been decreasing over the past few years, now reaching 60% of gross written premium, also due to domestic players being very active. The dependency on MTPL is rather high with a share that increased to more than one third of the market (37%) in 2020.

Chart 34: Insurance penetration and density, Bulgaria, 2003-2020, BGN
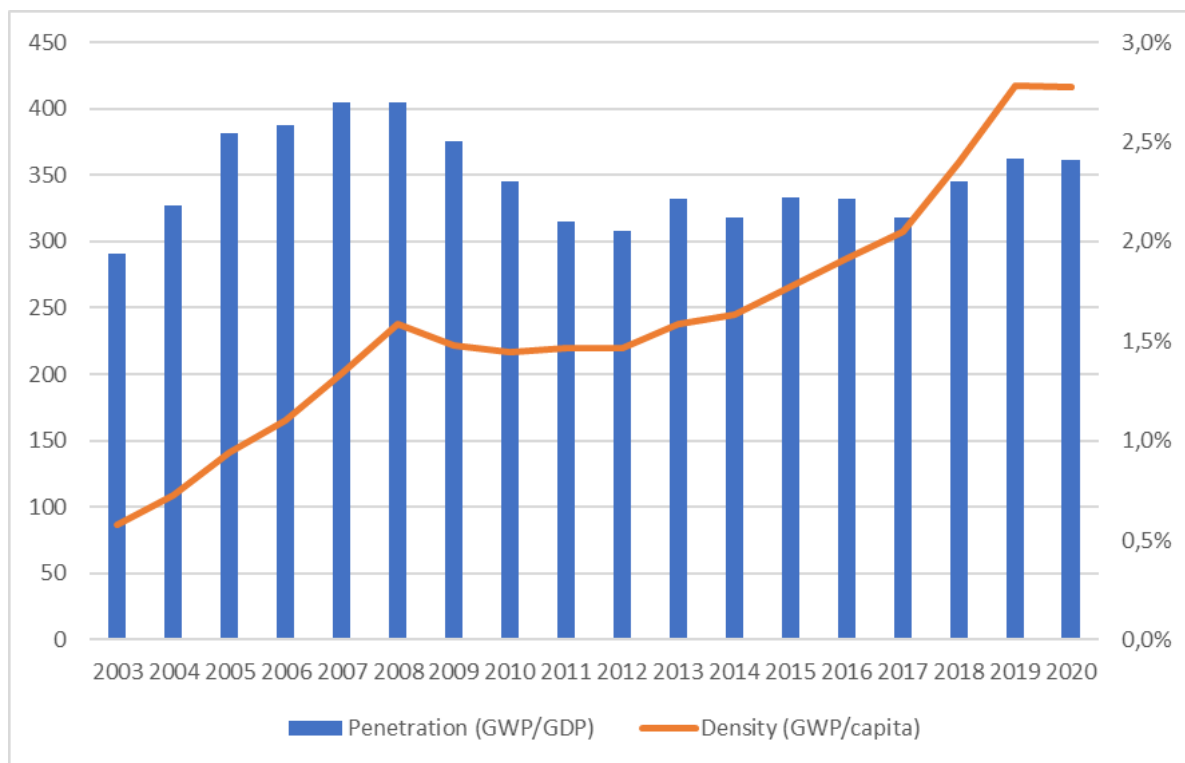
Source: Econometric model

5.2.3. Insurance market Czech Republic

The Czech insurance market is the second largest in this region, however its share in the Czech economy (penetration) has been gradually declining from above 4% of GDP to 3% of GDP in 2020, which is also es testimony to the strong overall economic development of the country. With an insurance density of EUR 634 (in the charts are local currencies) it ranks at the second place among these selected CEE countries. The largest players of the market are all subsidiaries of international companies now and the international market share is at 96%. Moreover, the market entertains high levels of profitability. The dependency on MTPL is rather low with a share of the market of 16,6% in 2020.

Chart 35: Insurance penetration and density, Czech Republic, 2003-2020, CZK
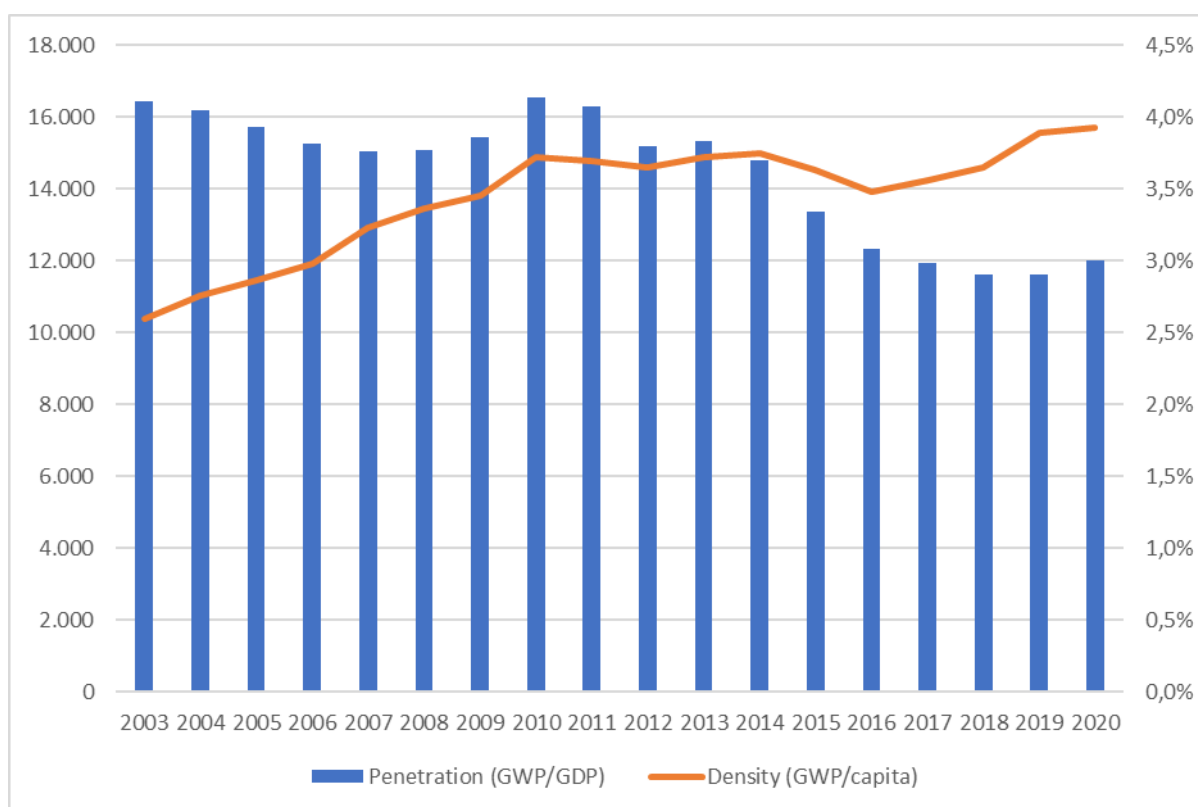
Source: Econometric model

5.2.4. Insurance market Hungary

The Hungarian insurance market has seen its share in the overall economy (penetration) gradually declining from above 3% of GDP to 2,5% of GDP in 2020. Its insurance density of EUR 341 (in the charts are local currencies) is at the same level as Croatia. The international market share is at 86% and the relevance of MTPL has rebounded after a phase of fierce competition during the previous decade and now obtains a share of the market of almost 20% in 2020.

Chart 36: Insurance penetration and density, Hungary, 2003-2020, HUF

Source: Econometric model

5.2.5. Insurance market Poland

The Polish insurance market is the largest in this region and has been holding or even growing its share economy (penetration) throughout many years but has been gradually declining in the last few years to 2,7% of GDP in 2020, which is also es testimony to the strong overall economic development of the country. With an insurance density of EUR 354 (in the charts are local currencies) it ranks just above Croatia, however due its market size with a population of 38 million its insurance market is much larger. The largest player of the market is the state insurer PZU which is also the largest insurer of the region and therefore the market share of the international insurers is somewhat capped below two thirds of the market. The Polish insurance market has recently also seen some prominent exits of international insurance groups (eg AXA, Aviva). MTPL has been very relevant for the development of market profitability in the past and currently holds a share of 23% in 2020.

Chart 37: Insurance penetration and density, Poland, 2003-2020, PLN
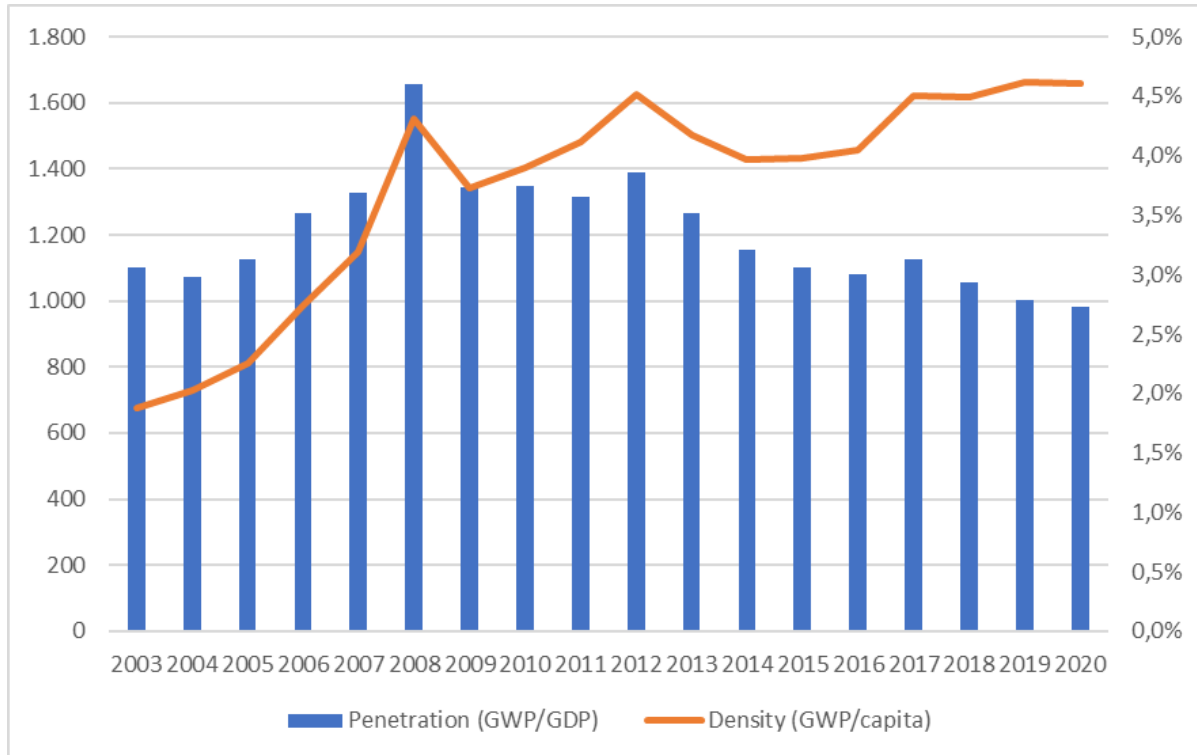
Source: Econometric model

5.2.6. Insurance market Romania

The Romanian insurance market has faced its challenges with its share in GDP (penetration) gradually declining over the course of the past years 18 years, now amounting to 1,2% of GDP. With an insurance density of EUR 127 is the least developed market among these selected CEE countries. Due to its population size however, it is an important market for many international companies. More than three quarters are in international insurers' hands, although this share has been slightly decreasing over the past few years. The dependency on MTPL is rather high with a share that increased to more than one third of the market (36%).

The Romanian insurance market has seen many insurers struggling and during some turbulent times several companies went into bankruptcy or lost their licences, usually for reasons of capital insufficiency.

Chart 38: Insurance penetration and density, Romania, 2003-2020, RON
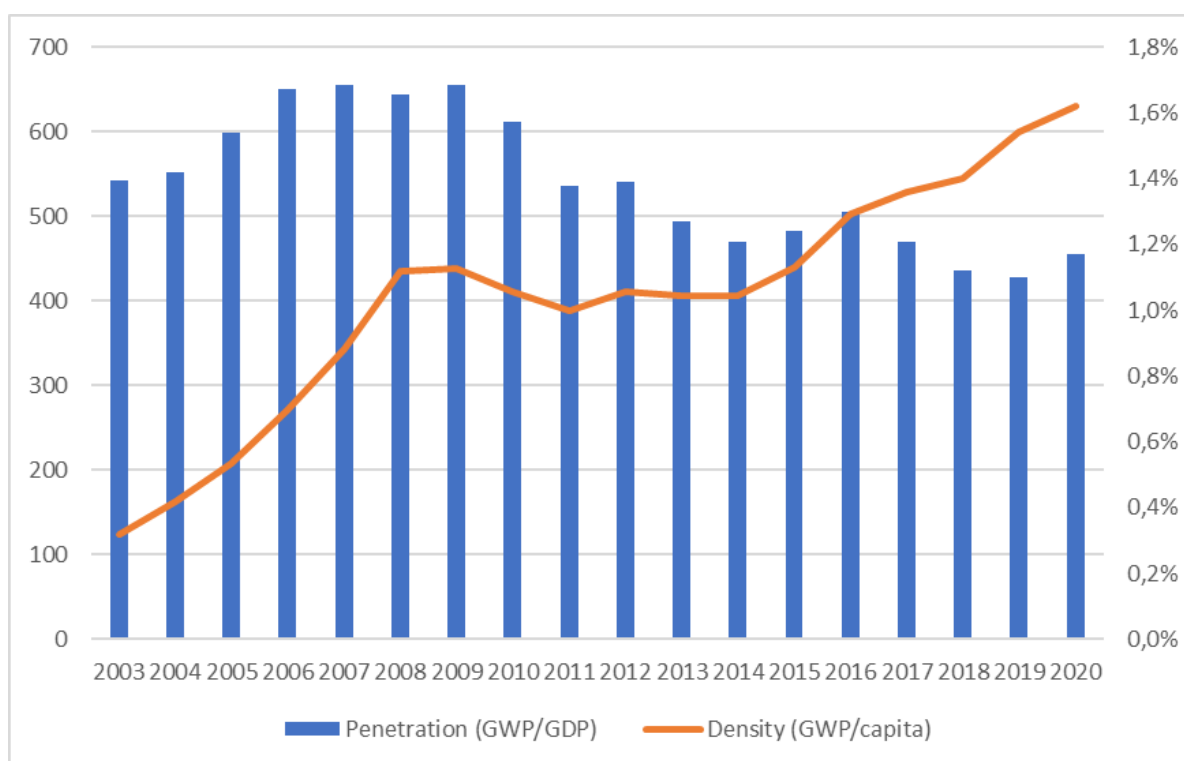
Source: Econometric model

5.2.7. Insurance market Slovakia

The Slovak insurance market has kept its share in the overall economy (penetration) relatively stable at 2,7% in 2020. With an insurance density of EUR 457 it ranks at the third place among these selected CEE countries. In terms of market structure and participants it bears a lot of resemblance with the Czech insurance market. Almost the entire market is in international ownership with a market share between 97% and 99% throughout these past 18 years. Moreover, the market entertains high levels of profitability. The dependency on MTPL is rather low with a share of the market of 16,8% in 2020.

Chart 39: Insurance penetration and density, Slovakia, 2003-2020, EUR
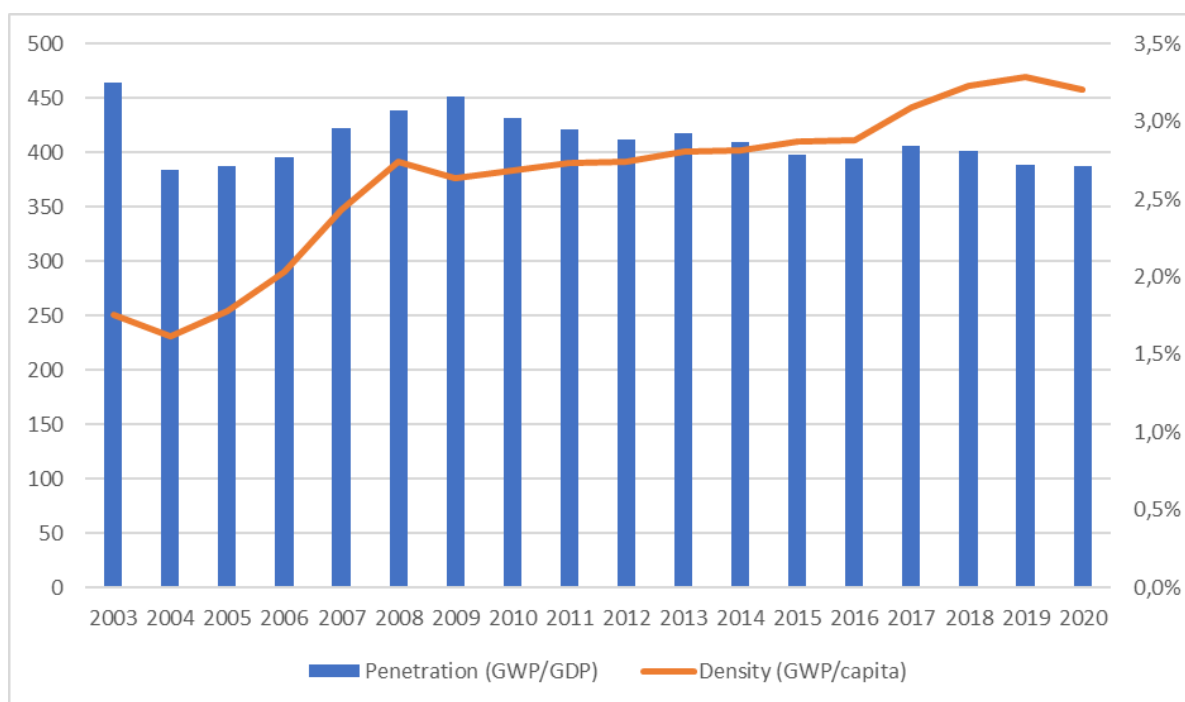
Source: Econometric model

5.2.8. Insurance market Slovenia

Both in terms of insurance penetration and insurance density, Slovenia, as the smallest country among the selected CEE countries, holds the top spot. The Slovenian insurance market has increased its share in the overall economy (penetration) from 4,7% in 2003 to 5,0% in 2020. With an insurance density of EUR 1.129 it is almost double than the second placed Czech Republic. Certainly, due to its size the market is quite peculiar, but also for many years it has been dominated by domestic companies. The largest player on the market is the state insurer Triglav and even after the acquisition of the third largest insurer Adriatic by Generali the international companies' market share is still below one quarter in 2020. Following the MTPL liberalisation and severe price reductions the share of MTPL is only at 10,6% in 2020.

Chart 40: Insurance penetration and density, Slovenia, 2003-2020, EUR
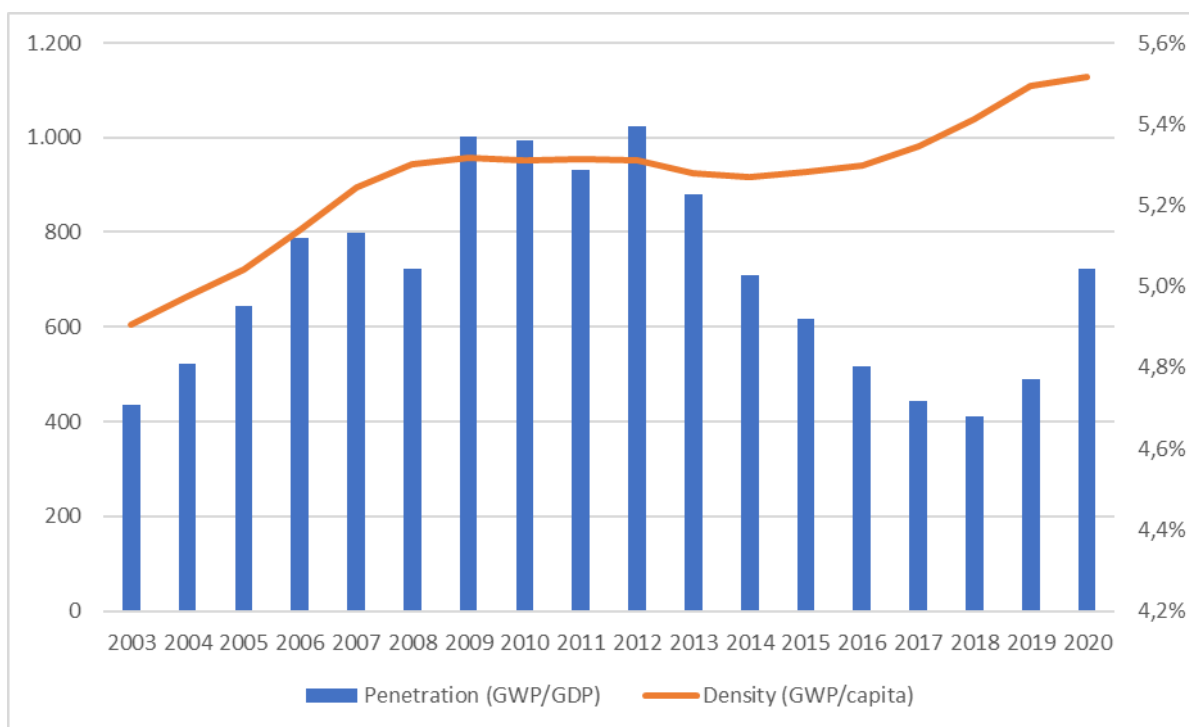
Source: Econometric model

5.3.   Key indicators of the markets in the CEE-region

Before starting the deeper analysis, here are a few charts introducing the region as such and comparing the selected countries, in order to get a better understanding of its dynamics and differences. There are vast differences in sizes of population and insurance markets, as can be seen in the Charts 41-44.[168]

Chart 41: Population 2020, in million
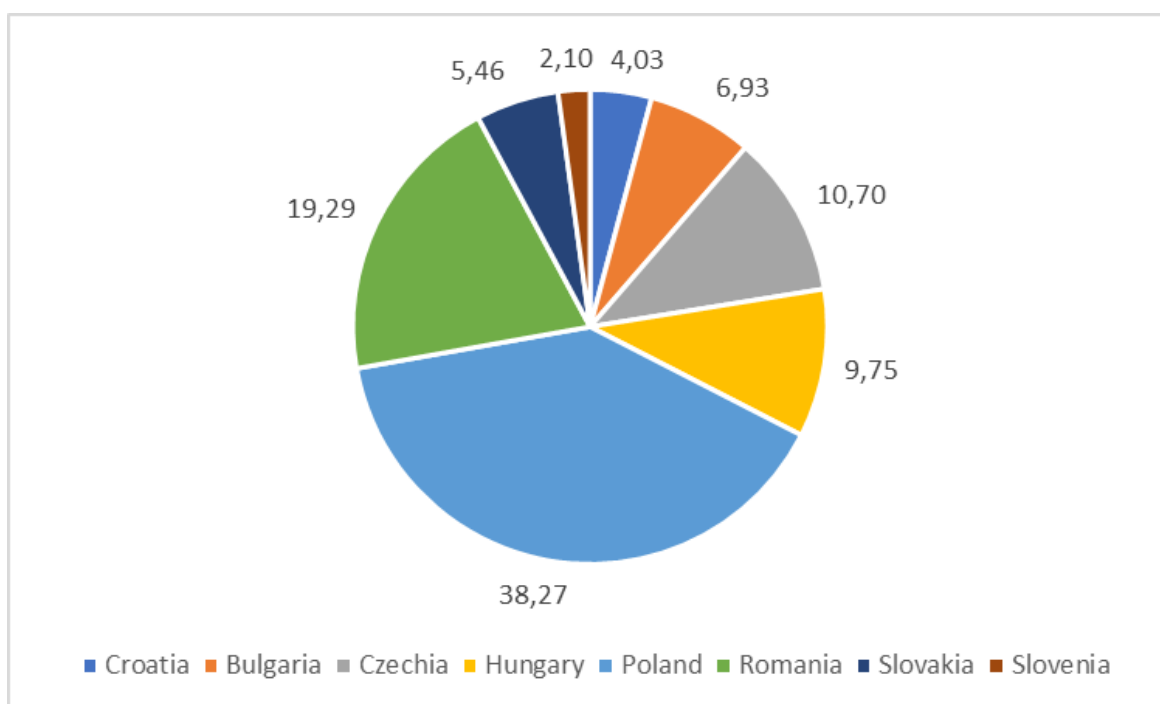
Source: by author (2022)

Chart 42: Share of gross written premium, by country, 2020
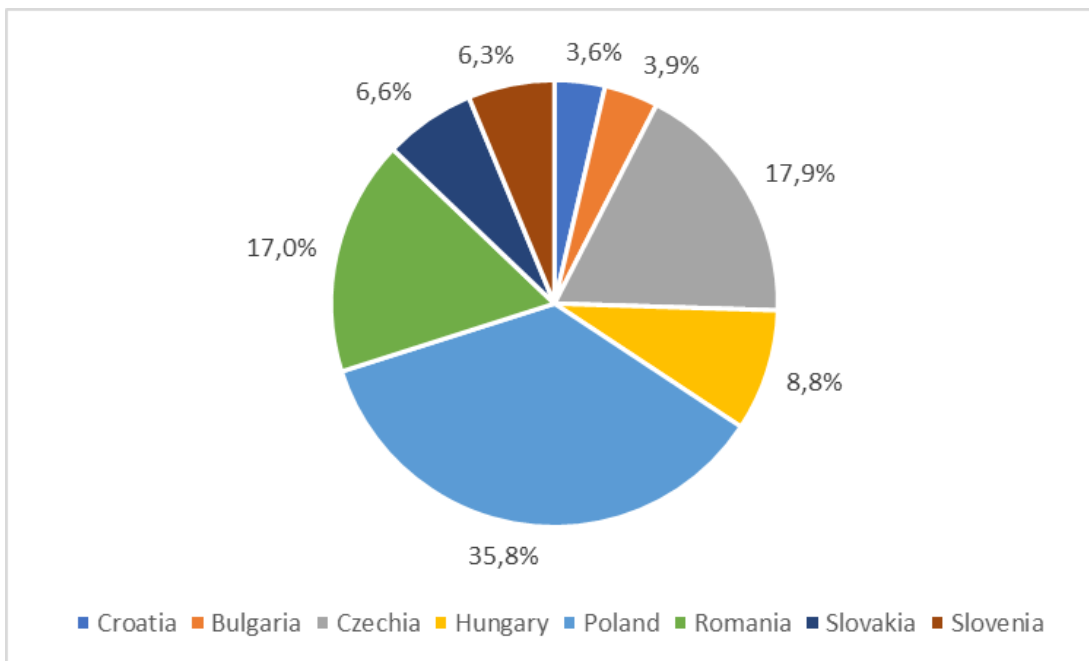
Source: by author (2022)

Chart 43: Share of GDP, by country, 2020
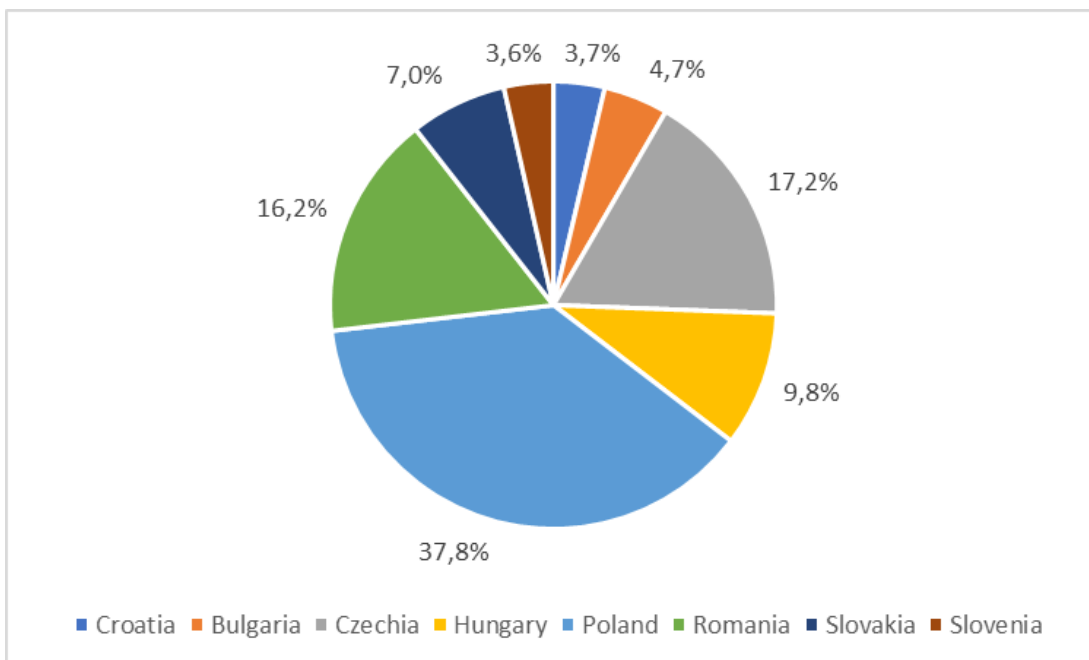
Source: by author (2022)

Chart 44: Insurance density = GWP/capita (right scale) and insurance penetration=GWP/GDP (left scale), by country, 2020
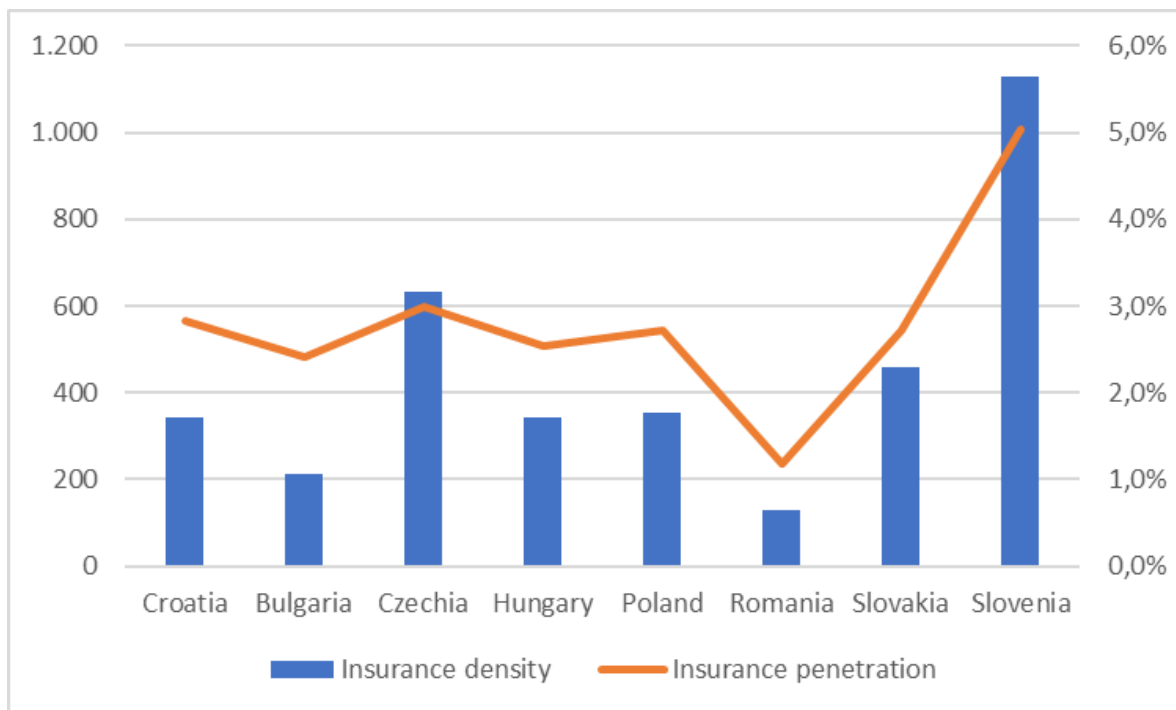
Source: by author (2022)

Croatia shows an insurance penetration of 2,8% of GDP whereas on the other side of the spectrum is Slovenia with a penetration of 5,0%. Similarly, the average insurance premium per capita in Croatia amounts to EUR 342 whereas its neighbouring country is already at EUR 1.129. These indicators are also the reason why the insurance markets of both countries are of similar size, although the population of Slovenia is half of the Croatian population.

In terms of market size, by far the largest insurance market in the region is Poland, capturing 36% of the premium. Croatia, as a rather smaller market holds 4% of the region's market. Both these numbers are reflecting the size of the economies and populations.

5.4.   Players in the insurance market of the CEE-region

In the eight countries of the CEE-region which are part of the closer analysis (Poland, Czech Republic, Slovakia, Hungary, Romania, Slovenia, Croatia, Bulgaria) there were more than 200 distinct insurance companies active by the end of 2020, with two thirds of the companies from international origin.

In terms of volumes the insurance market in the region is dominated by international insurance groups, for example by the Austrian companies Vienna Insurance Group (VIG) and Uniqa, the German groups Allianz and Talanx, or the Italian insurer Generali. Nationale Nederlanden, Metlife and Aegon for example follow opportunistic approaches in selected CEE countries only and with a focus on the Life insurance business. The key international insurance groups will be introduced in the next chapter.

However, there are also still local players even with dominant positions and in the individual markets there are international companies and local players fighting for their positions. From the local players, a number that has been decreasing over the past decade, worth mentioning are the following insurers:[169]

- PZU: The Polish state insurer has a dominant position on the Polish market with market shares of 38% in Life and 31% in Non Life while having yet to be privatised. Due to the size of the Polish insurance market with the largest economy in the region, PZU also appears as the largest insurer with a gross written premium of more than EUR 5 billion, although not really being present in other countries than its home territory. Although also being a contender during the privatisation of Croatia osiguranje, PZU has not made any significant insurance acquisitions outside of Poland, yet.

- Zavarovalnica Triglav: Also, the Slovenian state insurer has yet to be privatised and is able to hang on to its dominant position on the Slovenian market with market shares of

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[169] Numbers for PZU and Triglav for the years 2018
    See: Deloitte, CEE Insurance M&A Outlook, 2019

24% in Life and 28% in Non Life. Due to the relative size of the small Slovenian state's economy also Triglav appears as a large insurer within the perimeter of the region by recording premiums of EUR 1 billion, which is also written outside of Slovenia, for example in Croatia.

- Agram Group: The previously already mentioned Agram group with its insurers Euroherc, Adriatic and Agram Life has in the past also appeared as a consolidator and entertains a very strong market position in Croatia with a market share of 22,5% as of 2020. Apart from being active also in Bosnia and Herzegovina, interestingly this group made a the rather exceptional move to enter into Western European markets (Austria and Italy) from their Eastern home market. In total Agram Group is collecting a gross written premium volume of slightly above EUR 400 million.

- Euroins Group: Another independent insurance group in the region is the Bulgarian based Euroins Group with operations in 14 countries, including Bulgaria, Romania, North Macedonia, Georgia and Ukraine. It has expanded its activities to the CIS region and is in total collecting a premium volume of EUR 470 million.

Most insurance markets are in the meantime dominated by international groups where usually the former state insurer has already been privatised. Another exception to this is Dunav osiguranje which still holds a dominant position on the Serbian insurance market and is still controlled by the state.

5.5. Regulatory bodies in the CEE region

Although all the markets of the selected countries are part of the European Union and therefore fall under the EIOPA regime, supervision and regulation of markets is still local and handled by the regulatory authorities specified in the country. These regulators are established by the local lawmakers, and are not entirely consistent throughout the region, being split between either a designated supervision agency or the respective national bank. Therefore, below follows a short list of the insurance regulators of the selected CEE countries:[170]

- Croatia: Hrvatska Agencija za Nadzor Financijskih usluga / Croatian Financial Services Supervisory Agency (HANFA)

- Bulgaria: Financial Supervision Commission (FSC)

- Czech Republic: Czech National Bank (CNB)

- Hungary: Magyar Nemzeti Bank (MNB)

- Poland: Financial Supervision Authority (KNF)

- Romania: Financial Supervisory Authority (FSC)

- Slovakia: National Bank of Slovakia (NBS)

- Slovenia: Insurance Supervision Agency (AZN)

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[170] EIOPA, https://www.eiopa.europa.eu/register-of-national-supervisory-authorities-of-reinsurance-undertakings_en

6. INTERNATIONAL INVESTORS IN THE CEE-REGION

The opening of previously closed markets brought various benefits to the countries of the CEE-region as it helps to improve financial stability in general and more particularly improves efficiencies and quality in the insurance markets and forces supervisory authorities to strengthen their supervision of the respective markets. This relationship is illustrated in the Figure 11.

Figure 11: Benefits of liberalisation for emerging markets
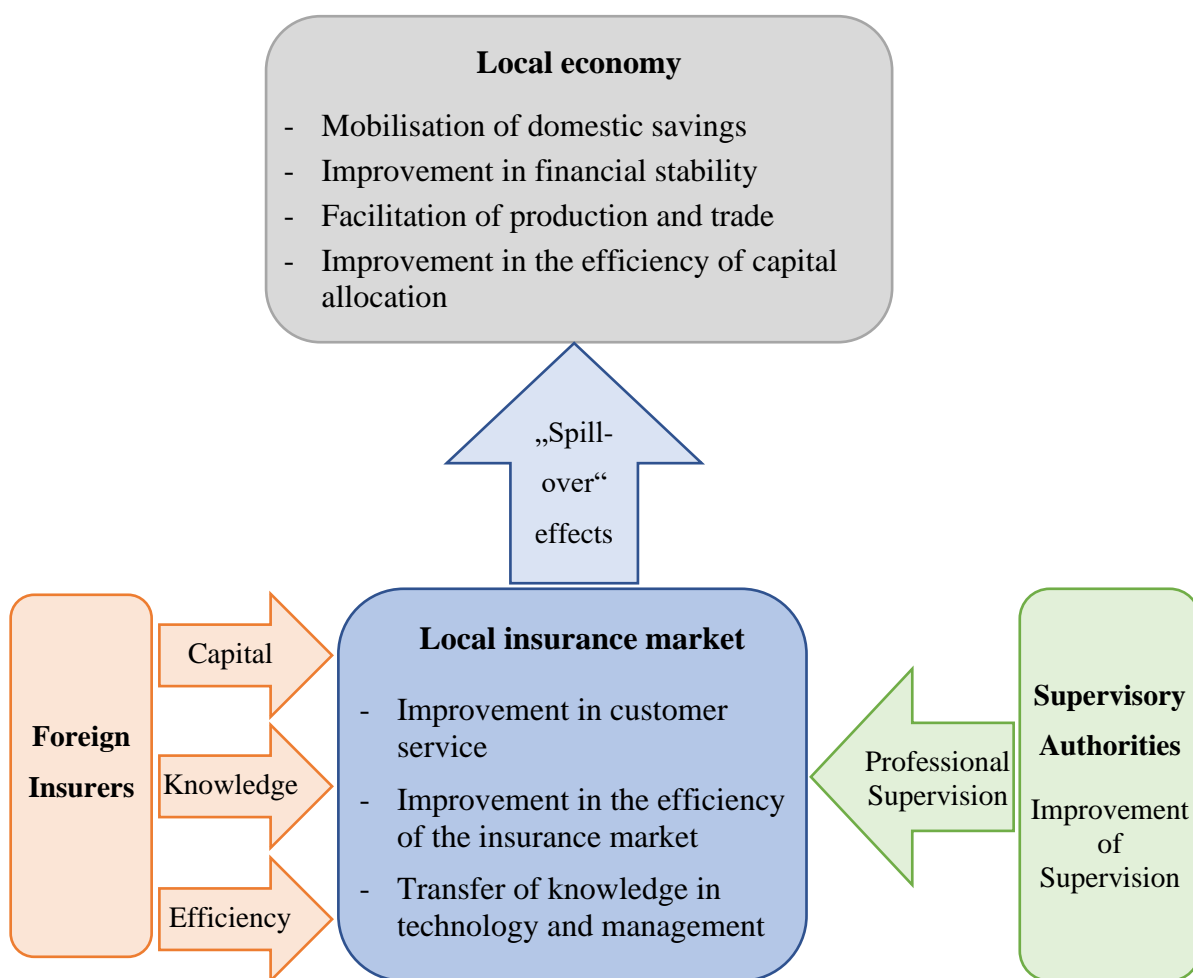
Source: Swiss Re signa 4/2000[171]

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[171] Baur, E., Birkmaier, U., Rüstmann, M., United Nations, Swiss Re, The economic importance of insurance in Central and Eastern Europe and the impact of globalisation and e-business, Zürich, 2001, p. 11

For the aforementioned reasons, the emerging market CEE region is an interesting target market for international investors. The region is being dominated by international insurance groups which have largely been of continental European origin, taking advantage of their geographical proximity. This is even more true for the number of insurance companies from Austria, that have invested into the region, building on geographic proximity and historical ties and in their moves often taking advantage of an early entry and therefore being able to expand their positions throughout the years.

Analysing the market shares of the largest insurance companies for the entire region, Life and Non Life business together, a large number of international companies is arising, although the largest one is a predominantly local state insurer from Poland.

Chart 45: Market share 2018 CEE-region, by companies, Non Life and Life
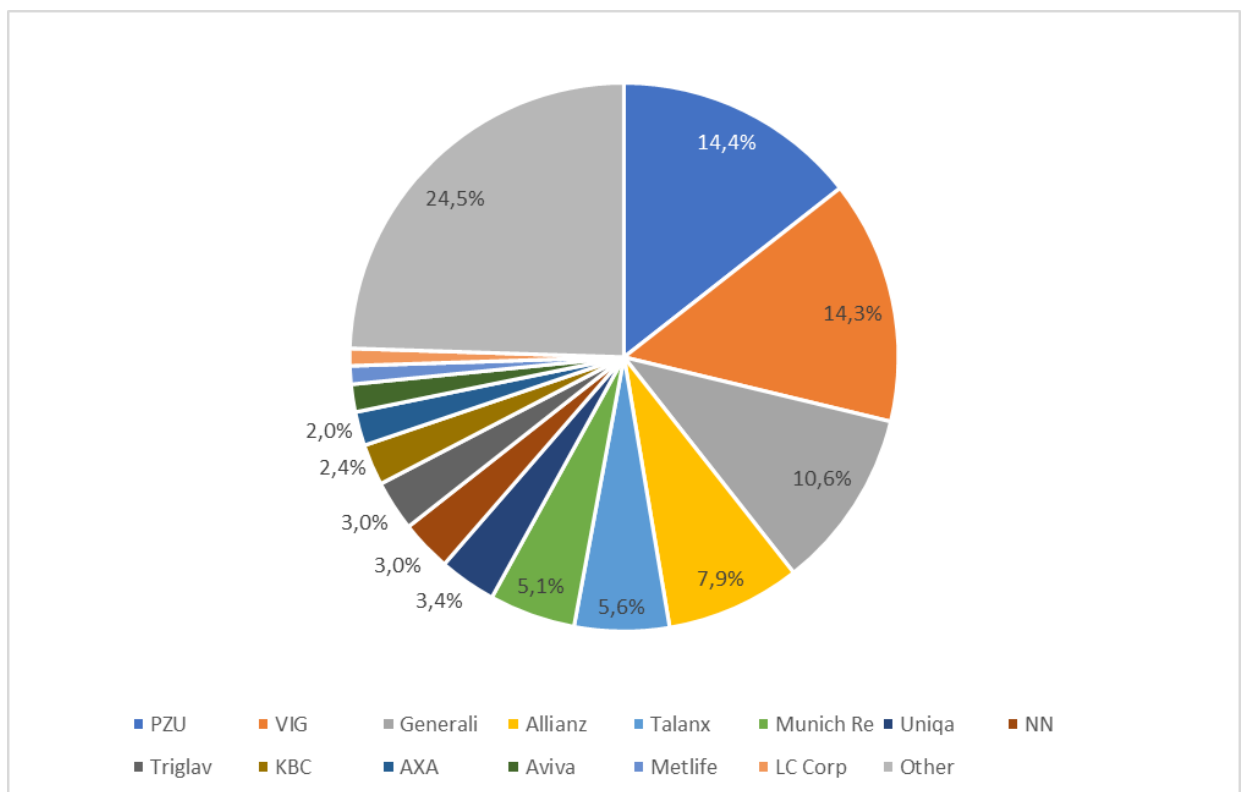
Source: Deloitte/Efma, CEE Insurance M&A Outlook, 2019

6.1. Main international insurance groups in the CEE-region

This chapter will shortly introduce the main international insurance groups currently dominating the region, which are Vienna Insurance Group, Assicurazioni Generali Group, Allianz Group, Uniqa Group, Talanx Group and Munich Re Group (Ergo), as well as mention a few of the others (NN, Metlife, AXA, Aegon, AIG, Zurich) that are or have been active.

Vienna International Group (VIG)

The Austrian VIG is headquartered in Vienna and although listed on the Stock Exchanges of Vienna and Prague with a free float of 28% it is still largely independent and 72%-owned by Wiener Städtische mutual. Its largest market is still Austria, but the group has managed, also thanks to aggressive expansion and M&A activities, to increase the non-Austrian share of its business, which is largely comprised of CEE-countries, to 60% of its annual gross written premium of EUR 10,4 bn.[172] With nine transactions during the period of 2015-2019 VIG has also been the most active acquirer of insurance companies and with the broadest presence in the region. In 2020 it acquired Aegon's insurance, pension fund and asset management business in Hungary, Poland, Romania and Turkey for EUR 830 mn.[173] In Croatia alone, VIG had integrated five insurance companies over time.

VIG has been one of the early movers entering Slovakia and the Czech Republic immediately after the Fall of the Iron Curtain in 1990. Hungary followed in 1996 and Poland in 1998 with the group being guided by the potential of the CEE region as insurance density was lagging behind Western markets.[174]

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[172] VIG Annual Report 2020
[173] Press release, Aegon / VIG 21.09.2021: An update on Aegon's sale of its Central and Eastern European business to VIG – Approval for Hungary still pending.
[174] VIG website: https://www.vig.com/en/vig/market/a-leading-insurer-in-cee.html

Chart 46: Markets of Vienna Insurance Group
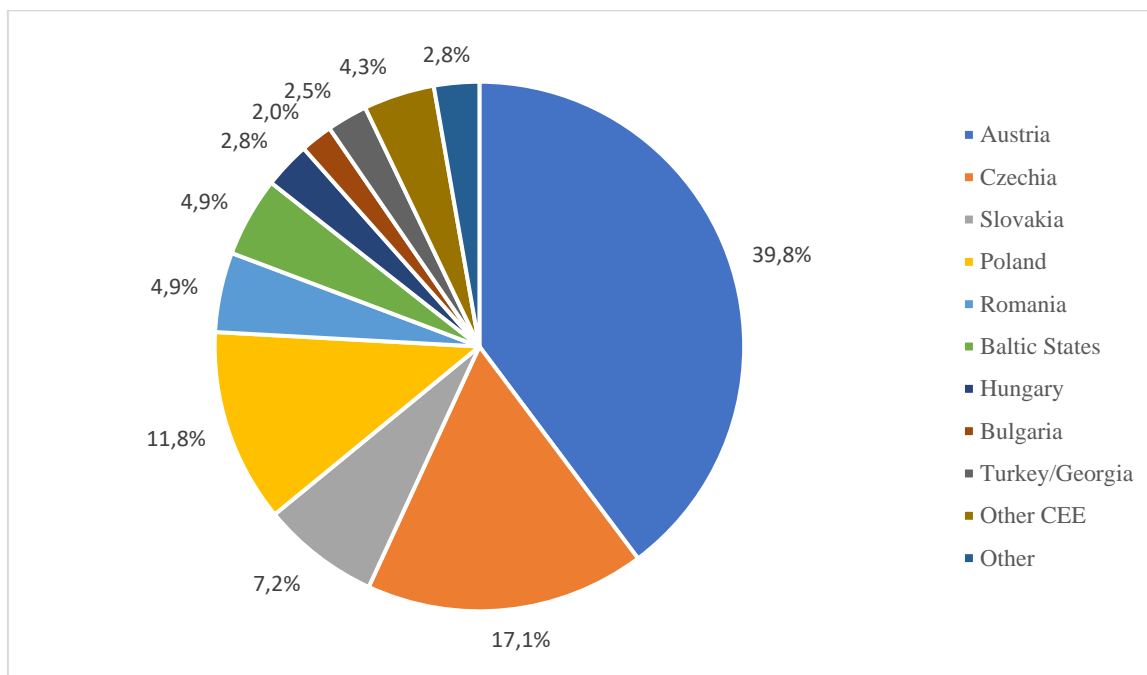
Source: VIG Annual Report 2020

Generali Group

The Italian Generali Group is headquartered in Trieste and listed on the Milan Stock Exchange with a diverse shareholder base and as such a major Italian financial institution with a global gross written premium of EUR 70,7 bn in 2020 by serving 66 million customers.[175] Its largest market is Italy, followed by Germany and France with a very strong position across Europe and operations in Latin America and Asia, where resources for expansion are directed, apart from the CEE-region. In Central and Eastern Europe Generali represents the second largest international insurance group with a premium of EUR 3,9 bn across ten countries.[176]

Generali also understood its opportunities as an early mover into the region after the end of Communism already entering the Hungarian market in 1989, followed by the Czech operations in 1993. Several M&A transactions followed with a few large ones among them, for example the acquisition of the Czech market leader in 2007 (former state insurer Česka Pojistovna), the

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[175] Generali Group, Annual Integrated Report and Consolidated Financial Statements 2020
[176] Generali CEE Holding, Annual Report 2020 (Numbers excluding Austria, Russia, North Macedonia)

takeover of the Zurich operations in the region in 2002 or the acquisition of one of the largest Slovenian insurance groups Adriatic Slovenica in 2018. In Croatia Generali made two smaller transactions by acquiring Libertas osiguranje in 2006 and Izvor osiguranje in 2019.

Chart 47: Markets of Generali Group
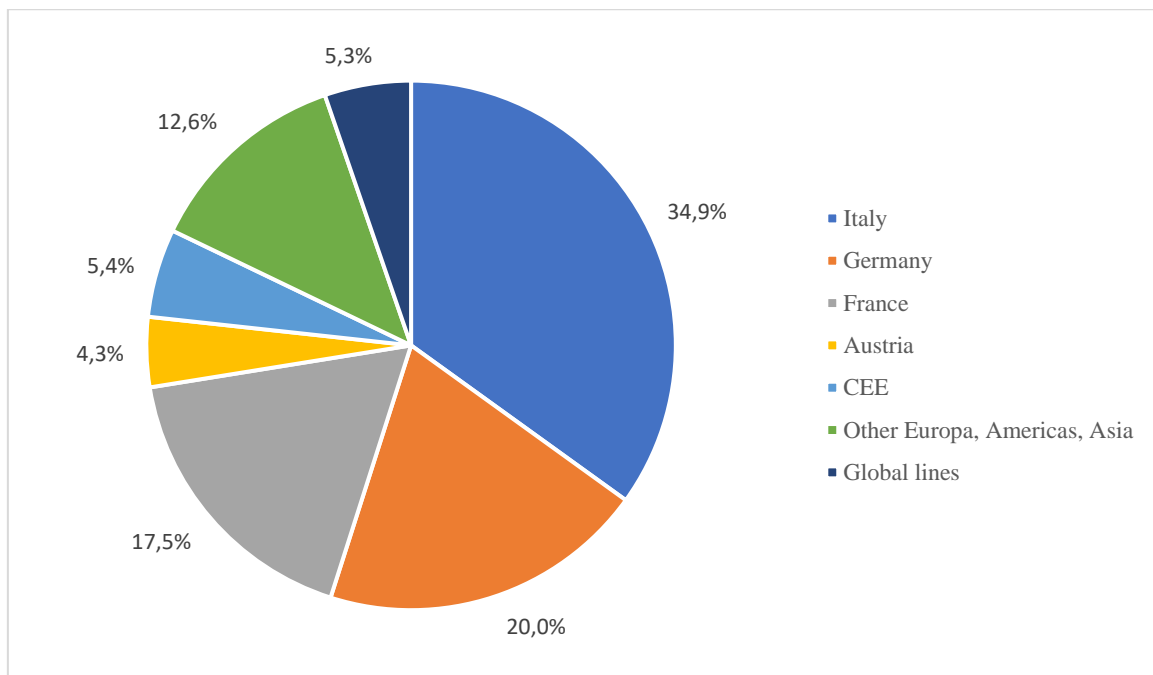
Source: Generali Group, Annual Report 2020

Although the CEE-countries make up for only 5% of the business written in Generali's portfolio, it accounts for double that in terms of profits, which is also why it is an important market for the Italian group.

Allianz Group

The German Allianz Group, headquartered in Munich, is one of the largest global insurers, with a dominant position in its home market and worldwide operations generating total revenues of

EUR 140 bn in 2020 by serving more than 100 million clients.[177] Other important markets for the German group are including Italy, France, Spain and the Asian region and, contrary to Generali, it has a strong presence in the United States. Allianz SE is listed on various German stock exchanges with a diverse retail shareholder base. Apart from the insurance business the group also has significant asset management operations with total Assets under Management of EUR 2,4 trillion.

In the CEE region, Allianz has strong positions in Slovakia, where it acquired the former state insurer Slovenska poistovna and in Hungary, but also in Croatia. In 2021 Allianz acquired the Polish operation from the UK-based Aviva for EUR 2,5 bn.[178]

Chart 48: Markets of Allianz Group
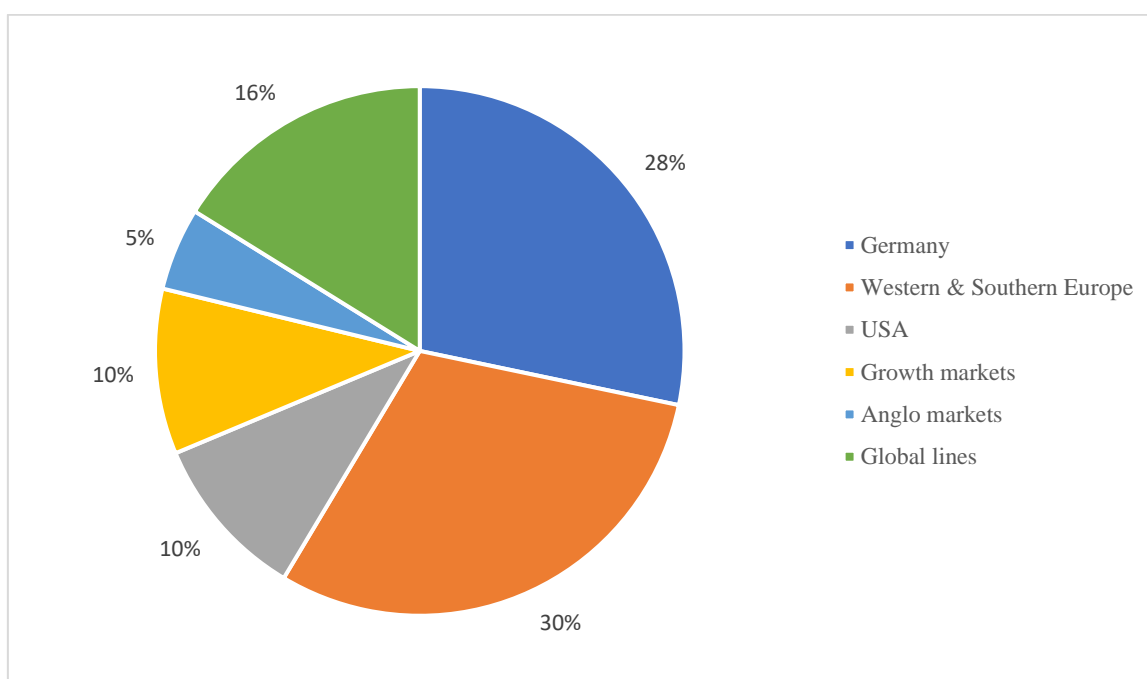
Source: Allianz Group, Annual Report 2020*

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[177] Allianz Group Annual Report 2020, Allianz Group Analyst presentation results YE2020, Allianz Group factsheet
    * Growth markets: Central and Eastern Europe, Asia-Pacific, Latin America, Middle East and Africa, Turkey
[178] https://www.reinsurancene.ws/aviva-sells-polish-arm-to-allianz-for-e2-5bn/

Uniqa Group

Similarly to VIG, the Austrian Vienna-based Uniqa Group has built on the strong position on its home market and from there expanded into many countries of the Central and Eastern European region. Another similarity is in the shareholder structure as also Uniqa is controlled by a special mutual and in the general proximity of the Austrian Raiffeisen Group with a free float on the Vienna stock exchange of 36%. The group recorded a total premium volume of EUR 5,6 bn in 2020 whereof EUR 1,7 bn are generated outside of Austria, thereof EUR 1,4 bn in CEE.[179]

Also active in M&A transactions, Uniqa has acquired the Croatian (and Serbian) business from Baloise/Basler in 2014 and most recently taken over the AXA operations (insurance and pension funds business) in Poland, Czech Republic and Slovakia during 2020 for a price of EUR 1,0 bn. This transaction brought in additional EUR 800 mn of GWP and increased the CEE-share within the portfolio of Uniqa and bringing Uniqa to EUR 2,2 bn of CEE-premium.

Chart 49: Markets of Uniqa Group
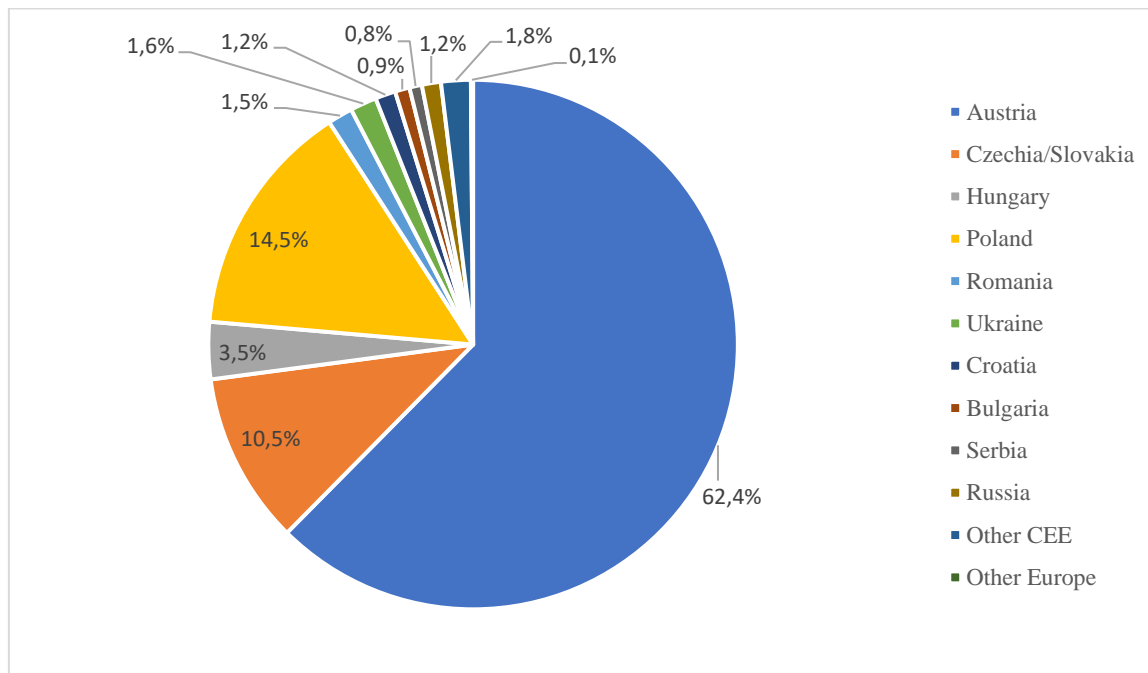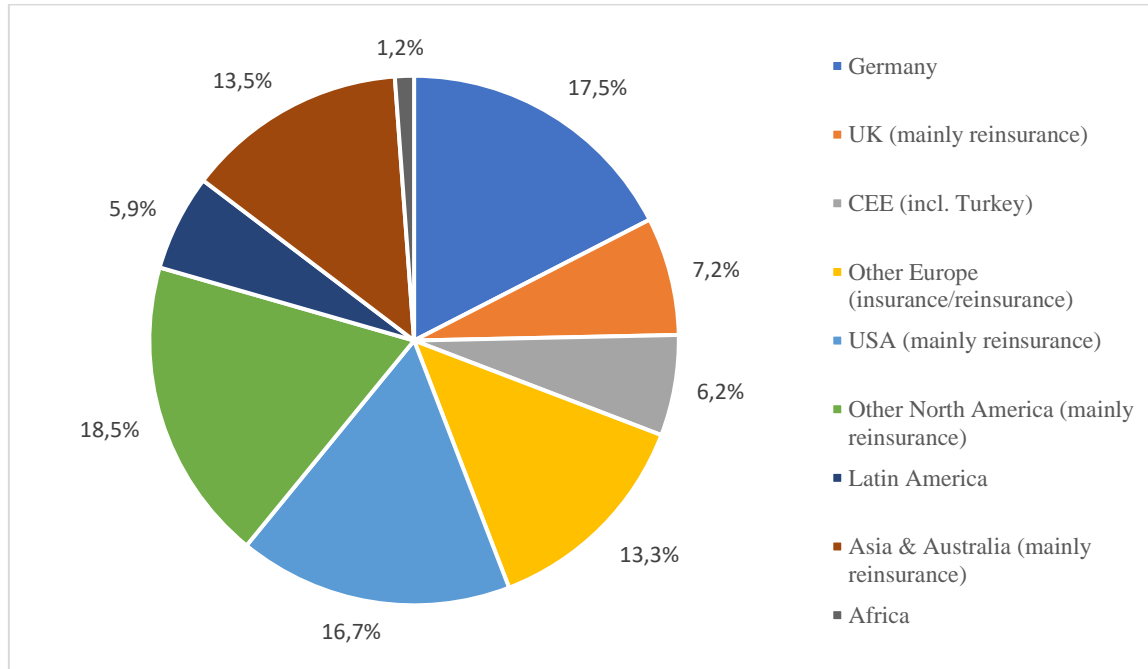

Source: Uniqa Group, Annual Report 2020

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[179] Uniqa Group Annual Report 2020, Analyst presentation YE2020, www.uniqagroup.com,
Presentation: acquisition of AXA's businesses in CEE (Poland, Czech Republic and Slovakia)

Talanx Group

The German Talanx Group is headquartered in Hannover and is a result of the integration of HDI and Gerling in Germany with HDI mutual still as the main shareholder with 79% while 21% are in free float. The group is recording gross written premium in the amount of EUR 41 bn with however a different strategic approach as for example its German competitor Allianz as Talanx operates with a multi-brand strategy across its markets. Talanx is also majority shareholder of one of the leading reinsurers worldwide, Hannover Rück, where it holds more than 50% of the shares.[180]

Due to an aggressive but selected M&A strategy, the group was able to significantly increase its premium volume and outperform the growth of its peers. In the CEE-region Poland is its strongest market where Talanx generates the majority of its CEE-premium, also following the acquisition of WARTA. In the CEE region (here including Turkey) Talanx generates EUR 2,6 bn of primary insurance premium, and another EUR 0,4 bn of reinsurance premium.

Chart 50: Markets of Talanx Group

Source: Talanx Group, Annual Report 2020

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[180] Talanx Group Annual Report 2020,
Talanx Capital Markets Day presentation 2021

Ergo / Munich Re Group

The German Ergo is part of Munich Re Group, the leading global reinsurer, which is listed on the Munich stock exchange with a free float of 100% and generates total gross written premium EUR 54,9 bn. For several years Ergo was very active in the CEE-region, also in Croatia, but in the past few years left several of these markets, like for example Croatia where the Ergo companies were sold to Sava Re or Slovakia and Hungary which was sold to Generali. Now Ergo / Munich Re has kept a relevant position only in the largest of the CEE markets, Poland.[181]

Chart 51: Markets of Munich Re Group
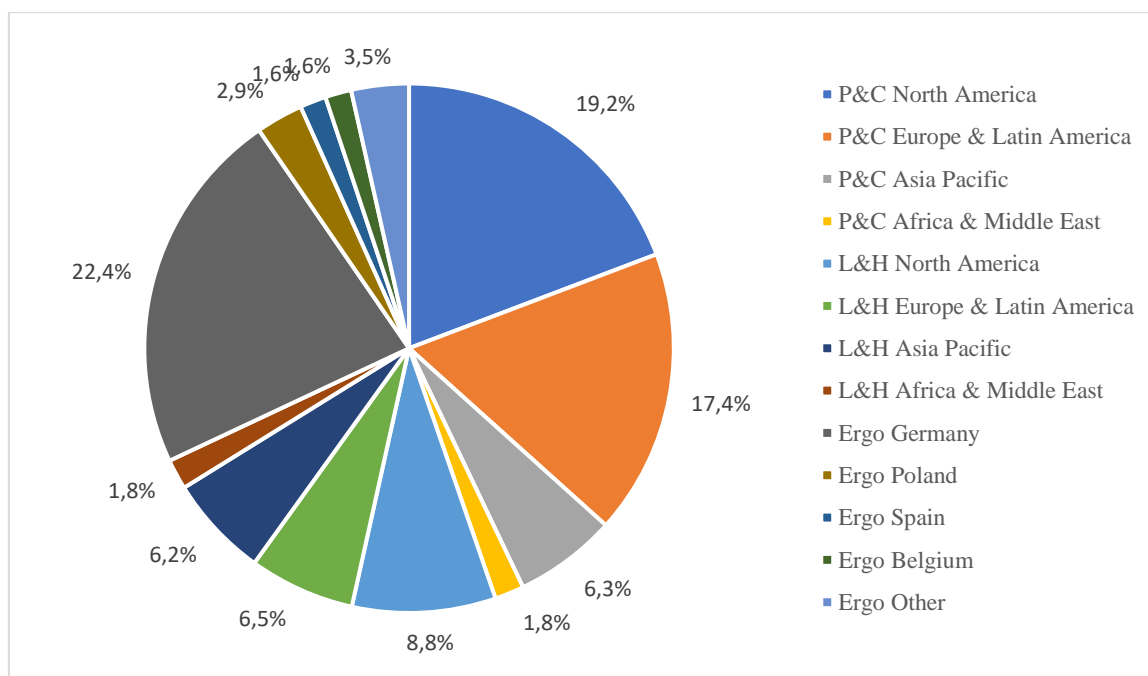
Source: Munich Re Group, Annual Report 2020

International vs regional groups

Although the companies introduced here, all have moved beyond their home market, it is worth making a minor distinction. Whereas Allianz, Generali and Talanx can be regarded as true

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[181] Munich Re Annual Report 2020
    Munich Re Analyst Presentation Equity Story 2022, www.munichre.com, www.ergo.com

international and in fact global players, VIG and Uniqa are rather regional insurers with a strong market position in Austria and CEE.

The latter ones, then purely Austrian companies recognized the growth potential of the opening of the former communistic countries and their insurance markets and initially opportunistically entered the emerging markets of the CEE region through direct investments. When their approaches became determined they were able to increase their presence to 18 (VIG) and 15 (Uniqa) countries across the region and whereas VIG usually applies rather a multi-brand strategy, Uniqa follows a single brand approach.[182]

Other international and regional groups[183]

Other international insurers followed a rather opportunistic and selective approach, for example Metlife is focused on the Life insurance business in specific markets like Poland, Czech Republic and Slovakia but also present in Bulgaria, Hungary and Romania.

Nationale Nederlanden (NN), the Dutch financial group, is active in Life insurance (and pension) business in Slovakia, Czech Republic, Poland and Hungary. KBC, the Belgium bank and bancassurance group has strong positions where they operate together with the banking side of the group (Czech Republic, Slovakia, Hungary, Bulgaria) focused mainly on this specific distribution channel.

The Dutch group Aegon decided to exit the CEE region and in 2020 sold its insurance, pension fund and asset management business in Hungary, Poland, Romania and Turkey to VIG. Previously Aegon had already disposed of its Slovak and Czech business which was acquired by NN in 2018.

As mentioned previously, one of the largest global insurers, the French AXA Group has recently sold its CEE business in Poland, Czech Republic and Slovakia to the Austrian Uniqa Group. Another global insurance group, the Swiss insurance group Zurich, had already disposed its

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[182] Schuh, A., Mayerhofer, F., Vienna University of Economics and Business, Case study UNIQA vs VIG: What is the right brand strategy for Central and Eastern Europe?, Vienna, 2020, p. 1-13
[183] Companies' websites, press releases, Annual Reports 2020

CEE-operations at the beginning of the Millennia. The UK insurance group Aviva, in a massive strategic shift is selling its non-core business units and as part of this move it disposed of its large Polish business in 2021.

Other regional groups with wide reaching geographical presences across the CEE region include the Austrian smaller groups Grawe and Merkur with gross premiums written of slightly above EUR 300 mn and just below EUR 100 mn, respectively.[184] Worth noting is the fact that Grawe in many of the countries of the CEE region was one of the first international companies to do business.

<u>Sellers</u>

AIG (United States), Munich Re (Ergo, from Germany), AXA (France), Aviva (UK), Aegon (Dutch) and Zurich (Swiss) have been among the large international or global insurance groups which have decided to exit some of the markets or the entire region. The lack of achieving scale-efficiency, which as stated previously is crucial for the insurance business, was often expressed as a driving reason behind such a strategic decision.

As becomes visible from this chapter, international involvement has been even higher than what meets the eye when looking at current market statistics. From entering into new markets to exiting them again, often it were the international insurance groups being involved in the M&A transactions, and when exiting again, also on both ends of the transaction.

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[184] Annual Report Grawe Group 2020, Annual Report Merkur Group 2020 (Merkur in Slovenia, Croatia, Serbia)

6.2. Market positions of international insurance groups in CEE

From the previously shown top-14 insurance groups within the CEE region, most of them are international groups, except for the two state-owned companies PZU and Triglav. Remarkably, although the insurance industry is a highly fragmented market across the globe, these 14 companies hold three quarters of the insurance market Life/Non Life in the CEE region. Given the massive size of the Polish economy and its insurance market, its market leader PZU is even the largest insurance company in the entire region. There are even a few more international companies active in the region which didn't make it onto this list. This means, the share of really local one-market companies is small and decreasing.

In the two Tables 15 and 16 below, the top 10 insurers are shown for the CEE region, split by market positions in individual countries, separate for Life and Non Life. It appears, these lists are dominated by international insurance groups. The only two players originating from the CEE-region are PZU (Poland) and Triglav (Slovenia), whereby PZU has a market leading position in the largest market but almost no international engagement while also Triglav has kept its market dominating position in its home country and has some medium engagement in Croatia and Serbia.

Table 15: Ranking of the leading insurers by total Gross Written Premium in respective countries, Life business, 2018, CEE-region

Rank	Life insurer group	Change in rank (17-18)	PL	CZ	SK	HU	RO	SL	HR	BG	SRB	EE	LV	LT	Nr. of countries with presence	Total CEE GWP (EUR m)
1	PZU		1											6	2	1 940
2	VIG		6	1	1	5	2	9	2	1	2	3	4	4	12	1 847
3	Generali		7	2	4	3	6	3	4		1				8	1 127
4	NN		5	3	3	1	1								5	1 087
5	Allianz		10	5	2	6	4		3	2					7	765
6	Talanx Group	▲ 2	3			2									2	615
7	Aviva	▲ 1	2											2	2	561
8	Metlife	▼ -1	8	6	n.a.	9				5					5	378
9	LC CORP	▼ -3	4												1	366
10	KBC			4	5	12		5		4					5	338

Source: Deloitte intelligence, CEE insurance M&A outlook, 2019

Table 16: Ranking of the leading insurers by total Gross Written Premium in respective countries, Non Life business, 2018, CEE-region

Rank	Non-life insurer group	Change in rank (17-18)	PL	CZ	SK	HU	RO	SL	HR	BG	SRB	EE	LV	LT	Nr. of countries with presence	Total CEE GWP (EUR m)
1	VIG	▲ 1	4	2	2	7	1	7	7	4	4	6	1	2	12	3 323
2	PZU	▼ -1	1												1	3 262
3	Generali		7	1	3	2	6	2	4	1	2				9	2 700
4	Allianz		5	3	1	1	3	8	3	6					8	2 100
5	Munich Re		2	9				9	10			4	5	3	7	1 683
6	Talanx Group		3			12										1 398
7	Uniqa		8	5	4	5	7		5	10	6				8	932
8	Triglav Group							1	6		5				3	699
9	KBC	▲ 1		4	6	6		11		3					5	537
10	AXA	▼ -1	6	7	n.a.										3	515

Source: Deloitte intelligence, CEE insurance M&A outlook, 2019

The top international players like Allianz, AXA, Generali or Zurich have all been invested into the region, although some of them have already made their exit, like a few other international groups. It is safe to say that all of them have been looking for size and top positions in the various markets in order to reap economies-of-scale effects in the otherwise smaller markets. Therefore, all of them have applied M&A transactions to achieve the necessary volumes, but for example AXA, Zurich or Munich Re (Ergo) have also made the decision to exit again when recognizing they have not been able to reach the necessary targets in these countries.

Apart from the larger Austrian groups (Vienna Insurance Group VIG, Uniqa) who are within the top investors in the region, there are also the smaller Austrian insurers which have no larger international presence outside of the region (Grawe, Merkur) but have taken early moves into the CEE region when its markets opened up. They built their business usually slowly but steadily, but don't hold dominating positions in the local markets.

On the other hand, the larger international groups have had mixed approaches, but trying hard to get within the top positions of the respective markets. Slightly differentiating from this have been the more Anglo-Saxon orientated companies like Aviva or Metlife, specifically following

an opportunistic approach by moving into the largest economies of the region (eg Poland) and oftentimes focusing on the life insurance business. Something similar was also applied by the financial institutions originating from the Netherlands, like Nationale Nederlanden (NN) and Aegon.

So, why are insurance companies looking for ways to expand in the CEE region?

Obviously, these corporations are exploiting opportunities, but – looking at their behaviours and transactions in more detail – it becomes even more clear, that most of them are also looking for economies of scale within their specific CEE strategies. Since most markets in the region, except maybe Poland and the Czech Republic are rather small, these companies are looking for ways to reach critical mass relatively quickly, for example often through M&A transactions or strategic bancassurance distribution agreements.

As observable in the past, in case these international corporations do not reach their targets of critical mass and therefore also profitability, they are willing to exit again from certain territories or even the entire region.

The next chapter will explore the steps of the market development these international investors have been critically involved in and have influenced the development of the individual markets in the CEE region.

6.3. Strategic involvement of international groups in key steps of insurance market development

As pointed out in the previous chapters, the countries of the CEE region have transitioned from a centrally controlled economy to advanced market economies. Investors and in particular international investors have played and are still playing a crucial role in this development of emerging economies. Usually, these markets had been dominated by state-controlled insurance companies and competition was not exercised. Attracted by the growth potential of these newly available markets, many international investors were looking to exploit these opportunities. The financial crisis somewhat stopped the growth fantasy temporarily but from 2015 the economies of the CEE countries have again been achieving higher growth rates than the western EU members.[185]

Towards the end of the Nineties, the major reform component in the insurance arena in the CEE-region was centered around market liberalisation, abolition of state-monopolies, granting access to international insurers and developing adequate supervision for the sector. There are various benefits of market liberalisations by increasing levels of competition which forces the market participants to consider specialisations in their comparative advantages, therefore altogether raising the market levels. International companies can further contribute to improved efficiency of local insurance markets through superior customer experiences, launching new products and services, transferring innovation and technological solutions from abroad and managerial skills. Foreign insurers often come with greater financial strength and strong risk management and diversification capabilities. As a reliable insurance market is crucial for attracting foreign direct investment, international engagement in insurance supports achieving financial stability and facilitates trade and commerce in developing countries.[186]

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[185] Schuh, A., Mayerhofer, F., Vienna University of Economics and Business, Case study UNIQA vs VIG: What is the right brand strategy for Central and Eastern Europe?, Vienna, 2020, p. 2-4

[186] Baur, E., Birkmaier, U., Rüstmann, M., United Nations, Swiss Re, The economic importance of insurance in Central and Eastern Europe and the impact of globalisation and e-business, Zürich, 2001, p. 12

It is not exclusive to emerging markets of the CEE region that the opening of the market will lead to an increase in the number of foreign insurers, more competition and following structural changes, as this also happened expectedly in the Western – and now considered "mature" – markets, for example in Germany.[187]

These international investors, together with the rise of private local companies, have played an important role through the application of different strategies, whether by starting green-field operations in new markets or through M&A transactions. Participation in privatisations of formally state-owned insurance companies have equally contributed to the transformation of the insurance markets as the opening of formally regulated insurance business in motor third party liability.

The United Nations Conference on Trade and Development (UNCTAD) issued already in the year 1994 a paper on the topic of insurance in developing and emerging countries with a specific focus on the elements privatisations and market liberalisation. The report clearly points out the importance of a market-oriented insurance sector for the development of a market economy. Furthermore, it discusses the impact and outlines the benefits of privatizations of insurance companies and insurance market liberalizations, citing the stronger efficiency as the most important motive for privatisations in the insurance sector.[188]

Privatisations of financial institutions in the region mainly followed three models, either vouchers were distributed to the population of a country, or shares were privately placed with a strategic, and often foreign, investor, or via an initial public offering (IPO).[189] Countries have differently applied these models, but undoubtedly a somewhat close relationship between privatisations and foreign direct investment arose with privatisations being a major source of international inflows. Several studies and a survey from the United Nations Conference on

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[187] See also: Kanthack, E., Für eine Liberalisierung des deutschen Versicherungsmarktes, Kieler Diskussionsbeiträge, No. 132, Institut für Weltwirtschaft, Kiel, 1987, p. 24-33
Rabe, T., Liberalisierung und Deregulierung im Europäischen Binnenmarkt für Versicherungen, Berlin, 1997

[188] See more: United Nations, Insurance in developing countries: Privatizations of insurance enterprises and liberalization of insurance markets, 1994, p. 3-6

[189] Consigilio, J., The Balkan and Baltic experience of financial services privatization, eabh Papers, No. 14-09, The European Association for Banking and Financial History, 2014, p. 3

Trade and Development found that FDI had a positive impact on improving efficiencies and corporate governance and in particular the involvement of international investors was more of a guarantee for fast restructuring.[190]

Privatisations of state-owned insurance companies

Table 17 summarizes the main privatisations of state-owned insurance companies which have taken place in the following CEE countries (excluding Baltic states):

Table 17: Privatisations in the CEE-region

Country	Company	Owner	Origin owner	International
Poland	Warta	KBC, then Talanx	Belgium, then Germany (Japan)	Yes
	PZU			Not privatised
CZ	Česka Pojistovna	PPF, then Generali	CZ, then Italy	yes
Slovakia	Slovenska Pojstovna	Allianz	Germany	yes
Hungary	Hungary Biztosito	Allianz	Germany	yes
Romania	Asirom, BCR	VIG	Austria	Yes
Slovenia	Triglav zavarovalnica			Not privatised
Croatia	Croatia osiguranje	Adris	Croatia	No
Bulgaria	DZI	KBC	Belgium	Yes
	Bulstrad	VIG	Austria	Yes
Serbia	Dunav			Not privatised
	DDOR	UnipolSai	Italy	Yes

Source: Companies' websites, preparation by author (2022)

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[190] Kalotay, K., Hunya, G., Privatization and FDI in Central and Eastern Europe, in: Transnational Corporations, Vol. 9, Nr. 1, 2000, p. 39-41

Most former state-owned companies are privatised by now and are controlled by international insurers, predominantly from Germany, Austria and Italy. Some of them have taken advantage of an early move into a new market and exploiting a dominating market position and therefore achieving the desired economies-of-scale effects.

This is not the case for the states of former Yugoslavia, however. Interestingly, some countries have withstood the push for privatisations. For example, in Slovenia the state is still holding on to their ownership of Triglav and remaining a shareholder of Sava Re, the same applies for the largest Serbian company Dunav. Also Poland has shown no interest in selling their stake in the dominant insurer of the country PZU.

On the contrary, these countries are resisting the forces for privatisations but rather taking advantage of controlling such major financial institutions. To evaluate in which ways, however, would go beyond the scope of this research.

Croatia found some middle ground as in the privatisation process a domestic investor gained control of Croatia osiguranje. Therefore, it remains, that Croatia osiguranje is the only former state monopolist that is privatised but not in the ownership of an international group.

Liberalisation motor third party liability

This form of insurance is mandatory for users of a motor vehicle and therefore has traditionally been the most important business segment in developing markets. The liberalisation of prices and the liberty of price-setting for the segment of Motor Third Party Liability insurance for vehicles is another strategic step in the development and opening of insurance markets of CEE countries. Driven by European Union regulation[191], for Western markets this happened much sooner and some CEE countries moved faster than others in this respect.

The transition from regulated or state-set prices to free pricing is particularly challenging as insurers are required to define the fair price for this product and coverage but often lack

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[191] Previously, Directive 2009/103/EC

experience and reliable data. Establishing such prices requires technical knowledge and access to methodologies often built over time with liberalised markets becoming then rather sophisticated in terms of pricing and risk selection.[192] Here, international insurance groups do have a significant advantage of know-how and access to data as they can draw on information and skills from other countries that have already gone through such a process.

Therefore, also here, mostly international insurance groups that have entered markets have taken advantage of the liberalisation process of the market for third party liability motor insurance that came along with the transition to advanced market economies. This we have seen for example in the Czech Republic, Slovakia, Bulgaria, Romania, Slovenia or Croatia. Often this process has led the former market leader to lose some of its historic market share.

This by itself has had significant impact on the domestic insurance market and created temporarily significant price decreases and shifts in market positions. It increased competition after ratification of EU directives and is often followed by deeper restructurings of the markets.[193] Historically, the markets in this region have heavily relied on motor insurance also in terms of profitability and while other business lines where neglected, the insurance sector in this process of liberalisation lost an important source of profitability.

Recap of the strategies of the large international groups

The larger international insurance groups have exploited the entire mix of possibilities for their strategic attempts to expand in the CEE region. While some were early movers and set up their operations in the countries, all of them have also tried to acquire domestic players, whether state-owned companies or private ones.

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[192] Tomeski, B., Development of Motor Third Party Liability Insurance Market in Terms of Changing Regulation, in: Social and Behavioral Sciences 44, 2012, p. 200 – 203

[193] See, for example, the Czech market: Nečas, S., Čejková, V., Czech Insurance Market before entering the European Union, in: Ekonomický časopis 51/2003, p. 1217 - 1233

In particular VIG has both been an early mover, but also been rather active on the M&A side. Allianz made similar efforts, but it appears that for the largest insurer it had less of a priority than for the previously local insurer from Austria, VIG, which built its internationality mainly on the CEE region. Generali has also early on been active in the region, but for some period moderately less active in attempts of an-organic growth, although this has changed in recent years with several acquisitions across the region (Slovenia, Poland, Slovakia, Croatia).

AXA has been present in some countries but has re-directed its attention to other markets and exited from the CEE region. Zurich was active early and has also made an exit early on, Ergo has tried and is pulling out again. Aviva is re-focusing its entire business and has also just exited the region.

In conclusion of the qualitative review of the markets and the strategies of their participants, the international insurers have had significant impact on the development of the insurance markets, through:

- Their participation in M&A transactions.
- Their participation in market and MTPL liberalisations.
- Know-how transfer.
- Education of the early market movers.

Following the review of the engagement of the international insurers in the Central and Eastern European region, the focus in the next chapter lies now on the econometric model with the objective to establish a quantifiable connection to the identified research problems and the impact of these international groups on the development of the CEE insurance markets.

7. RESEARCH MODEL AND RESULTS

7.1. Introduction

Econometrics encompasses research tools for various disciplines ranging from business areas like finance, accounting or marketing but extends to wider areas of the social sciences stretching to politics and sociology. It is at the center of analysis for many of these disciplines. Econometrics, irrespective of the field of interest, examines how selected variables are connected and interrelated. These relationships are described by expressing them in a mathematical function and allows the researcher to establish projections and assess how much a change in one variable is affecting change in another variable. Econometrics also includes testing the hypotheses about relationships between variables and thereby deepen the understanding of these interrelations. Research questions are answered and hypotheses tested by using statistic tools on data and theories from the social sciences.[194]

There are various types of data for an econometric model, depending on a) the level of aggregation (micro vs macro), b) whether it is a number of flow or stock and c) whether it is quantitative or qualitative data. Time-series data is gathered over a specified time interval in a regular pattern. If data of the same variable is collected over different sample units (for example, countries or companies), they are referred to as cross-section data.[195]

Econometric models are based on measurable data and help in drawing conclusions on the relationships of such measured variables. It is a common desire to feed the model with more and higher quality data but given that models often have to deal with the shortcomings of data,

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[194] Hill, C., R., Griffiths, W., E., Lim, G., C., Principles of Econometrics, Melbourne, 2017, p. 1-5
[195] Also there: p. 7-10

several statistical methods have been established to overcome this. These statistical techniques include methods of the least square methods, which are also applied here.[196]

Often relations and dependencies of economic variables are such, that one endogenous variable is dependent on more than one independent (exogenous) variable. Although these functions are not always linear, it is possible to transfer them into linear functions for the analysis, applying multivariate regressions. However, despite applying various statistical tools for the analysis, it remains very important to understand the data beneath the model and not just merely run regressions on a set of numbers.[197]

In the econometric model for this research, we rely on quantitative data, collected over a time series and cross-sectionally. The selected variables are extracted over the specified time interval in an annual pattern and by country, meaning that the countries are the sample units which will then be compared to each other.

7.2. Econometric model

Most important ingredient for the econometric model is the data necessary for performing the statistical analysis. The data is extracted individually by country as there are no European institutions that collect all the data at one specific point. This is unfortunately neither the case for the countries themselves, as in some countries the information necessary for the model, is only partially available or not available for the entire time series. Extensive research has been invested to find the best adequate data sources and to minimize existing data inconsistencies between the various institutions. Therefore, it was attempted to extract the data from the original source and owner of the data, usually relying on national supervisory authorities and national banks as well as national insurance associations.

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[196] Novak, B., Sistemska dinamika i ekonometrijski modeli u modeliranju ekonomskih sistema, Ekonomski Vjesnik, 1 (1), 1988, p. 87-94

[197] See also: Schneeweiß, H., Ökonometrie, Heidelberg, 1990, p. 89-92

Mainly the two tools correlation and regression are employed for the statistical analysis. The first one, the correlation coefficient is a unit-free measure of the strength but also the direction of a linear relationship between two parameters and is not influenced by the observed values. It is calculated by dividing the covariance between two variables with the product of their standard deviations. The output of the correlation coefficient lies between -1 and +1, where the first one indicates a perfectly negative relationship and the latter a perfect positive relationship. A coefficient of 0 indicates that the two variables are independent to each other and a coefficient above (+/-) 0,5 implies a moderate relationship. The correlation analysis however does not reveal any causality in the effects between two variables, for which the regression analysis can help.[198]

The regression tool allows estimating the impact of one or more independent variables (X-variables) on a potential dependent variable (Y-variable) by looking for the least-squares estimates with values minimizing the sum of squares of residuals. Whether dependent or independent is part of a statistical hypothesis and can only be tested as previously assumed. In the econometric model of this research times series data from 2003 to 2020 is analysed across the selected CEE countries. In order to test the adequacy of the statistical relationship between the variables in the model, the ANOVA results are considered, the significance of the coefficients is assessed through the standard deviation of the residuals, hence the dispersion around the estimate.[199] The validity of the regression analysis is assessed by looking at its significance and t-stats as well as p-values. If p-value were above significance level, this would indicate that there is no relationship with the independent variables and the Null hypothesis, a coefficient of zero indicating no relationship, could be rejected.[200]

The coefficient of determination R square (R^2) represents the share of a change in Y that can be explained by a variation in X, which is the sum of squares due to regression divided by the total sum of squares. In a simple regression R and R^2 are identical. A multiple regression is

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[198] Watsham, T., J., Parramore, K., Quantitative Methods in Finance, 2005, p. 66-67

[199] t-statistics and testing of significance: Watsham, T., J., Parramore, K., Quantitative Methods in Finance, 2005, 194 – 200

[200] t-stats equals coefficient divided by its standard error, SS (sum of squares) and MS (mean squared errors): t-stats, p-value, lower and upper intervals provide better understanding of validity and variables of model

useful where the variation of a dependent needs to be explained by more than one independent variable, which is often the case in reality. The coefficient of determination R^2 can then be adjusted for the number of observed independent variables.[201]

For example, in a relationship with an R^2 of 0,9, 90% of the changes of the dependent variable can be explained with the behaviour of the independent variable(s). Of course, adding too many variables bears the risk of becoming less precise and overestimating the dependent.

The econometric model is organizing economic, financial and insurance-specific data from the selected CEE-countries including Croatia and examining them in respect of the supporting hypotheses and the main hypothesis. The results of the supporting hypotheses 1-3 will allow the confirmation or dismissal of the main hypothesis.

The critical parameters, which are taken into account in this analysis, include the following market development indicators per country:

- Development of market share of international insurers

- Insurance penetration (also international insurers' penetration)

- Insurance density (also international insurers' density)

- Share of MTPL in GWP (also available share of MTPL/Casco/Life in GWP)

For each supporting hypothesis the most relevant indicators are selected and their relationships statistically analysed with the tools of correlation and regression, their correlations assessed and their connection to an independent variable tested in a simple linear regression and also a multivariate linear regression.

Comment on data availability and quality:

In order to obtain the highest possible reliability of data quality, it was attempted to obtain as much as possible data from the primary source, hence from the regulatory and supervisory bodies of the specific countries, their national banks, as well as the individual insurance

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[201] See further, also there: Watsham, T., J., Parramore, K., Quantitative Methods in Finance, 2005, p. 188

associations and the national Stock Exchanges. If certain data were not available from the aforementioned institutions, further sources were used, for example the World Bank, National Statistics Offices, European Insurance Association, individual companies' publications, relevant research paper as well as data providers and portals. The data sources for the econometric mode are listed at the end of the paper.

In individual countries, obtaining historic data back to the start of the time series posed a challenge. Reasons could be that the regulatory environment was changed and the historic reports were no langer made available. Sometimes inconsistent definitions were found to be applied by different institutions within a given country. Therefore, only, in rare cases, for specific countries and individual years, professional estimates (considering discussions with market experts) were applied.

Overall, the econometric model consists of

- 30 parameters
- In a time series from 2003 – 2020 (18 years)
- Across eight countries
- Bringing the total of data points to 4.310.

In the sense of data reliability of the econometric model, less than 5% of the data points, are based on inferences, calculations and best estimates and therefore its reliability appears adequate. Corrections to data have been made where appropriate, for example Ceska Pojstovna hast been treated as domestic until 2007, despite being in the ownership of Netherland-registered investment group PPF. However, the ultimate owner was Czech at that time.

Statistics tool:

The econometric model has been built in MS Excel as the data has been collected in there. The statistical analysis has been performed with the statistics add-in Analysis ToolPak and working with the tools of correlation and regression. In addition, various operations and validations have been performed with the tools made available on https://www.wessa.net.

7.2.1. Supporting hypothesis 1

> **Supporting hypothesis 1:**
>
> The indicators of the development of the Croatian insurance market are correlated with foreign investment in the insurance market.

The analysis for the supporting hypothesis 1 is focused on Croatia and looks at the following relations and correlations, where the level of foreign investment in the insurance market will be evaluated via two different variables, one being the annual year-end market share accumulated by the international insurers, the other being the share of the international insurers in total insurance companies active on the market. The development of the insurance market will be assessed via the indicators Gross Written Premium, insurance penetration and insurance density:[202]

- Gross written premium (GWP) / share international insurers

- Insurance penetration / share international insurers (number)

- Insurance density / share international insurers (number)

- GWP / market share international insurers

- Insurance penetration / market share international insurers (share in GWP total)

- Insurance density / market share international insurers (share in GWP total)

- Also shown in a correlation matrix

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[202] Correlations (=Pearson coefficient)

Market share of international insurance companies is the acceptable proxy for foreign investment in insurance, as with their investments the international investors are actually achieving certain volumes, and this proxy is allowing for potential differences in profitability, therefore implicitly underlying normal distribution of return on investments across the market.

Table 18: Data for SH1 analysis, Croatia, 2003-2020

Year	GWP (1.000 HRK)	GDP (1.000 HRK)	Population	Penetration	Density	GDP/ capita	Number insurers	Number int. insurers	Share int. insurers	GWP int. insurers	Market share int. insurers	Int. Penetration	Int. Density	Domestic Penetration	Domestic Density
2003	6.067.042	232.453.716	4.305.921	2,6%	1.409	53.985	24	12	50,0%	1.569.071	25,9%	0,7%	364	1,9%	1.045
2004	6.626.867	251.017.689	4.311.560	2,6%	1.537	58.220	24	12	50,0%	1.813.894	27,4%	0,7%	421	1,9%	1.116
2005	7.350.074	270.223.309	4.310.894	2,7%	1.705	62.684	24	13	54,2%	2.189.620	29,8%	0,8%	508	1,9%	1.197
2006	8.180.156	294.250.216	4.314.428	2,8%	1.896	68.201	20	12	60,0%	2.741.450	33,5%	0,9%	635	1,8%	1.261
2007	9.064.932	322.595.445	4.312.527	2,8%	2.102	74.804	23	14	60,9%	3.849.877	42,5%	1,2%	893	1,6%	1.209
2008	9.686.102	347.172.115	4.310.682	2,8%	2.247	80.538	25	16	64,0%	4.005.203	41,4%	1,2%	929	1,6%	1.318
2009	9.411.336	331.385.070	4.303.309	2,8%	2.187	77.007	27	18	66,7%	3.960.290	42,1%	1,2%	920	1,6%	1.267
2010	9.245.543	329.022.883	4.290.275	2,8%	2.155	76.690	25	15	60,0%	3.982.055	43,1%	1,2%	928	1,6%	1.227
2011	9.145.245	333.768.066	4.281.482	2,7%	2.136	77.956	26	15	57,7%	3.964.464	43,4%	1,2%	926	1,6%	1.210
2012	9.038.475	331.079.670	4.267.458	2,7%	2.118	77.582	27	16	59,3%	3.954.850	43,8%	1,2%	927	1,5%	1.191
2013	9.076.600	331.262.774	4.255.321	2,7%	2.133	77.847	26	15	57,7%	4.078.808	44,9%	1,2%	959	1,5%	1.174
2014	8.561.358	331.835.581	4.238.296	2,6%	2.020	78.295	25	14	56,0%	4.086.571	47,7%	1,2%	964	1,3%	1.056
2015	8.724.673	339.481.440	4.204.662	2,6%	2.075	80.739	24	14	58,3%	4.254.062	48,8%	1,3%	1.012	1,3%	1.063
2016	8.761.130	349.049.004	4.171.967	2,5%	2.100	83.665	23	15	65,2%	4.196.118	47,9%	1,2%	1.006	1,3%	1.094
2017	9.055.924	365.158.226	4.125.706	2,5%	2.195	88.508	22	14	63,6%	4.393.788	48,5%	1,2%	1.065	1,3%	1.130
2018	9.855.630	382.001.163	4.089.473	2,6%	2.410	93.411	20	13	65,0%	4.716.905	47,9%	1,2%	1.153	1,3%	1.257
2019	10.481.343	400.051.260	4.067.265	2,6%	2.577	98.359	18	11	61,1%	5.152.628	49,2%	1,3%	1.267	1,3%	1.310
2020	10.436.076	368.765.951	4.032.487	2,8%	2.588	91.449	16	10	62,5%	4.980.096	47,7%	1,4%	1.235	1,5%	1.353

Source: data from various reports and statistics from HNB, HANFA, HUO

Table 19: Correlation coefficients (Pearson), time series 2003-2020

	GWP	Ins Penetration	Ins Density
Share of int insurers	0,806033205	0,107201427	0,785591958
Market share of int insurers	0,847235683	-0,195319586	0,858237261

Source: Econometric model, calculations by author (2022)

The coefficients above show that the tightest correlations are stemming from the relationship between the market share accumulated by international insurers and insurance density. Furthermore, international insurers certainly contribute to the general development of the Gross Written Premium, whereas the relation to insurance penetration is statistically not significant, which is probably related to the general GDP development and the fact that penetration has not picked up in Croatia.

If eliminating the years extraordinarily impacted by the COVID-19 pandemic, then the correlation coefficients are even slightly higher and bringing the relation of insurance density and market share accumulated by international insurers to a solid 0,88.

Table 20: Correlation coefficients (Pearson), time series 2003-2018

	GWP	Ins Penetration	Ins Density
Share of int insurers	0,850936886	0,077422289	0,859975383
Market share of int insurers	0,84320676	-0,24747241	0,878884571

Source: Econometric model, calculations by author (2022)

Even more so, when carving out the development of the insurance penetration and insurance density into domestic and internationally sourced premium, then the trend and impact on both parameters becomes even more clear. The development of these insurance penetrations and density is shown in the following charts, with separate graphs for total, international and domestic GWP.

Chart 52: Development of insurance penetrations, Croatia, 2003-2020
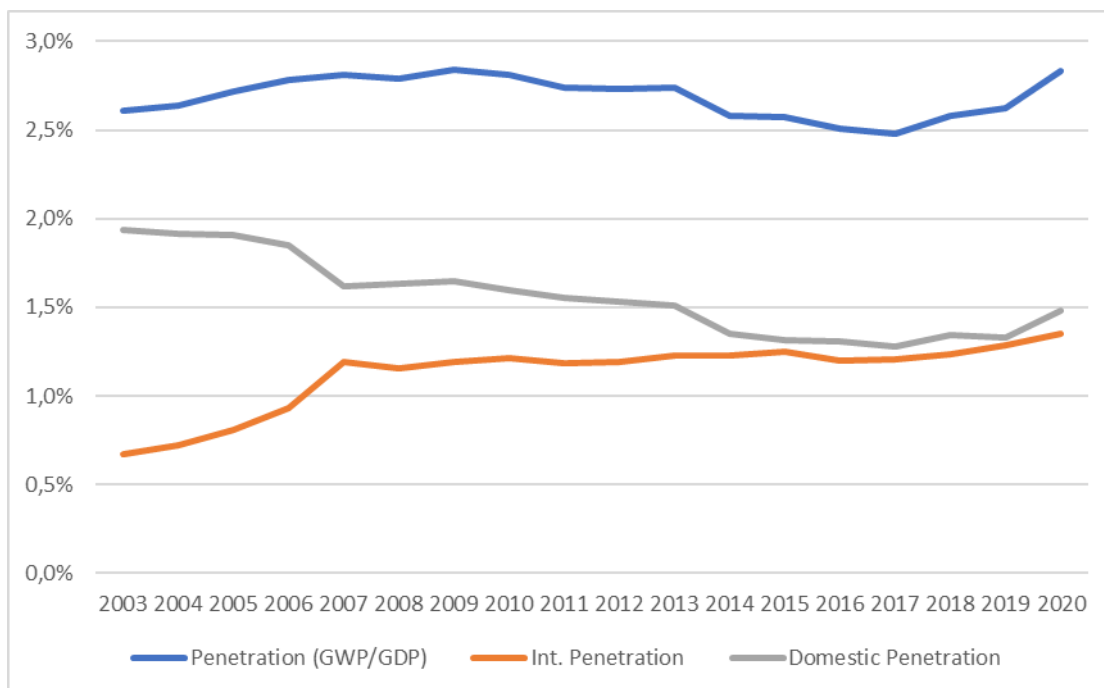
Source: data from various reports and statistics from HNB, HANFA, HUO

Chart 53: Development of insurance densities, Croatia, 2003-2020
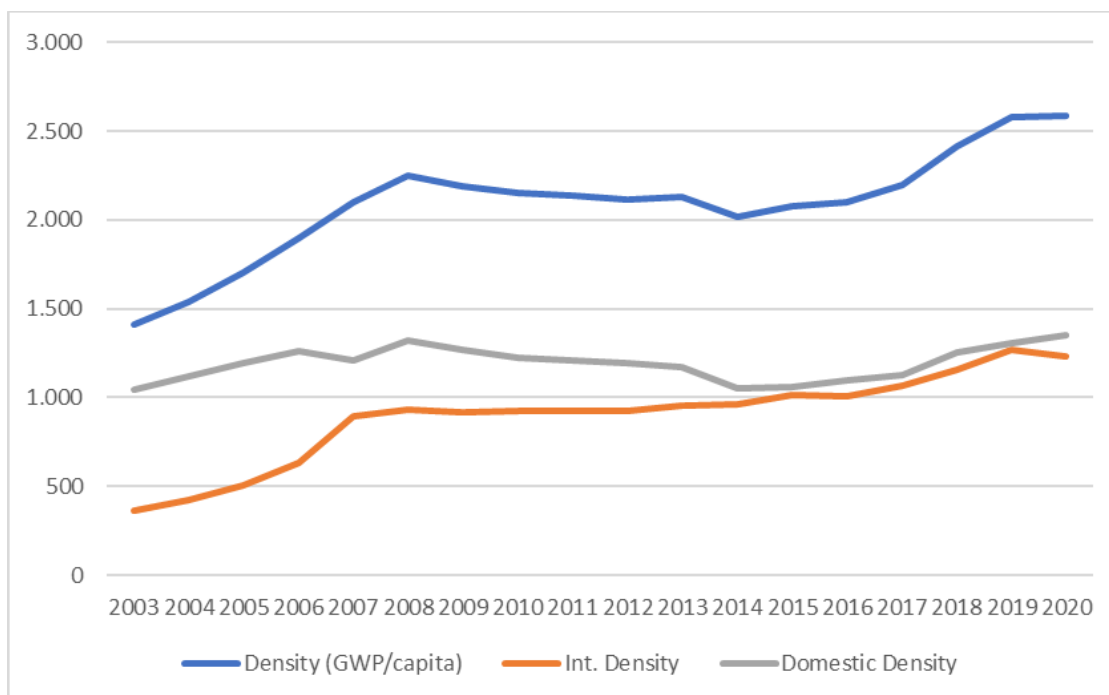
Source: data from various reports and statistics from HNB, HANFA, HUO

Focusing the descriptive statistics on the correlation between

- insurance density and market share of international insurers

gives the following outputs in scatterplots with marginal histograms and quantile-quantile plot in more detail:[203]

Chart 54: Output PEARSON correlation, scatterplots, normality tests
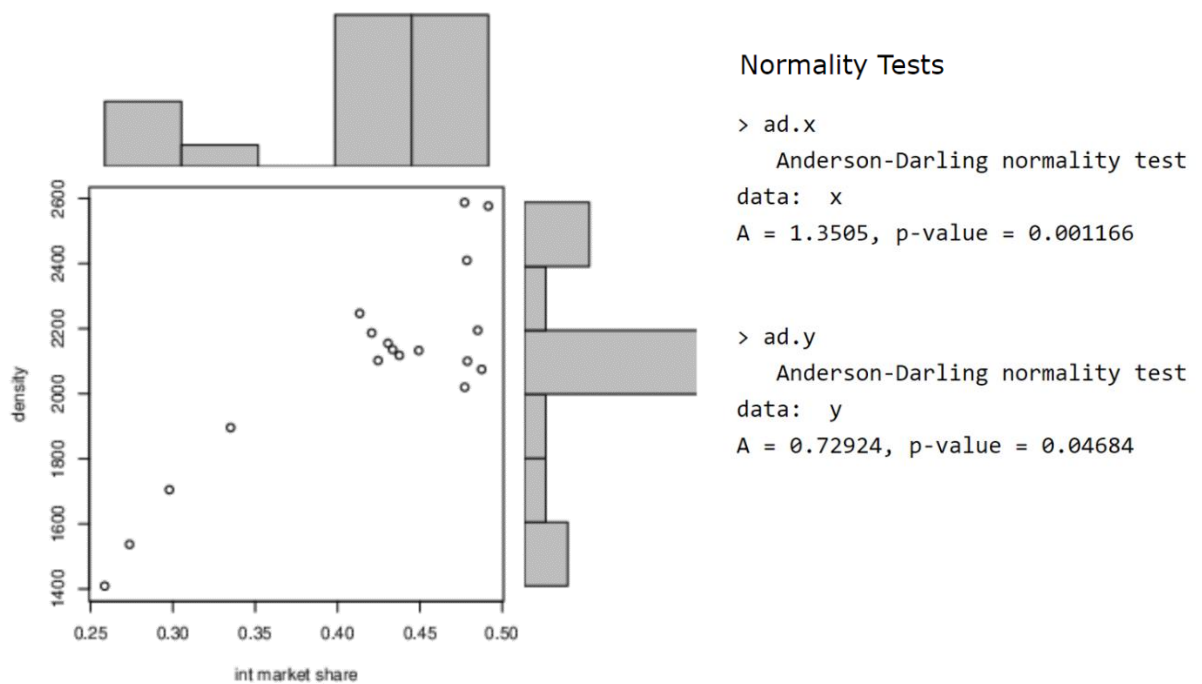
Source: wessa.net

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[203] Wessa P., (2017), Pearson Correlation (v1.0.13) in Free Statistics Software (v1.2.1), Office for Research Development and Education, URL https://www.wessa.net/rwasp_correlation.wasp/

Chart 55: Output PEARSON correlation, QQ-plots

QQplot of variable x

QQplot of variable y
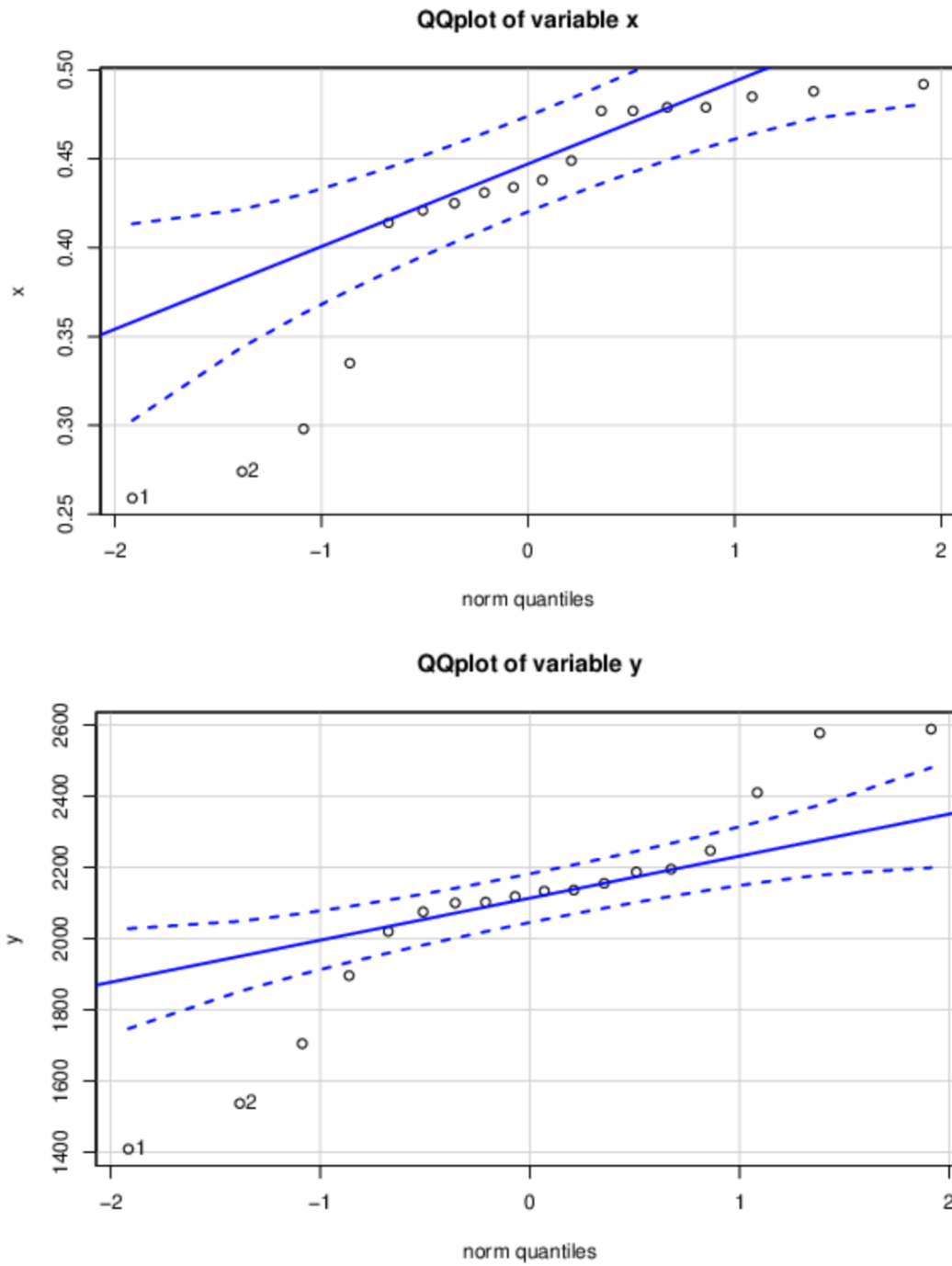
Source: wessa.net

While domestic insurers' contribution to the development of penetration decreases over time, international contribution compensates for this effect. In terms of density, while domestic insurers' contribution stagnates, international insurers are driving the growth.

Table 21: Correlation matrix for various parameters, time series 2003-2020

	GWP (1.000 HRK)	GDP (1.000 HRK)	Penetration (GWP/GDP)	Density (GWP/capita)	Share of int. insurers	Market share of int. insurers	Int. Penetration	Int. Density
GWP (1.000 HRK)	1							
GDP (1.000 HRK)	0,941952299	1						
Penetration (GWP/GDP)	0,227417686	-0,111851164	1					
Density (GWP/capita)	0,98995801	0,960622429	0,140121133	1				
Share of int. insurers	0,806033205	0,790901866	0,107201427	0,785591958	1			
Market share of int. insurers	0,847235683	0,930273923	-0,195319586	0,858237261	0,701679401	1		
Int. Penetration	0,919845151	0,916184256	0,059405963	0,909768285	0,733481366	0,967085243	1	
Int. Density	0,940187545	0,981618377	-0,071931535	0,961126928	0,746691187	0,960428632	0,960159689	1

Source: Econometric model, calculations by author (2022)

These numbers have also been tested with wessa.net free statistical software and enlarged for the Kendall tau correlation.

Chart 56: Kendall tau correlation matrix
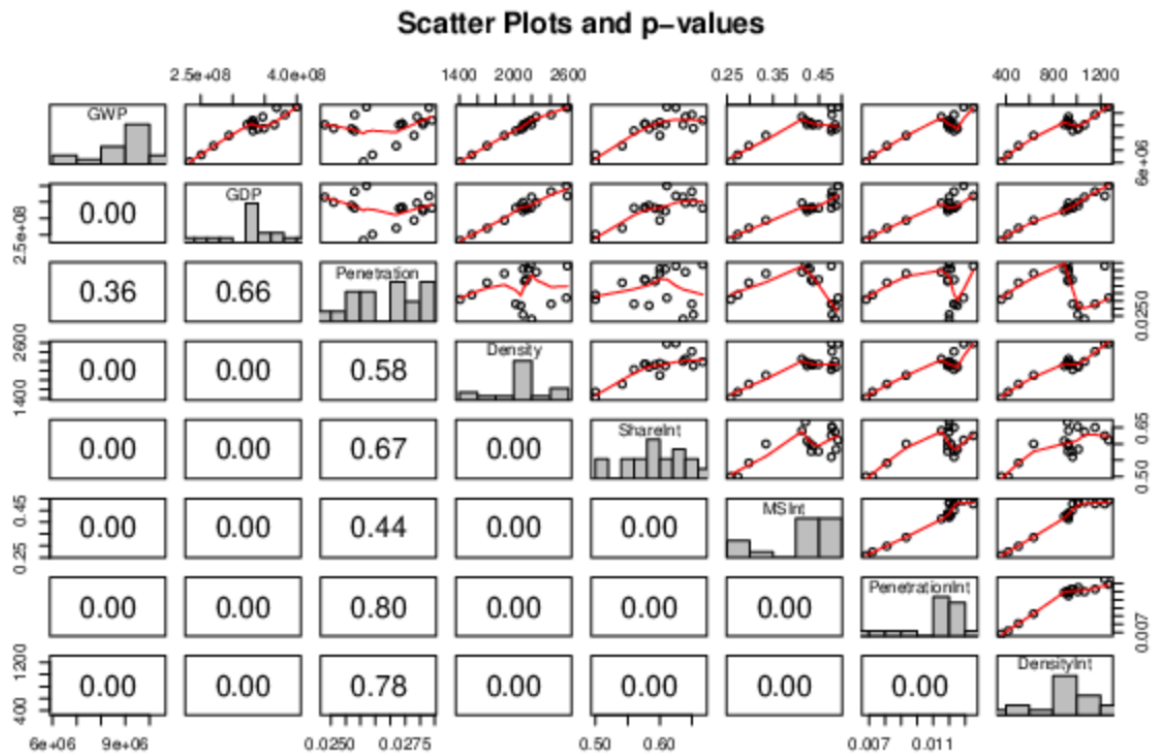
Source: wessa.net

For the strongest correlation pair from the analysis of the Pearson coefficients (international market share vs insurance density) in the time series until 2018, the linear regression provides the following result, with insurance density being the dependent variable and the international insurer the independent variable.

Table 22: Simple linear regression (x=market share of international insurers, y=insurance density), Croatia, time series 2003-2018

Regression Statistics						
Multiple R	0,878884571					
R Square	0,772438089					
Adjusted R Square	0,756183666					
Standard Error	130,8195705					
Observations	16					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	813275,2971	813275,3	47,52171911	7,39936E-06	
Residual	14	239592,6404	17113,76			
Total	15	1052867,938				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	782,2792973	183,4373298	4,264559	0,000785652	388,8453543	1175,71324
Market share of in	3024,159966	438,6909633	6,8936	7,39936E-06	2083,261428	3965,058504

Source: Econometric model, by author (2022)

Obviously, there are more and strong relations between the economic and insurance market variables, however for the multivariate regression the variables of GDP, GWP and market share of international insurers shall be analysed on the development of the insurance density, which is, as expected given a very strong relationship result. Furthermore, looking at both shares, international market share as well as share in the number of international insurers, also returns a solid relationship. Density has been selected as dependent as it appears the most responsive factor to the insurers development and GDP has been included as independent variable as international insurers are also embedded in the local economy. Charts 57-60 focus on the regression outputs of share and market share of international insurers on insurance density development.

Table 23: Multivariate linear regression (GWP, GDP, market share of international insurers impacting insurance density), time series 2003-2020

Regression Statistics						
Multiple R	0,994216511					
R Square	0,988466471					
Adjusted R Square	0,985995					
Standard Error	36,33288202					
Observations	18					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	3	1583898,904	527966,3	399,9507415	8,48695E-14	
Residual	14	18481,09642	1320,078			
Total	17	1602380				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-295,0494333	77,2239583	-3,8207	0,001872712	-460,678351	-129,4205155
GWP (1.000 HRK)	0,000191634	2,31694E-05	8,271023	9,27242E-07	0,000141941	0,000241328
GDP (1.000 HRK)	2,65738E-06	9,05143E-07	2,93587	0,010844944	7,16043E-07	4,59872E-06
Market share of in	-427,8733243	324,7216587	-1,31766	0,208773345	-1124,332015	268,5853666

Source: Econometric model, calculations by author (2022)

Table 24: Multivariate linear regression ((market) share of international insurers impacting insurance density), time series 2003-2020

Regression Statistics						
Multiple R	0,89600108					
R Square	0,802817935					
Adjusted R Square	0,776526993					
Standard Error	145,1345575					
Observations	18					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	2	1286419,403	643209,7	30,53591373	5,14642E-06	
Residual	15	315960,5967	21064,04			
Total	17	1602380				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-306,0582941	463,5768067	-0,66021	0,519129067	-1294,148868	682,03228
Share of int. insure	2301,692178	1025,304975	2,244885	0,040281703	116,306355	4487,078001
Market share of in	2439,309855	649,070867	3,758156	0,001898991	1055,84805	3822,771659

Source: Econometric model, calculations by author (2022)

This would give the equation of: Density (t) = -306 + 2301 Share (t) + 2439 MarketShare (t)

The result of this regression indicates a strong relationship of the aforementioned variables with R^2 on 0,80. Significance F, t-stats and p-values further indicate that the statistical relation is relevant and the null hypothesis can be rejected.[204]

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[204] This would indicate that there is no relationship with the (market) share of international insurers.

Chart 57: Multiple regression outputs a), (Market) Share international insurers on density[205]

Actuals and Interpolation

Residuals
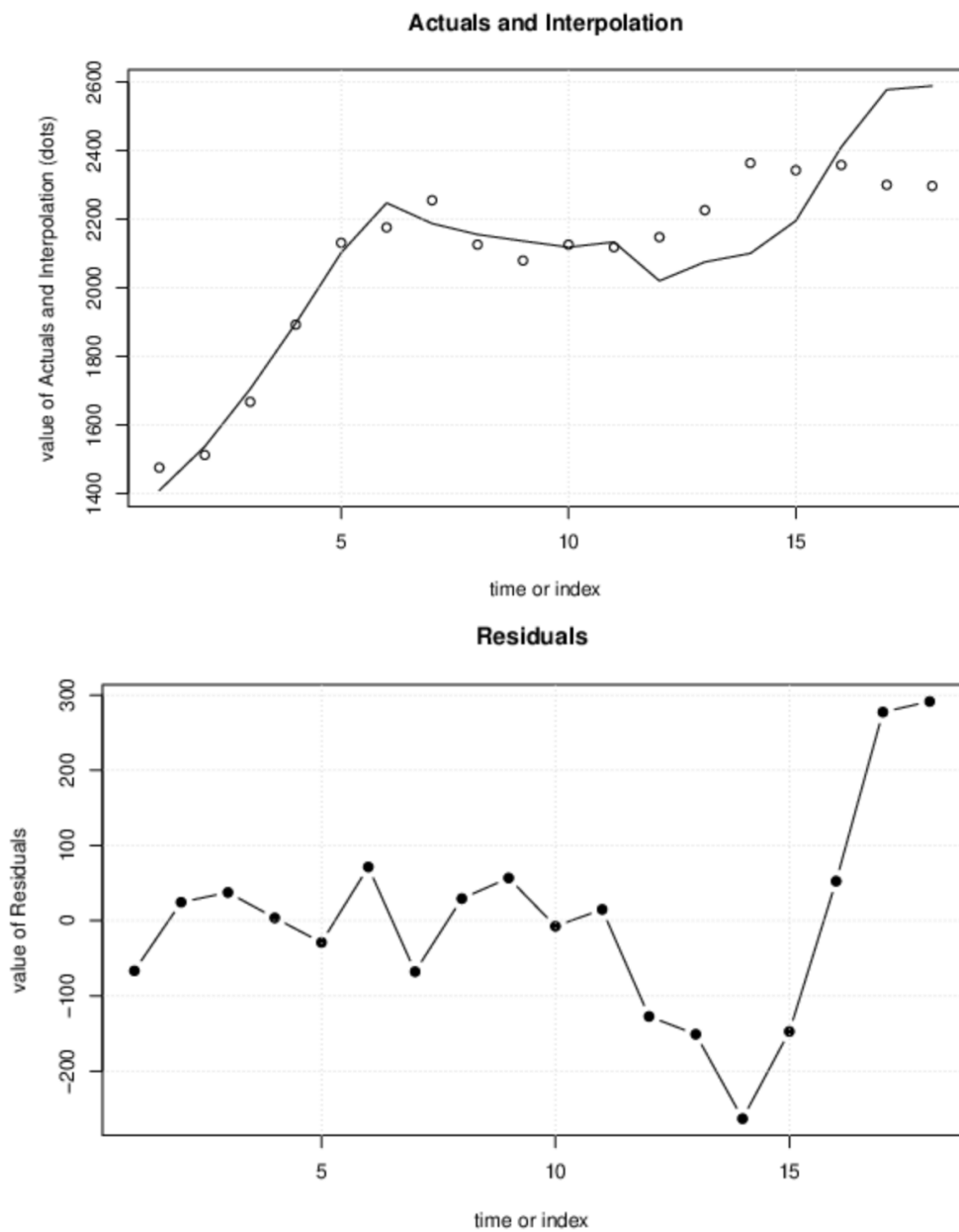
Source: wessa.net

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[205] Wessa P., (2017), Multiple Regression (v1.0.48) in Free Statistics Software (v1.2.1), Office for Research
Development and Education, URL https://www.wessa.net/rwasp_multipleregression.wasp/
Comment: Numbers from wessa.net minimally diverging from MS Excel

Chart 58: Multiple regression outputs b), (Market) Share international insurers on density

Distribution of Studentized Residuals

Residual Density Plot
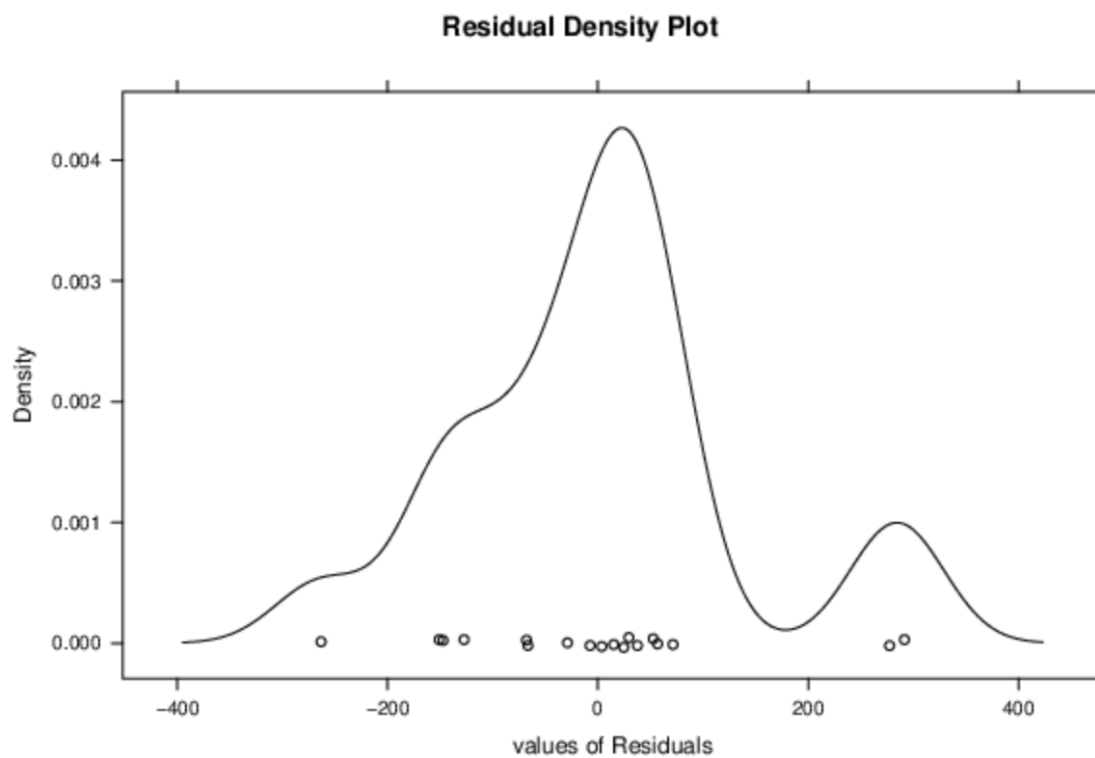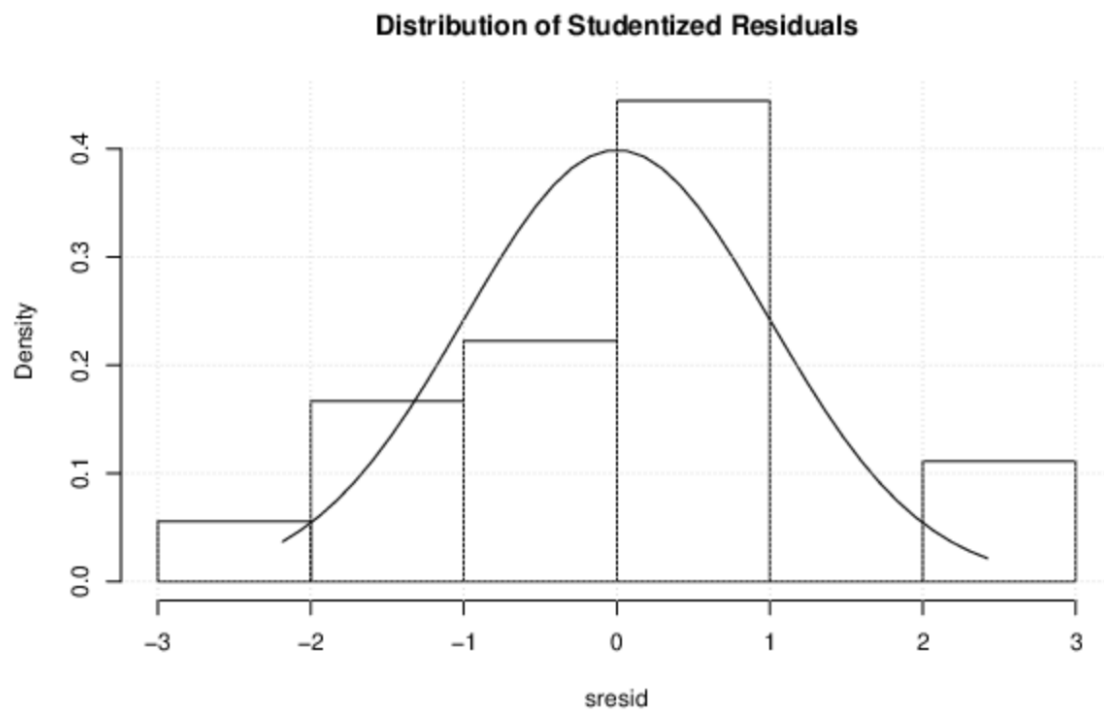
Source: wessa.net

Chart 59: Multiple regression outputs c), (Market) Share international insurers on density

QQ Plot

Residual Lag plot, lowess, and regression line
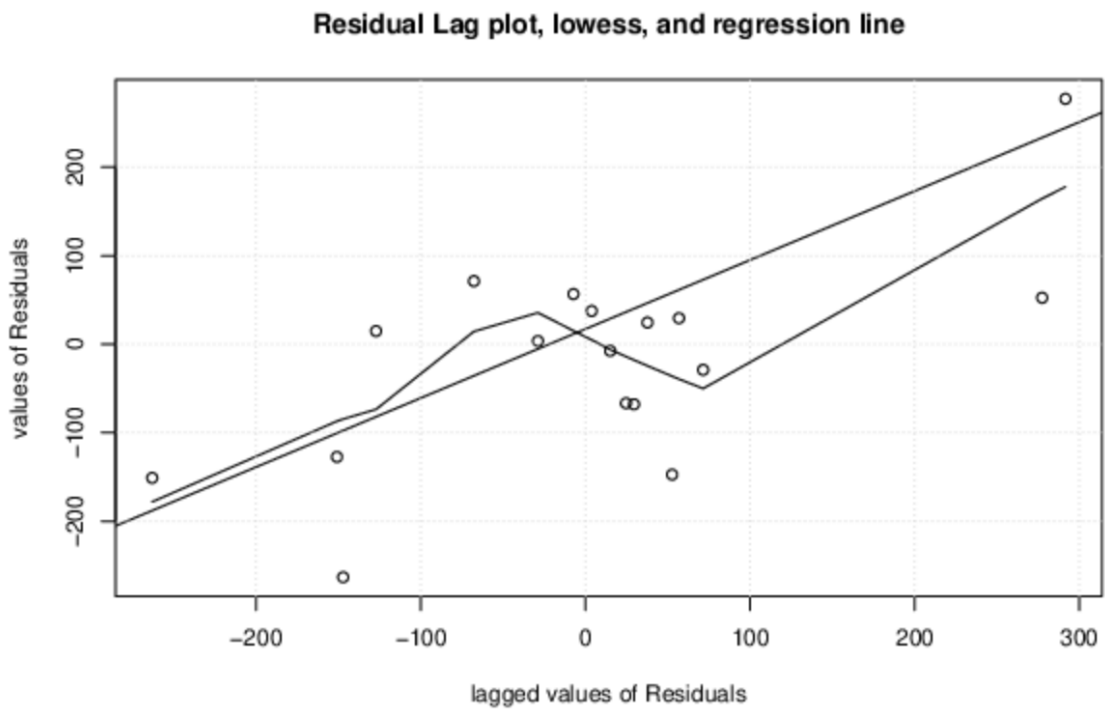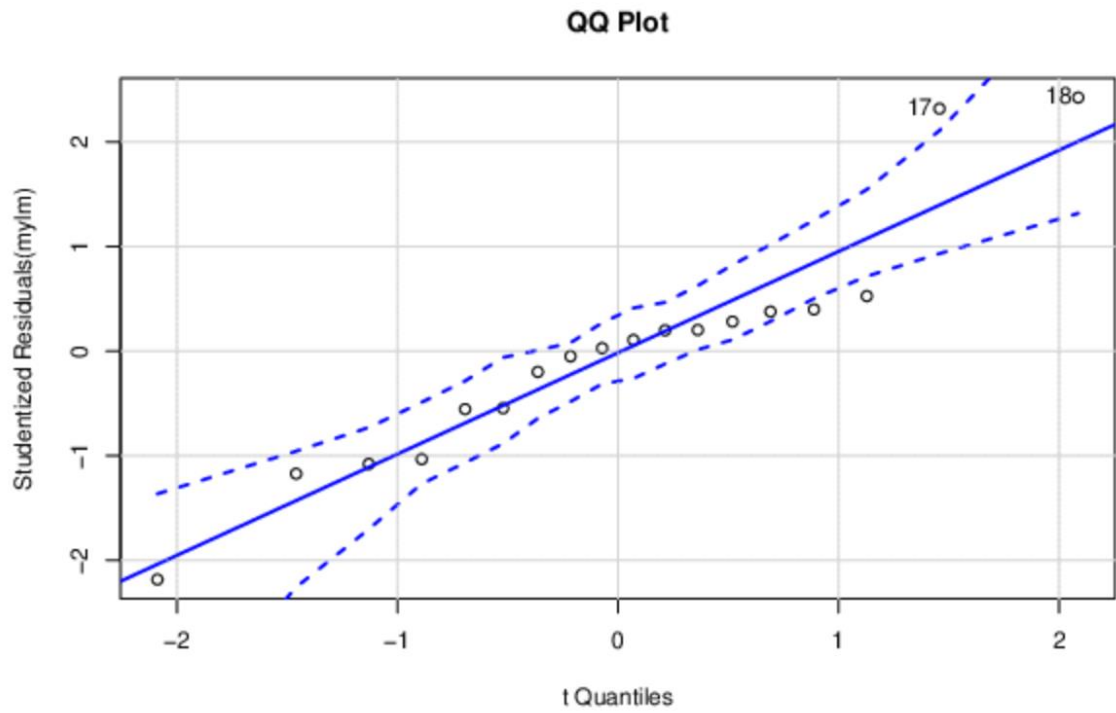
Source: wessa.net

Chart 60: Multiple regression outputs d), (Market) Share international insurers on density
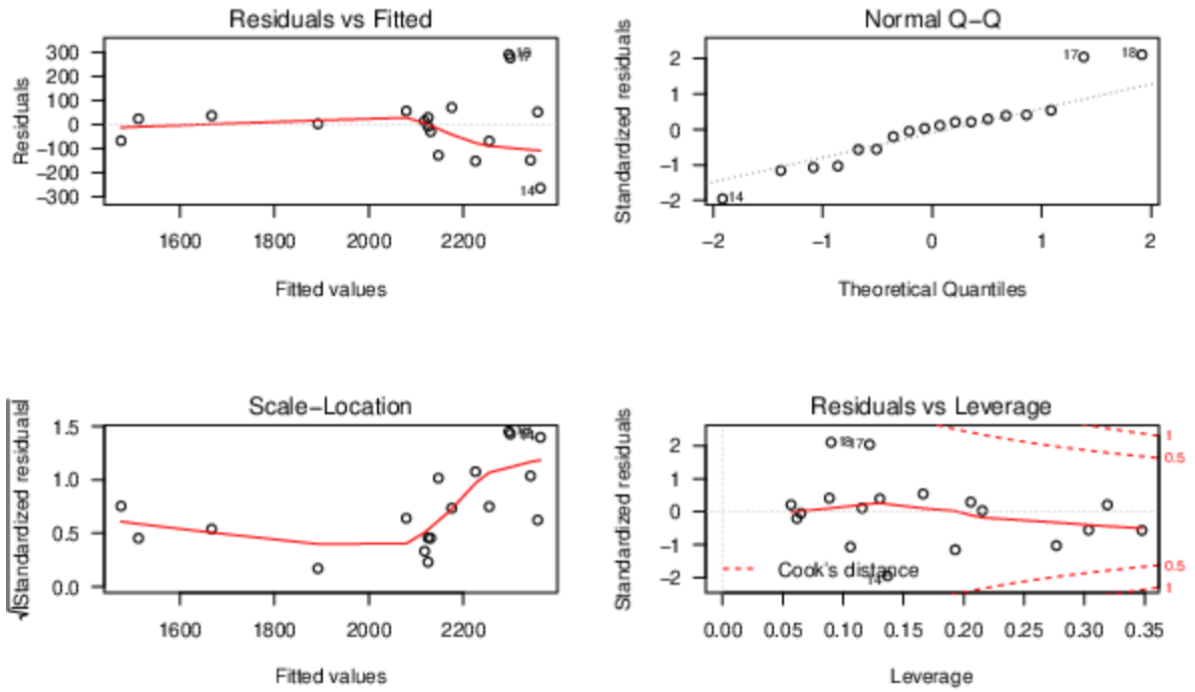
Source: wessa.net

Finally, below is shown the scatter for both, the share of international insurers as well as their accumulated market share in relation to the insurance density development.

Chart 61: Scatter for (market) share of international insurers vs insurance density, Croatia
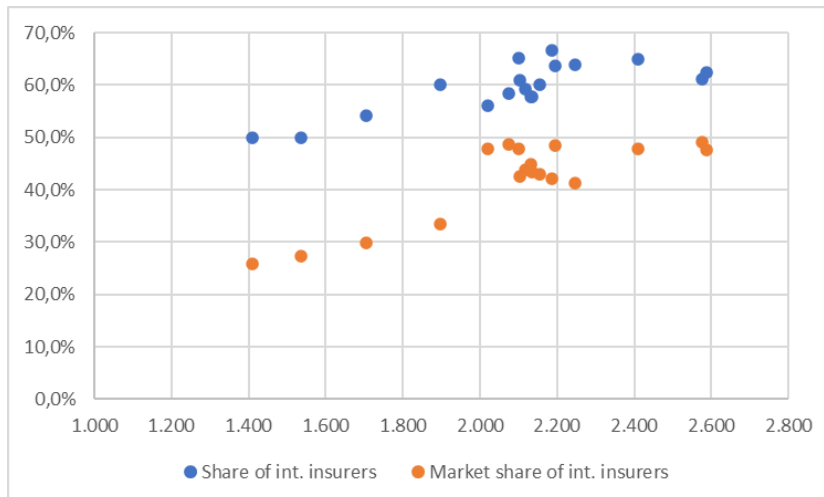
Source: Econometric model, by author (2022)

Considering the outcomes of the correlation analysis and the simple and multivariate regression analyses presented above, it appears the indicators of the development of the Croatian insurance market (insurance density) are strongly positively correlated with foreign engagement in the insurance market, and therefore the supporting hypothesis 1 is confirmed as valid. This is also supported by the qualitative review of the markets and the strategies of the international insurers.

7.2.2. Supporting hypothesis 2

Supporting hypothesis 2:

The specifics of financial development, economic structure and social relations within a country affect the level of international investment and the number and type of financial products.

The supporting hypothesis 2 is evaluating the parameters attracting the engagement of international investors and their impact on the financial deepening of a country. It looks to examine all selected countries of the CEE-region. Again, as a proxy for the international investment, in this part of the analysis as the dependent variables, can serve the share of the international investors and the accumulated market share of the international insurers as this is a direct result of their investment into a country.

The level of financial deepening, represented in the number and type of financial products, related to the insurance industry, is approximated by looking at the share of (a) MTPL GWP in total GWP and (b) the share of MTPL / Casco / Life insurance in total GWP. Motor Third Party Liability for Vehicles has for a long time been the most important line of business across the region and therefore its share serves as a proxy as to whether other lines are catching up in relevance in the market. The second indicator goes one step further by adding Casco and Life insurance to the mix and therefore implicitly giving room to other product lines, for example household, corporate, liability, health or credit insurance.[206] This parameter will also be included in part 1 of SH2 as it serves as an indicator to economic development and social relations in the sense of this research.

The social relations of a country will be measured via the development of average salaries and the unemployment rate.[207] For the financial development of a country the model will take into consideration the share of the insurance sector in the total assets of the financial industry, as

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[206] For the correlation analysis in fact the indicators will be adjusted to its inverse, hence 1 minus share of MTPL and 1 minus share of MTPL, Casco and Life.

[207] Also here inversed, 1 minus unemployment rate

well as stock market valuation (stocks and bonds where available) in relation to the GDP, reflecting on the maturity of the financial market in the respective country.

The economic structure of the country will be measured in respect of the relevance of the insurance sector and for this already the indicators have been established previously, insurance penetration and insurance density. However, when looking at the regression analysis, this time these parameters will be the independent variables.

In the attempt of proofing the first part of the supporting hypotheses 2, the following correlation pairs will be looked at, per country, before running simple linear and multivariate regression analysis on the most relevant parameters:

- (Market) Share of international insurers (number) / GDP/capita

- (Market) Share of international insurers (number) / Insurance penetration

- (Market) Share of international insurers (number) / Insurance density

- (Market) Share of international insurers (number) / Share of insurance sector in assets

- (Market) Share of international insurers (number) / Stock market/GDP

- (Market) Share of international insurers (number) / average salary

- (Market) Share of international insurers (number) / 1-unemployment rate

- (Market) Share of international insurers (number) / 1-share of MTPL

- (Market) Share of international insurers (number) / 1-share of MTPL, Casco, Life

For the second part of the supporting hypotheses 2, the following relations will be evaluated:

- 1-share of MTPL (Casco, Life) / GDP/capita

- 1-share of MTPL (Casco, Life) / Stock market/GDP

- 1-share of MTPL (Casco, Life) / average salary

- 1-share of MTPL (Casco, Life) / 1-unemployment rate

Below is shown the data series of the relevant parameters and for each country, which is followed by the correlation table for all countries.

Table 25: Data for SH2 correlation analysis, Croatia, 2003-2020

Year	GDP (1.000 HRK)	Population	GWP (1.000 HRK)	Penetration	Density	GDP/ capita	Share int. insurers	Market share int. insurers	Share of insurance assets	Stock market / GDP	Ins. assets / stock market	average salary	1- unempl. rate	1- share of MTPL	1-share of MTPL, Kasko, L
2003	232.453.716	4.305.921	6.067.042	2,6%	1.409	53.985	50,0%	25,9%	5,8%	21,7%	25,1%	3.940	85,8%	67,7%	33,7%
2004	251.017.689	4.311.560	6.626.867	2,6%	1.537	58.220	50,0%	27,4%	5,6%	34,4%	16,7%	4.173	86,2%	68,1%	32,5%
2005	270.223.309	4.310.894	7.350.074	2,7%	1.705	62.684	54,2%	29,8%	5,2%	42,6%	14,4%	4.376	87,3%	69,4%	31,7%
2006	294.250.216	4.314.428	8.180.156	2,8%	1.896	68.201	60,0%	33,5%	4,8%	68,5%	9,7%	4.603	88,8%	70,0%	31,6%
2007	322.595.445	4.312.527	9.064.932	2,8%	2.102	74.804	60,9%	42,5%	5,1%	122,1%	5,9%	4.841	90,1%	70,0%	30,6%
2008	347.172.115	4.310.682	9.686.102	2,8%	2.247	80.538	64,0%	41,4%	5,4%	51,0%	14,5%	5.178	91,5%	69,8%	31,6%
2009	331.385.070	4.303.309	9.411.336	2,8%	2.187	77.007	66,7%	42,1%	5,7%	51,8%	16,3%	5.311	90,8%	69,0%	30,5%
2010	329.022.883	4.290.275	9.245.543	2,8%	2.155	76.690	60,0%	43,1%	5,9%	56,9%	16,1%	5.343	88,4%	68,7%	30,2%
2011	333.768.066	4.281.482	9.145.245	2,7%	2.136	77.956	57,7%	43,4%	6,2%	54,0%	17,7%	5.441	86,3%	67,9%	29,3%
2012	331.079.670	4.267.458	9.038.475	2,7%	2.118	77.582	59,3%	43,8%	6,4%	56,0%	18,4%	5.478	84,1%	67,5%	28,3%
2013	331.262.774	4.255.321	9.076.600	2,7%	2.133	77.847	57,7%	44,9%	6,3%	53,7%	19,4%	5.515	82,7%	67,2%	27,2%
2014	331.835.581	4.238.296	8.561.358	2,6%	2.020	78.295	56,0%	47,7%	6,7%	59,4%	18,6%	5.533	82,7%	71,6%	28,8%
2015	339.481.440	4.204.662	8.724.673	2,6%	2.075	80.739	58,3%	48,8%	6,8%	60,0%	18,6%	5.711	83,8%	75,9%	30,3%
2016	349.049.004	4.171.967	8.761.130	2,5%	2.100	83.665	65,2%	47,9%	7,0%	66,6%	16,9%	5.685	86,9%	76,7%	31,4%
2017	365.158.226	4.125.706	9.055.924	2,5%	2.195	88.508	63,6%	48,5%	7,0%	64,7%	17,3%	5.985	88,8%	77,4%	32,9%
2018	382.001.163	4.089.473	9.855.630	2,6%	2.410	93.411	65,0%	47,9%	6,9%	61,1%	18,0%	6.242	91,6%	77,9%	34,1%
2019	400.051.260	4.067.265	10.481.343	2,6%	2.577	98.359	61,1%	49,2%	7,1%	65,9%	17,3%	6.457	93,4%	78,4%	37,2%
2020	368.765.951	4.032.487	10.436.076	2,8%	2.588	91.449	62,5%	47,7%	7,0%	73,5%	17,5%	6.763	92,5%	75,2%	38,0%

Source: data from various reports and statistics from HNB, HANFA, HUO, Zagreb SE

Table 26: Data for SH2 correlation analysis, Bulgaria, 2003-2020

Year	GDP (1.000 BGN)	Population	GWP (1.000 BGN)	Penetration	Density	GDP/capita	Share int. insurers	Market share int. insurers	Share of insurance assets	Stock market / GDP	Ins. assets / stock market	average salary	1-unempl. rate	1-share of MTPL	1-share of MTPL, Kasko, L
2003	34.627.545	7.801.300	672.751	1,9%	86	4.416	64,3%	51,5%	4,2%	7,9%	33,2%	273	86,5%	86,0%	32,2%
2004	38.822.636	7.761.049	845.903	2,2%	109	4.919	65,5%	53,0%	3,5%	10,6%	26,2%	292	87,8%	84,8%	33,5%
2005	42.797.407	7.718.750	1.086.991	2,5%	141	5.420	65,5%	66,4%	3,5%	20,1%	15,6%	324	89,3%	86,4%	36,0%
2006	49.360.950	7.679.290	1.269.569	2,6%	165	6.376	61,8%	73,9%	2,6%	31,2%	12,6%	360	93,1%	80,3%	33,0%
2007	56.519.818	7.659.765	1.530.384	2,7%	200	7.379	61,8%	69,4%	2,1%	51,3%	7,7%	431	93,1%	80,9%	28,7%
2008	69.295.031	7.954.466	1.810.820	2,7%	238	8.711	70,3%	77,1%	2,3%	17,9%	21,5%	545	93,7%	78,8%	25,3%
2009	68.321.610	7.821.653	1.681.504	2,5%	222	8.735	69,4%	75,2%	2,1%	17,3%	33,7%	609	90,9%	73,8%	24,6%
2010	70.474.302	7.527.563	1.623.464	2,3%	217	9.362	62,9%	68,1%	2,0%	15,3%	44,0%	647	90,8%	70,3%	24,4%
2011	75.308.000	7.348.556	1.613.760	2,1%	220	10.248	60,0%	68,8%	1,8%	16,5%	40,4%	686	89,6%	67,4%	24,4%
2012	78.089.000	7.305.548	1.604.144	2,1%	220	10.689	50,0%	71,3%	2,5%	12,0%	56,6%	731	88,6%	67,4%	24,7%
2013	78.115.000	7.270.570	1.729.415	2,2%	238	10.744	50,0%	68,5%	3,2%	12,1%	55,7%	808	88,2%	66,5%	25,1%
2014	83.634.000	7.234.149	1.774.736	2,1%	245	11.561	45,7%	68,3%	3,4%	11,7%	53,8%	822	89,3%	69,0%	25,5%
2015	88.571.000	7.380.302	1.964.319	2,2%	266	12.001	44,2%	68,6%	3,4%	9,7%	71,2%	878	90,0%	70,0%	25,4%
2016	92.635.000	7.143.904	2.050.662	2,2%	287	12.967	41,5%	67,1%	5,2%	10,2%	70,1%	962	92,0%	69,7%	23,9%
2017	102.741.000	7.075.826	2.177.442	2,1%	308	14.520	43,6%	67,9%	5,3%	23,1%	32,0%	1.037	92,9%	69,7%	24,0%
2018	109.964.000	7.025.107	2.527.287	2,3%	360	15.653	44,4%	65,5%	5,3%	24,4%	30,7%	1.146	93,9%	63,0%	21,1%
2019	120.395.000	6.975.781	2.910.824	2,4%	417	17.259	45,7%	62,3%	5,5%	23,5%	30,0%	1.267	94,1%	62,6%	23,0%
2020	119.951.000	6.933.985	2.885.172	2,4%	416	17.299	42,9%	60,0%	5,7%	23,9%	32,1%	1.391	93,3%	62,6%	24,5%

Source: data from various reports and statistics from BNB, FSC, XPrimm, Sofia SE

Table 27: Data for SH2 correlation analysis, Czech Republic, 2003-2020

Year	GDP (1.000 CZK)	Population	GWP (1.000 CZK)	Pene-tration	Density	GDP/ capita	Share int. insurers	Market share int. insurers	Share of insurance assets	Stock market / GDP	Ins. assets/ stock market	average salary	1-unempl. rate	1-share of MTPL	1-share of MTPL, Kasko, L
2003	2.577.000.000	10.193.889	105.946.000	4,1%	10.393	252.799	59,4%	57,1%	8,0%	25,0%	39,8%	16.430	91,7%	79,5%	27,5%
2004	2.781.000.000	10.197.101	112.578.000	4,0%	11.040	272.725	61,3%	58,8%	7,6%	35,1%	29,1%	17.466	92,2%	81,2%	29,2%
2005	2.978.000.000	10.211.216	117.075.000	3,9%	11.465	291.640	64,5%	60,4%	7,8%	44,7%	23,3%	18.344	92,1%	81,2%	29,7%
2006	3.204.000.000	10.238.905	122.090.000	3,8%	11.924	312.924	64,5%	60,8%	7,1%	49,7%	20,3%	19.546	95,2%	81,6%	30,2%
2007	3.530.000.000	10.298.828	132.900.000	3,8%	12.904	342.757	68,8%	63,1%	7,1%	52,2%	18,1%	20.957	95,2%	82,1%	29,2%
2008	3.706.000.000	10.384.603	139.852.000	3,8%	13.467	356.874	74,2%	97,9%	7,1%	27,1%	35,5%	22.592	95,2%	82,7%	29,1%
2009	3.739.000.000	10.443.936	144.171.000	3,9%	13.804	358.007	72,7%	97,2%	7,5%	32,9%	30,5%	23.344	92,5%	83,1%	29,7%
2010	3.775.000.000	10.474.410	155.996.358	4,1%	14.893	360.402	72,7%	96,3%	7,9%	35,0%	30,7%	23.864	93,0%	85,4%	29,3%
2011	3.809.000.000	10.496.088	155.092.582	4,1%	14.776	362.897	69,7%	98,0%	7,6%	26,3%	41,1%	24.455	93,4%	86,5%	30,5%
2012	4.048.000.000	10.510.785	153.598.866	3,8%	14.613	385.128	71,9%	98,2%	7,8%	28,1%	43,6%	25.067	93,0%	87,1%	30,7%
2013	4.086.000.000	10.514.272	156.579.314	3,8%	14.892	388.615	71,0%	98,4%	7,3%	26,7%	40,5%	25.035	93,0%	86,4%	31,4%
2014	4.266.000.000	10.525.347	157.817.390	3,7%	14.994	405.307	70,0%	98,4%	7,1%	24,1%	42,9%	25.768	94,1%	85,4%	31,0%
2015	4.595.800.000	10.546.059	153.395.094	3,3%	14.545	435.784	64,3%	98,1%	6,8%	23,9%	43,4%	26.591	95,4%	84,3%	33,5%
2016	4.773.200.000	10.566.332	147.216.232	3,1%	13.933	451.737	61,5%	97,9%	6,4%	21,9%	46,8%	27.764	96,4%	85,5%	33,6%
2017	5.055.000.000	10.594.438	150.836.603	3,0%	14.237	477.137	57,7%	97,5%	5,7%	24,8%	40,3%	29.638	97,6%	85,3%	34,9%
2018	5.346.399.448	10.629.928	155.045.584	2,9%	14.586	502.957	75,0%	97,1%	5,6%	397,7%	2,4%	32.051	97,8%	84,6%	35,3%
2019	5.721.652.414	10.671.870	165.927.920	2,9%	15.548	536.143	76,0%	96,5%	5,1%	385,5%	2,2%	34.578	98,0%	84,4%	38,8%
2020	5.599.223.967	10.698.896	167.976.719	3,0%	15.700	523.346	66,7%	96,0%	5,0%	241,2%	3,6%	35.662	96,8%	83,4%	38,4%

Source: data from various reports and statistics from CNB, ČAP, XPrimm, PSE, World Bank (data correction: Česka domestic until 2007)

Table 28: Data for SH2 correlation analysis, Hungary, 2003-2020

Year	GDP (mnHUF)	Population	GWP (mnHUF)	Pene-tration	Density	GDP/ capita	Share int. insurers	Market share int. insurers	Share of insurance assets	Stock market / GDP	Ins. assets/ stock market	average salary	1-unempl. rate	1-share of MTPL	1-share of MTPL, Kasko, L
2003	18.409.000	10.129.552	559.400	3,0%	55.225	1.817.356	58,6%	81,3%	8,9%	19,5%	30,4%	141.866	94,1%	82,7%	26,7%
2004	20.717.000	10.107.146	599.000	2,9%	59.265	2.049.738	60,7%	83,1%	9,4%	27,5%	23,9%	142.148	93,9%	81,6%	25,0%
2005	22.055.000	10.087.065	686.500	3,1%	68.057	2.186.464	63,0%	80,5%	9,6%	28,8%	25,5%	161.242	92,8%	82,1%	23,5%
2006	23.562.000	10.071.370	830.200	3,5%	82.432	2.339.503	69,2%	80,9%	9,6%	36,3%	22,3%	163.490	92,6%	84,4%	21,2%
2007	25.374.000	10.055.780	930.300	3,7%	92.514	2.523.325	62,1%	81,3%	9,4%	33,0%	26,6%	186.466	92,6%	85,7%	20,2%
2008	27.258.344	10.038.188	882.800	3,2%	87.944	2.715.465	68,6%	93,8%	7,7%	11,7%	67,1%	209.706	92,2%	84,8%	21,3%
2009	26.529.876	10.022.650	830.500	3,1%	82.862	2.646.992	70,6%	92,6%	9,5%	23,0%	39,4%	192.838	90,3%	84,2%	24,4%
2010	27.225.000	10.000.023	843.800	3,1%	84.380	2.722.494	70,0%	90,6%	9,2%	21,0%	41,9%	202.525	89,2%	86,0%	23,9%
2011	28.549.802	9.971.727	817.300	2,9%	81.962	2.863.075	68,8%	89,8%	8,9%	13,2%	62,5%	237.392	89,3%	88,1%	25,7%
2012	28.305.000	9.920.362	768.100	2,7%	77.427	2.853.222	65,6%	88,6%	9,6%	16,2%	49,6%	224.495	89,3%	89,1%	26,2%
2013	30.247.000	9.893.082	809.400	2,7%	81.815	3.057.389	66,7%	87,6%	10,0%	14,6%	53,4%	230.951	90,2%	89,9%	28,7%
2014	32.592.000	9.866.468	850.200	2,6%	86.171	3.303.310	65,6%	86,2%	10,1%	10,3%	70,2%	243.444	92,5%	89,4%	28,6%
2015	34.324.000	9.843.028	869.200	2,5%	88.306	3.487.138	65,6%	86,4%	10,0%	14,1%	48,4%	252.679	93,4%	87,9%	28,7%
2016	36.127.000	9.814.023	918.900	2,5%	93.631	3.681.161	66,7%	85,3%	10,5%	17,6%	41,3%	261.660	95,0%	85,8%	28,3%
2017	39.233.000	9.787.966	989.600	2,6%	101.104	4.008.289	70,4%	86,4%	10,3%	22,1%	32,0%	300.064	96,0%	84,7%	27,7%
2018	43.350.000	9.775.564	1.035.100	2,4%	105.886	4.434.527	71,4%	88,3%	9,7%	18,0%	35,8%	332.043	96,4%	83,3%	28,8%
2019	47.524.000	9.771.141	1.167.800	2,5%	119.515	4.863.710	76,9%	86,4%	9,9%	20,1%	31,9%	367.833	96,7%	80,3%	28,0%
2020	47.743.000	9.749.763	1.235.300	2,5%	126.701	4.896.837	75,0%	86,4%	8,6%	18,0%	36,9%	403.616	95,9%	80,1%	26,6%

Source: data from various reports and statistics from MNB, ECB, MABISC, Xprimm, Theglobaleconomy, EB

Table 29: Data for SH2 correlation analysis, Poland, 2003-2020

Year	GDP (1.000 PLN)	Population	GWP (1.000 PLN)	Pene-tration	Density	GDP/capita	Share int. insurers	Market share int. insurers	Share of insurance assets	Stock market / GDP	Ins. assets/ stock market	average salary	1-unempl. rate	1-share of MTPL	1-share of MTPL, Kasko, L
2003	847.152.100	38.191.000	25.882.465	3,1%	678	22.182	63,6%	71,9%	10,9%	41,4%	19,0%	2.201	80,6%	81,6%	20,4%
2004	933.091.500	38.174.000	27.772.477	3,0%	728	24.443	66,2%	72,1%	10,7%	55,6%	15,0%	2.290	80,9%	81,7%	19,8%
2005	990.530.500	38.157.000	31.020.901	3,1%	813	25.959	68,1%	72,7%	10,7%	72,0%	12,6%	2.380	82,3%	82,5%	19,1%
2006	1.069.431.400	38.125.000	37.581.034	3,5%	986	28.051	66,2%	75,1%	10,6%	89,8%	11,3%	2.477	90,4%	85,0%	17,7%
2007	1.187.508.100	38.116.000	43.816.098	3,7%	1.150	31.155	64,2%	77,9%	10,5%	120,4%	8,9%	2.691	90,4%	85,9%	17,0%
2008	1.285.570.700	38.136.000	59.109.677	4,6%	1.550	33.710	62,1%	78,6%	9,8%	64,4%	16,6%	2.944	92,9%	88,4%	13,7%
2009	1.372.024.500	38.167.000	51.168.684	3,7%	1.341	35.948	64,6%	82,2%	9,3%	81,8%	12,4%	3.103	91,8%	86,3%	17,7%
2010	1.446.843.500	38.530.000	54.148.095	3,7%	1.405	37.551	61,5%	77,4%	8,7%	88,7%	11,3%	3.225	90,4%	86,1%	18,4%
2011	1.565.251.300	38.538.000	57.149.635	3,7%	1.483	40.616	65,6%	77,1%	8,1%	74,4%	12,5%	3.400	90,4%	85,0%	19,1%
2012	1.623.442.500	38.533.000	62.626.384	3,9%	1.625	42.131	69,5%	77,7%	8,3%	81,5%	12,3%	3.522	89,9%	85,7%	18,7%
2013	1.646.723.900	38.496.000	57.862.686	3,5%	1.503	42.776	69,0%	78,5%	8,0%	86,9%	11,7%	3.650	89,7%	85,4%	22,1%
2014	1.711.244.200	38.479.000	54.926.969	3,2%	1.427	44.472	67,9%	69,6%	8,1%	104,3%	9,4%	3.783	91,0%	84,7%	23,0%
2015	1.801.112.000	38.437.000	55.101.881	3,1%	1.434	46.859	66,7%	69,5%	7,8%	92,5%	10,8%	3.900	92,5%	85,2%	25,4%
2016	1.863.486.900	38.433.000	56.039.183	3,0%	1.458	48.487	65,6%	65,5%	7,4%	93,2%	10,6%	4.047	93,8%	79,2%	24,9%
2017	1.989.834.600	38.434.000	62.338.742	3,1%	1.622	51.773	65,6%	64,4%	7,5%	102,6%	9,7%	4.272	95,1%	76,2%	24,6%
2018	2.121.555.000	38.411.000	62.169.792	2,9%	1.619	55.233	65,0%	64,3%	7,0%	86,3%	10,5%	4.585	96,2%	75,6%	27,3%
2019	2.293.199.300	38.383.000	63.815.049	2,8%	1.663	59.745	62,7%	64,0%	6,8%	80,1%	10,5%	4.918	96,7%	76,6%	29,7%
2020	2.326.656.500	38.265.000	63.421.468	2,7%	1.657	60.804	62,7%	63,8%	6,4%	88,6%	9,9%	5.167	96,8%	76,9%	30,3%

Source: data from various reports and statistics from PIU, KNF, NBP, World Bank, GPW, Statistics Poland, FRED

Table 30: Data for SH2 correlation analysis, Romania, 2003-2020

Year	GDP (1.000 leu)	Population	GWP	Pene-tration	Density	GDP/ capita	Share int. insurers	Market share int. insurers	Share of insurance assets	Stock market / GDP	Ins. assets/ stock market	average salary	1-unempl. rate	1-share of MTPL	1-share of MTPL, Kasko, L
2003	191.917.600	21.574.326	2.673.816	1,4%	124	8.896	52,2%	40,8%	2,7%	6,3%	34,3%	505	93,1%	83,0%	27,9%
2004	244.688.300	21.451.748	3.476.543	1,4%	162	11.406	59,5%	47,7%	2,8%	14,0%	15,8%	654	92,3%	82,9%	28,0%
2005	286.861.900	21.319.685	4.417.165	1,5%	207	13.455	64,3%	49,0%	2,8%	19,5%	11,3%	848	92,8%	82,8%	28,1%
2006	342.762.600	21.193.760	5.729.284	1,7%	270	16.173	70,0%	53,3%	3,1%	21,4%	11,5%	1.099	93,6%	82,6%	30,2%
2007	425.691.100	20.882.982	7.175.789	1,7%	344	20.385	71,4%	58,1%	3,4%	20,2%	13,6%	1.266	93,6%	80,5%	23,8%
2008	539.834.600	20.537.875	8.942.920	1,7%	435	26.285	65,9%	87,9%	4,0%	8,5%	34,5%	1.489	94,2%	79,4%	19,0%
2009	530.894.400	20.367.487	8.940.851	1,7%	439	26.066	62,2%	88,7%	4,2%	15,1%	21,8%	1.477	93,1%	74,9%	18,9%
2010	528.514.500	20.246.871	8.305.402	1,6%	410	26.104	62,8%	90,4%	4,2%	19,4%	16,9%	1.496	93,0%	70,1%	20,0%
2011	558.889.900	20.147.528	7.822.300	1,4%	388	27.740	62,8%	91,2%	3,6%	12,7%	24,2%	1.604	92,8%	74,8%	27,1%
2012	591.799.100	20.058.035	8.256.914	1,4%	412	29.504	73,2%	78,1%	3,8%	16,5%	19,2%	1.697	93,2%	74,1%	29,1%
2013	634.967.800	19.983.693	8.122.446	1,3%	406	31.774	84,2%	83,2%	3,6%	21,1%	13,7%	1.760	92,9%	69,7%	27,5%
2014	669.703.900	19.908.979	8.085.676	1,2%	406	33.638	90,0%	83,2%	3,4%	19,4%	14,1%	1.866	93,2%	65,4%	24,3%
2015	711.929.900	19.815.616	8.534.919	1,2%	440	35.928	85,7%	89,5%	3,9%	20,5%	12,8%	2.114	93,2%	61,5%	23,2%
2016	763.652.500	19.702.267	9.380.935	1,3%	503	38.760	87,1%	89,4%	4,2%	19,2%	15,0%	2.354	94,1%	55,9%	19,4%
2017	857.895.700	19.588.715	9.701.744	1,2%	528	43.795	87,1%	85,4%	4,1%	19,2%	14,0%	2.629	95,6%	60,6%	20,3%
2018	951.728.500	19.473.970	10.144.526	1,1%	545	48.872	89,7%	83,5%	4,2%	15,0%	17,9%	2.957	95,8%	63,1%	22,0%
2019	1.058.973.200	19.371.648	10.990.225	1,1%	599	54.666	90,0%	80,5%	3,9%	17,1%	14,6%	3.340	96,1%	63,7%	22,1%
2020	1.055.548.800	19.286.123	11.500.479	1,2%	630	54.731	90,0%	77,4%	3,8%	14,6%	17,7%	3.620	95,0%	63,6%	23,3%

Source: data from various reports and statistics from NBR, ASF, XPrimm, BVB, World Bank, various research articles

Table 31: Data for SH2 correlation analysis, Slovakia, 2003-2020

Year	GDP (1.000 EUR)	Population	GWP	Penetration	Density	GDP/ capita	Share int. insurers	Market share int. insurers	Share of insurance assets	Stock market / GDP	Ins. assets / stock market	average salary	1-unempl. rate	1-share of MTPL	1-share of MTPL, Kasko, L
2003	41.479.498	5.373.374	1.348.084	3,3%	251	7.719	85,2%	99,1%	9,4%	25,9%	25,0%	415	82,9%	77,7%	20,4%
2004	46.175.205	5.372.280	1.240.670	2,7%	231	8.595	88,9%	99,0%	10,4%	28,0%	25,0%	462	81,4%	68,6%	7,6%
2005	50.485.664	5.372.807	1.367.362	2,7%	254	9.397	92,6%	99,1%	10,9%	30,1%	25,1%	505	83,7%	71,7%	6,5%
2006	56.361.425	5.373.054	1.558.953	2,8%	290	10.490	88,9%	98,9%	11,6%	29,9%	25,1%	563	86,6%	79,8%	14,1%
2007	63.163.352	5.374.622	1.869.635	3,0%	348	11.752	88,5%	98,7%	12,4%	28,7%	29,4%	631	88,9%	82,6%	17,3%
2008	68.590.534	5.379.233	2.107.511	3,1%	392	12.751	91,7%	98,5%	10,4%	30,0%	24,9%	685	90,5%	84,6%	17,7%
2009	64.095.519	5.386.406	2.027.107	3,2%	376	11.899	90,9%	98,3%	11,2%	37,1%	25,8%	698	88,0%	86,1%	19,1%
2010	68.492.145	5.391.428	2.067.104	3,0%	383	12.704	90,0%	98,1%	11,8%	41,0%	24,4%	727	85,6%	86,3%	20,2%
2011	71.477.095	5.398.384	2.109.993	3,0%	391	13.240	90,0%	97,9%	11,1%	44,8%	20,1%	757	86,4%	86,5%	21,3%
2012	73.360.844	5.407.579	2.114.318	2,9%	391	13.566	88,9%	97,7%	11,5%	51,2%	18,2%	779	86,0%	86,5%	19,2%
2013	74.217.289	5.413.393	2.169.677	2,9%	401	13.710	90,9%	96,8%	11,3%	52,0%	17,9%	824	85,8%	87,3%	19,2%
2014	76.092.675	5.418.649	2.180.788	2,9%	402	14.043	88,2%	97,2%	11,3%	54,2%	17,6%	858	86,8%	87,5%	19,8%
2015	79.888.147	5.423.801	2.227.700	2,8%	411	14.729	93,8%	97,5%	9,5%	56,0%	14,6%	883	88,5%	87,4%	21,9%
2016	81.014.252	5.430.798	2.235.203	2,8%	412	14.918	93,8%	97,8%	9,2%	57,5%	14,4%	912	90,3%	87,5%	24,7%
2017	84.442.865	5.439.232	2.399.920	2,8%	441	15.525	93,8%	98,1%	8,8%	56,9%	14,3%	954	91,9%	86,7%	21,7%
2018	89.430.026	5.446.771	2.515.071	2,8%	462	16.419	93,3%	98,1%	8,3%	55,7%	13,7%	1.013	93,5%	85,7%	24,5%
2019	94.048.033	5.454.147	2.561.110	2,7%	470	17.243	92,3%	98,2%	8,5%	51,5%	15,2%	1.092	94,3%	85,1%	23,7%
2020	92.079.253	5.458.827	2.496.108	2,7%	457	16.868	91,7%	98,3%	8,1%	62,7%	13,2%	1.133	93,3%	84,2%	24,2%

Source: data from various reports and statistics from NBS, SLASPO, BSSE, Theglobaleconomy, World Bank

Table 32: Data for SH2 correlation analysis, Slovenia, 2003-2020

Year	GDP (1.000 EUR)	Population	GWP	Pene-tration	Density	GDP/ capita	Share int. insurers	Market share int. insurers	Share of insurance assets	Stock market / GDP	Ins. assets / stock market	average salary	1-unempl. rate	1-share of MTPL	1-share of MTPL, Kasko, L
2003	25.613.000	1.995.033	1.205.815	4,7%	604	13.156	23,5%	6,3%	10,5%	49,3%	19,7%	664	93,3%	78,9%	48,4%
2004	27.628.000	1.996.433	1.328.266	4,8%	665	13.878	29,4%	6,7%	10,7%	62,1%	16,6%	702	93,7%	78,5%	45,6%
2005	29.114.000	1.997.590	1.441.354	5,0%	722	14.551	23,5%	6,9%	10,3%	48,1%	23,3%	736	93,5%	80,3%	40,6%
2006	31.470.000	2.003.358	1.611.200	5,1%	804	15.676	27,8%	7,2%	10,1%	60,4%	20,5%	773	94,0%	81,7%	40,7%
2007	35.073.000	2.010.377	1.799.400	5,1%	895	17.373	27,8%	8,1%	10,3%	75,6%	19,0%	835	95,1%	82,6%	40,3%
2008	37.926.000	2.025.866	1.912.600	5,0%	944	18.757	27,8%	8,8%	9,7%	40,2%	33,8%	900	95,6%	83,3%	40,7%
2009	36.255.000	2.032.362	1.946.900	5,4%	958	17.758	35,0%	9,4%	10,2%	53,8%	29,0%	930	94,1%	84,4%	42,3%
2010	36.364.000	2.046.976	1.948.500	5,4%	952	17.749	38,1%	9,8%	11,0%	55,7%	29,8%	967	92,7%	85,5%	42,2%
2011	37.059.000	2.050.189	1.959.100	5,3%	956	18.052	40,9%	10,1%	11,4%	51,9%	32,7%	987	91,8%	86,2%	44,6%
2012	36.253.000	2.055.496	1.956.100	5,4%	952	17.626	42,9%	10,4%	12,6%	48,3%	38,8%	991	91,1%	87,1%	46,4%
2013	36.454.000	2.058.821	1.905.800	5,2%	926	17.700	40,9%	10,7%	14,4%	52,1%	36,5%	997	89,9%	87,8%	48,6%
2014	37.634.000	2.061.085	1.891.500	5,0%	918	18.253	40,9%	10,9%	14,9%	62,4%	31,4%	1.005	90,3%	88,3%	49,0%
2015	38.853.000	2.062.874	1.910.900	4,9%	926	18.830	39,1%	11,1%	15,7%	61,8%	31,1%	1.013	91,0%	88,8%	49,0%
2016	40.443.000	2.064.188	1.942.200	4,8%	941	19.589	43,5%	11,0%	15,9%	64,3%	29,7%	1.030	92,0%	89,1%	48,4%
2017	43.011.000	2.065.895	2.029.300	4,7%	982	20.820	45,5%	10,9%	16,0%	69,2%	26,9%	1.062	93,4%	89,3%	47,5%
2018	45.864.000	2.066.880	2.145.500	4,7%	1.038	22.136	47,8%	10,8%	15,3%	74,0%	23,4%	1.093	94,9%	89,4%	46,5%
2019	48.397.000	2.080.908	2.309.600	4,8%	1.110	23.167	45,5%	23,6%	15,6%	72,2%	24,9%	1.134	95,5%	89,1%	46,8%
2020	46.918.000	2.095.861	2.366.700	5,0%	1.129	22.312	47,6%	23,4%	14,3%	87,1%	22,3%	1.209	95,0%	89,4%	47,8%

Source: data from various reports and statistics from AZN, Statistics office Slovenia, ZAV Združenje, Bank Slovenije, LjSE,

Some of the indicators not yet plotted in the form of charts are shown below, for Croatia.

Chart 62: Share of 1-MTPL and 1-MTPL/Casco/Life, 2003-2020, Croatia
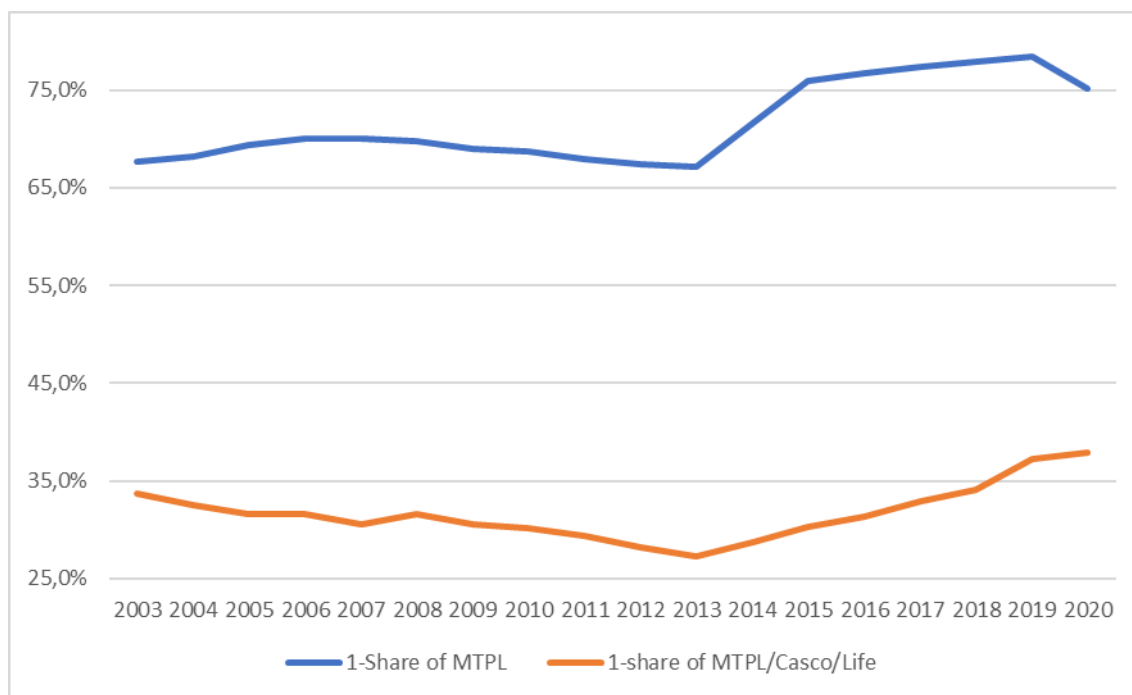
Source: Econometric model, by author (2022)

The chart above demonstrates the heavy reliance of the insurance sector on the most important product line, MTPL, which was for many years also the most relevant contributor to profits. In fact, up until 2013 its share even moderately increased, which is a testimony to the inertia of the sector to develop the other business lines even more. With the dawn of the liberalisation of the previously nationwide defined prices in MTPL from 2013 and the following price wars across the market, the insurers as an industry moved their attention also to other lines of business and their development, which is actually seen in both graphs in the chart above.

The next page yet shows two more charts with indicators of financial development and the indicators for social relations. The development of the stock market vs the assets of the insurance sector confirms the latter's stable development, while the unemployment rate is reminiscent of the effects of the long recession that took hold in Croatia.

Chart 63: Share of insurance assets in insurance sector and stock exchange, 2003-2020, Croatia
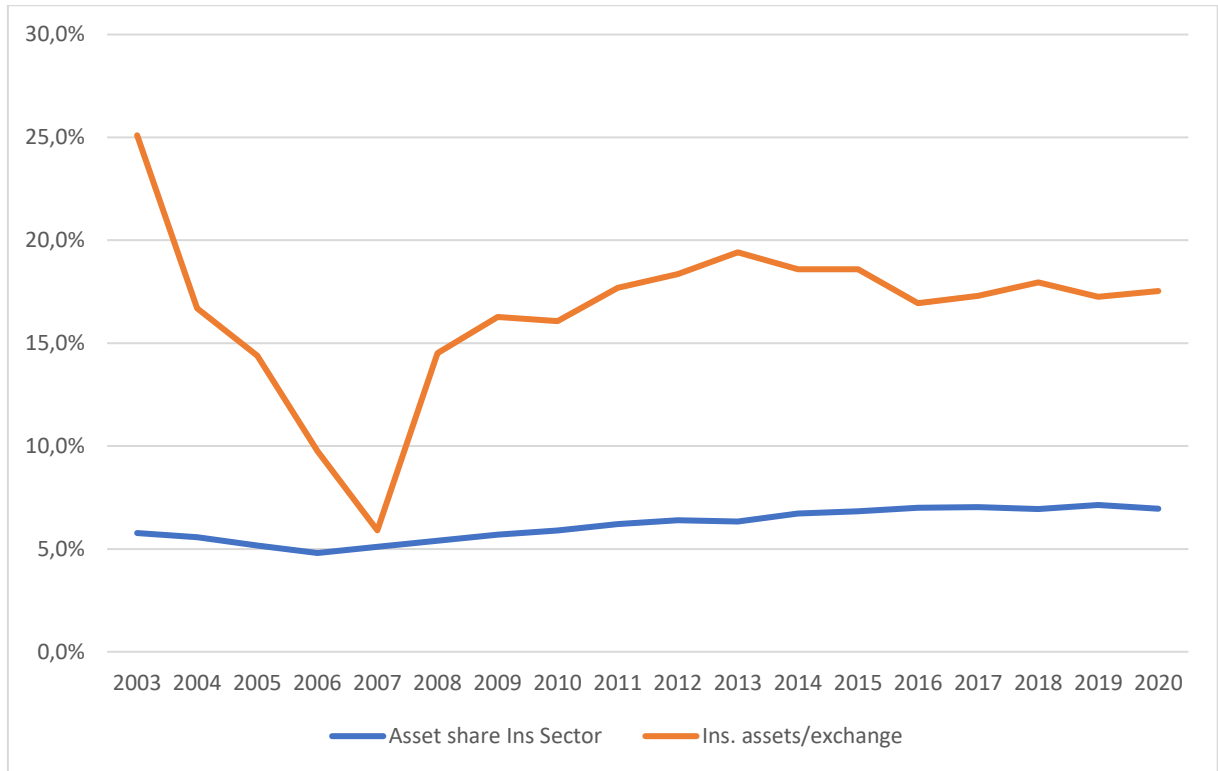
Source: Econometric model, by author (2022)

Chart 64: Unemployment rate vs average salary development, 2003-2020, Croatia
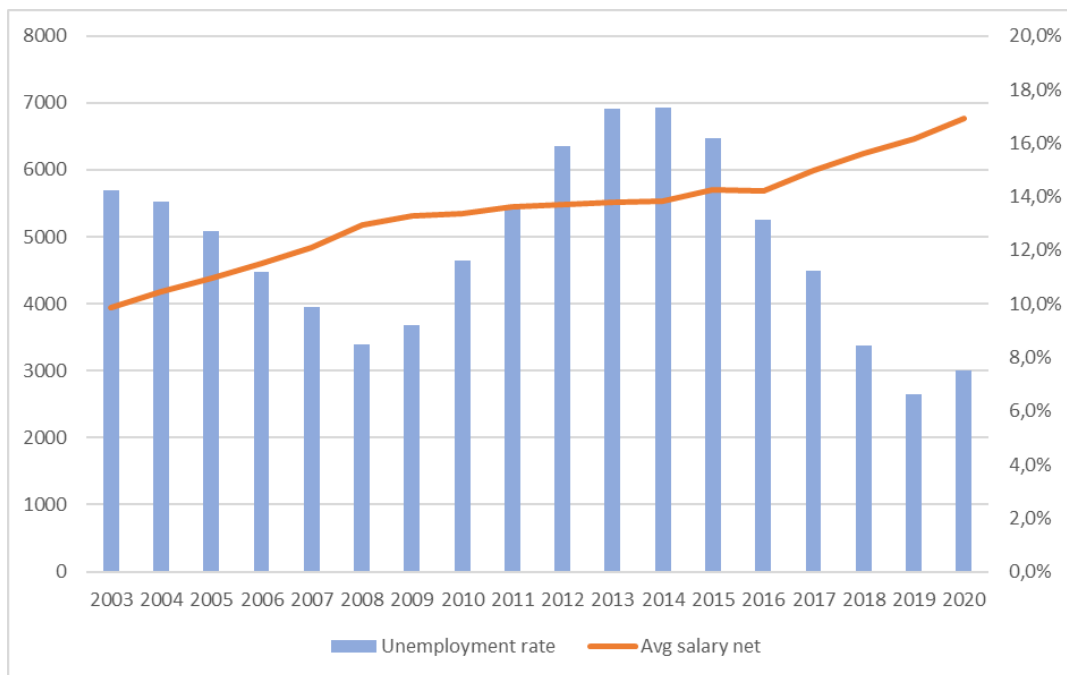
Source: Econometric model, by author (2022)

Table 33: SH2 part 1, Correlation coefficients (Pearson) for share international insurers, 2003-2020

	Croatia	Bulgaria	Czechia	Hungary	Poland	Romania	Slovakia	Slovenia
GDP/capita	0,758123686	-0,83018731	0,290692213	0,786305918	-0,122164951	0,862096101	0,650116627	0,838740035
Ins penetration	0,107201427	0,394945671	-0,022326568	-0,366048861	-0,069411739	-0,746056493	-0,490928837	-0,040102308
Ins density	0,785591958	-0,730034603	0,558377014	0,84609487	-0,107199508	0,778111353	0,584498148	0,824004705
Share of insurance sector in assets	0,307142967	-0,699565121	-0,086477636	-0,016372752	0,058817458	0,502801423	-0,514326397	0,830402243
Stock market/GDP	0,502420587	0,104243341	0,4505935	-0,186665488	0,123607739	0,484811985	0,570822294	0,511437005
Average salary	0,664042963	-0,838357566	0,335597107	0,792203174	-0,141192148	0,850341552	0,627164814	0,936905067
1-unemployment rate	0,575768581	-0,246331802	0,107759997	0,246884109	-0,29406619	0,652375784	0,630499118	-0,213587945
1-share of MTPL	0,508758781	0,755382748	0,388174554	-0,244335061	0,170218847	-0,849023839	0,319054684	0,936076321
1-share of MTPL, Casco, Life	0,139261264	0,577246512	0,126704338	0,196813318	-0,06061973	-0,303850285	0,277058537	0,611957969

Source: Econometric model, calculations by author (2022)

The following chart visualizes these correlation factors and it appears for many countries to hold that the selected parameters have a consistent positive correlation, the majority of countries even with a strong relation. However, as expected, this is not valid for all countries. For example, Bulgaria seems to follow a different pattern in most pairs of correlation, whereas Croatia, Hungary, Slovakia and Slovenia seem to show similar relations.

Chart 65: SH2 part 1, Correlation coefficients (Pearson) for share international insurers, 2003-2020
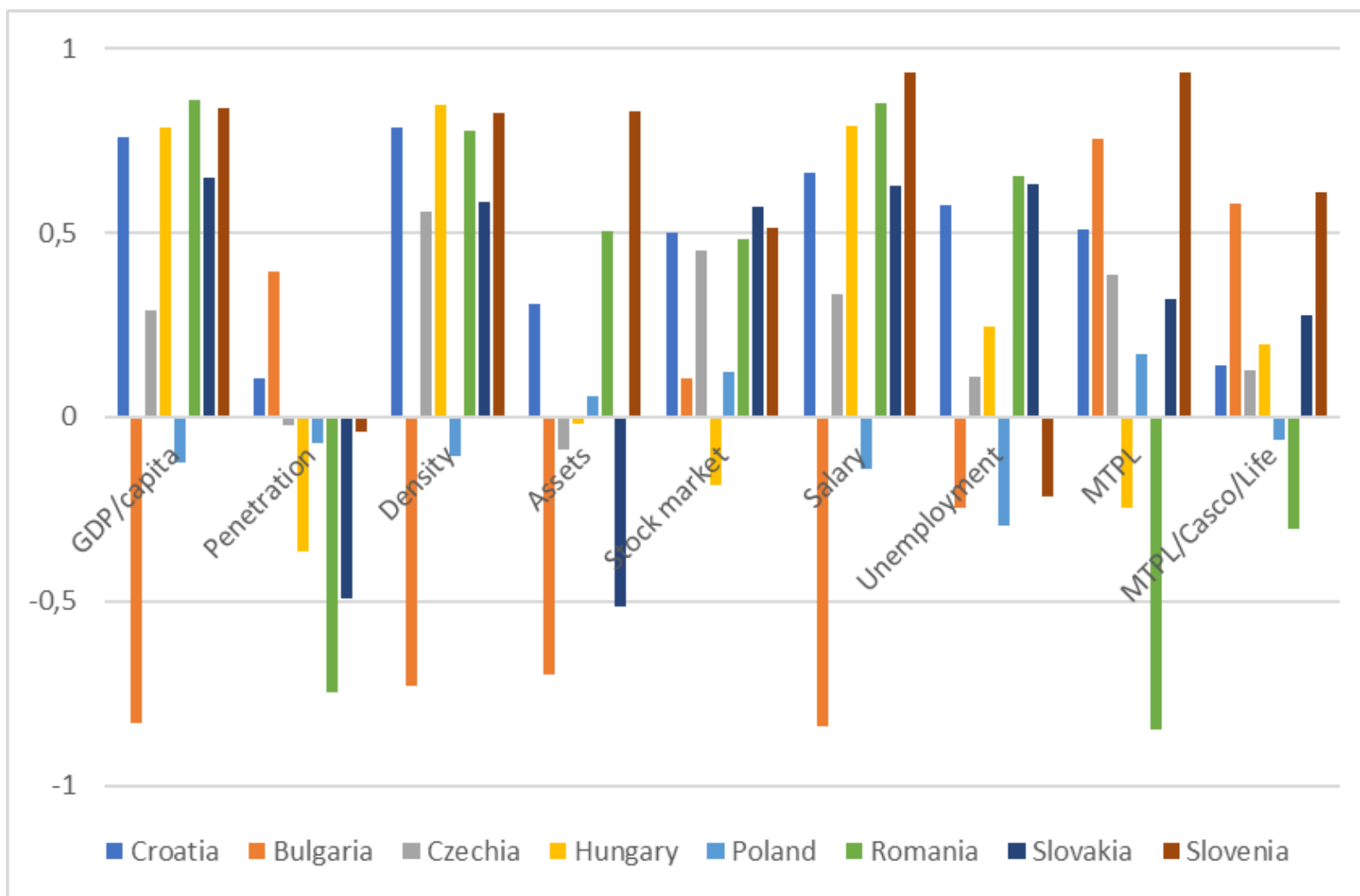
Source: Econometric model, by author (2022)

Table 34: SH2 part 1, Correlation coefficients (Pearson) for market share international insurers, 2003-2020

	Croatia	Bulgaria	Czechia	Hungary	Poland	Romania	Slovakia	Slovenia
GDP/capita	0,914266556	0,058768221	0,722185956	0,256705182	-0,64446811	0,661064391	-0,61541064	0,791018602
Ins penetration	-0,19531959	0,484776189	-0,45399537	-0,23151509	0,81980354	-0,30729788	0,052698393	-0,11602044
Ins density	0,858237261	0,116135031	0,903736675	0,262884974	-0,24089609	0,785259575	-0,65571399	0,760877214
Share of insurance sector in assets	0,749806179	-0,51839062	-0,3954976	-0,30979988	0,576323299	0,889572673	-0,02486132	0,564703674
Stock market/GDP	0,507593183	0,24644906	0,197948575	-0,63889739	-0,12699659	0,159636536	-0,7444869	0,616759332
Average salary	0,908201921	0,003946768	0,732598796	0,284163618	-0,66568716	0,594139734	-0,59134454	0,784437408
1-unemployment rate	0,147406463	0,392089596	0,40565623	-0,36719018	-0,38812137	0,309274643	-0,22664343	0,241409099
1-share of MTPL	0,621102219	-0,17903783	0,840584404	0,28811234	0,899423469	-0,71849307	-0,77266642	0,64134433
1-share of MTPL, Casco, Life	0,007952191	-0,31816246	0,499699048	0,119810232	-0,87187915	-0,65573133	-0,53681528	0,380708167

Source: Econometric model, calculations by author (2022)

Again, it appears for many countries to hold that the selected parameters have a consistent positive correlation, the majority of countries even with a strong relation. However, as expected, this is not valid for all countries. For example, Slovakia consistently shows negative correlations; this might be explained with the fact that the market share of international players was consistently extremely high throughout the entire observation period, whereas Croatia, Czech Republic, Romania, Poland and Slovenia seem to show similar relations.

Chart 66: SH2 part 1, Correlation coefficients (Pearson) for market share international insurers, 2003-2020
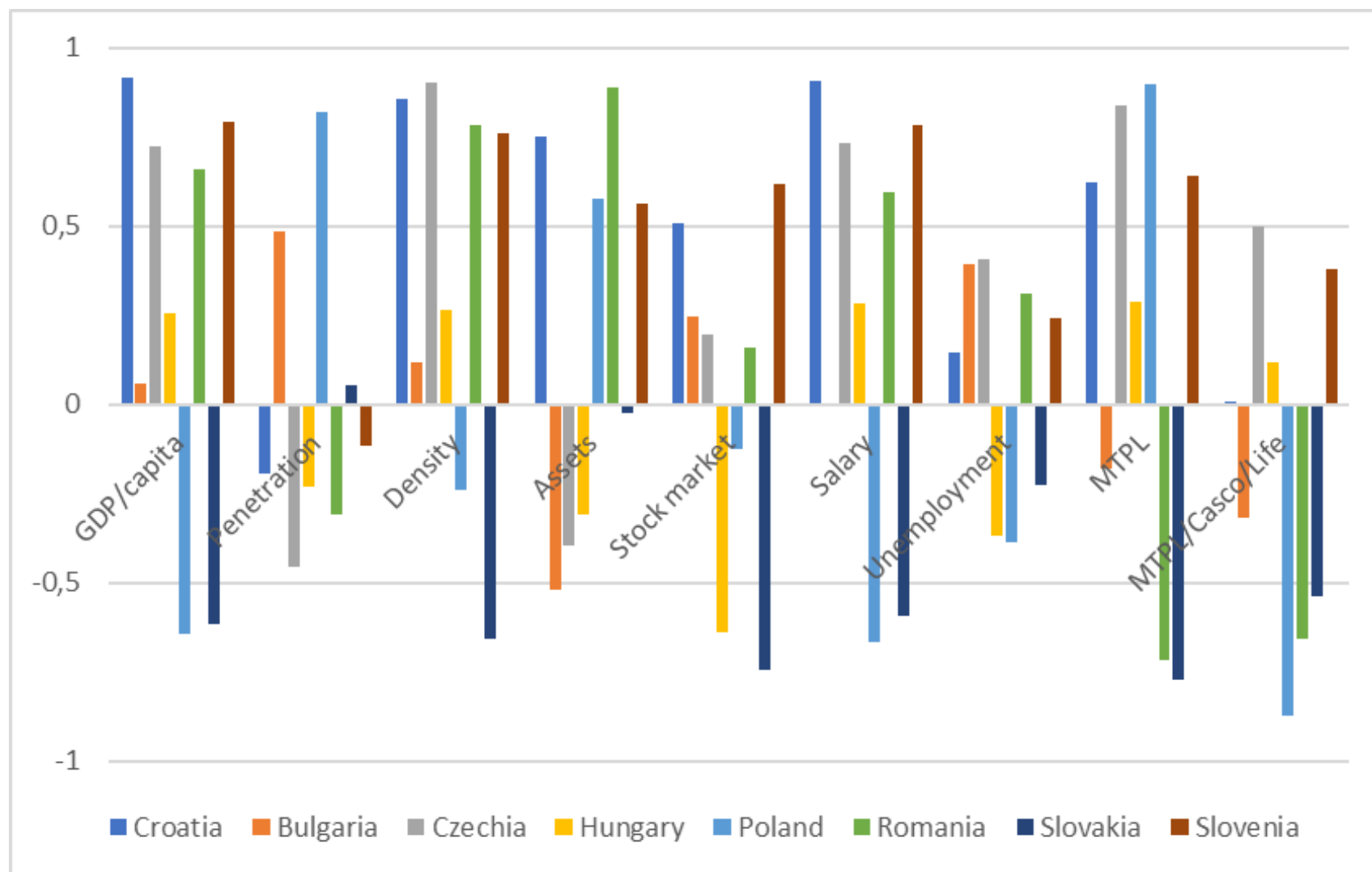
Source: Econometric model, by author (2022)

Table 35: SH2 part 2, Correlation coefficients for 1-share of MTPL, 2003-2020

	Croatia	Bulgaria	Czechia	Hungary	Poland	Romania	Slovakia	Slovenia
GDP/capita	0,751039334	-0,909541347	0,56796979	-0,206720578	-0,59661921	-0,864617289	0,747218657	0,87506976
Stock market/GDP	0,308292886	0,095713361	0,047918851	-0,438292572	-0,018602802	-0,340095276	0,686792499	0,446792855
Average salary	0,711934106	-0,906729968	0,571879374	-0,215458983	-0,61996572	-0,83482018	0,697768659	0,958414824
1-unemployment rate	0,428050018	-0,35624914	0,255586194	-0,654892511	-0,33599387	-0,577507257	0,585284674	-0,256225539

Source: Econometric model, calculations by author (2022)

Table 36: SH2 part 2, Correlation coefficients for 1-share of MTPL, Casco, Life, 2003-2020

	Croatia	Bulgaria	Czechia	Hungary	Poland	Romania	Slovakia	Slovenia
GDP/capita	0,336660861	-0,81404185	0,936824895	0,579852886	0,824069623	-0,50691125	0,767527256	0,318455585
Stock market/GDP	0,03398425	0,074593118	0,739178787	-0,61965156	0,203274774	0,038000542	0,717790631	0,280373676
Average salary	0,340067997	-0,79462727	0,935521405	0,551645212	0,845996131	-0,47645823	0,768515202	0,462854139
1-unemployment rate	0,736532657	-0,42819716	0,824232322	0,346347773	0,518023732	-0,49050628	0,700391169	-0,50716941

Source: Econometric model, calculations by author (2022)

Plotted on the charts these correlation coefficients appear the following for each country:

Chart 67: Results SH2 part 2, Correlation coefficients for 1-share of MTPL:
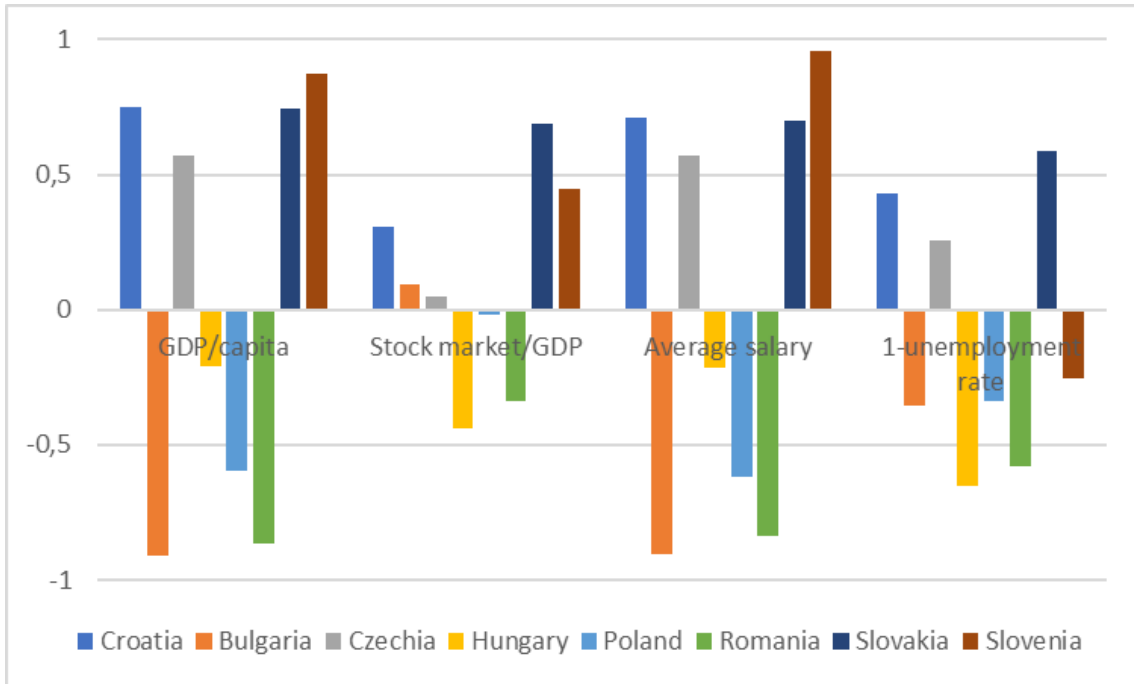
Source: Econometric model, by author (2022)

Chart 68: Results SH2 part 2, Correlation coefficients for 1-share of MTPL, Casco, Life
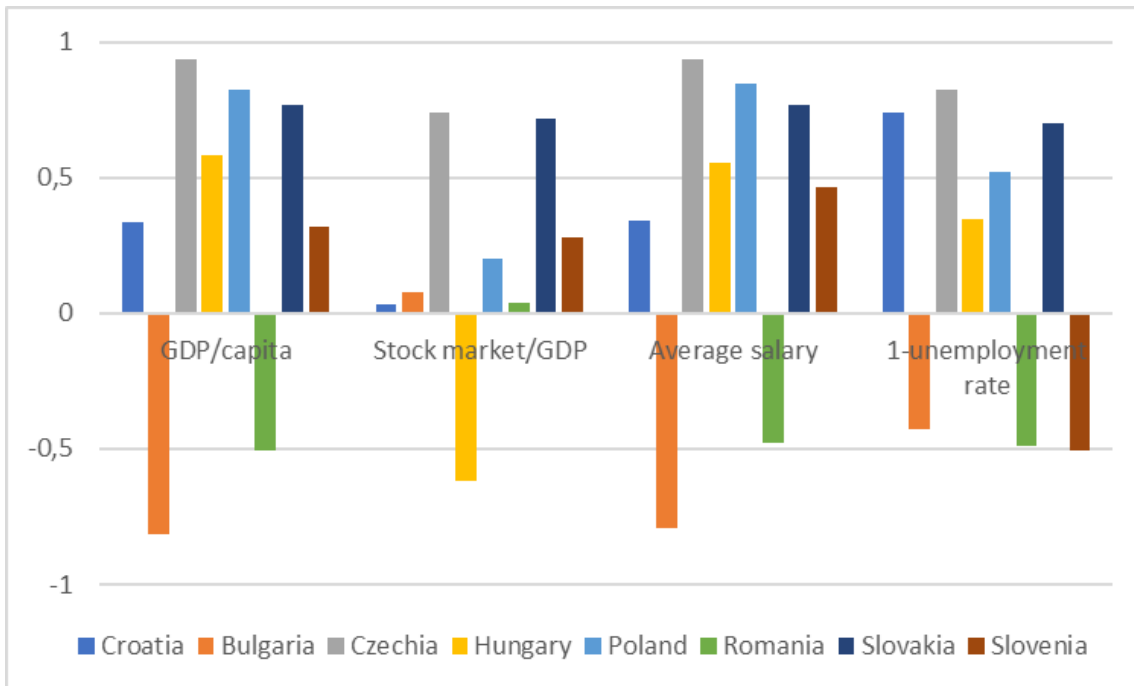
Source: Econometric model, by author (2022)

For the validation of the second part of the supporting hypothesis 2, the impact of the financial development, the economic structure and the social relations within a country affect the number and type of financial products, the analysis appears more conclusive when looking at the share of the most critical products including Life insurance. This is also as expected, as in particular Life insurance, as a financial product, is a testimony to the financial deepening and to the financial and economic development of a country. Differences between the countries also become visible and can be attributed to the numbers presented in the data set. For example, Bulgaria, shows a vastly different trend with returning to an increase of its MTPL-share over time and a consistently low share of Life insurance, while at the same time a decreasing trend in the engagement of international investors. This is also in line with the theme of the dissertation.

Purely looking at the correlation factors, Croatia appears with similar effects as Czech Republic, Slovakia, Poland and Slovenia. However, each country has its historic market development specifics which influence the outcome of the analysis. Table 36 reveals a positive relationship.

Overall, tendencies of similar developments across the countries appear, somewhere moderate and somewhere stronger. Individual market development, however, cannot be neglected and have their impact on the results of the research.

For completion, also the correlation matrix with selected key parameters for each country is presented below:

Table 37: Correlation matrix, SH 2, Croatia:

	Market share of int. ins	GDP/capita	Asset share Ins Sector	Exchange/GDP	Avg salary	1-Unemployment rate	1-Share of MTPL	1-share of MTPL/Casco/Life
Market share of int. insurers	1							
GDP/capita	0,914266556	1						
Asset share Ins Sector	0,749806179	0,733155795	1					
Exchange/GDP	0,507593183	0,453700576	0,022187063	1				
Avg salary	0,908201921	0,963451614	0,816199219	0,362939443	1			
1-Unemployment rate	0,147406463	0,465002028	-0,025730027	0,332196393	0,35119059	1		
1-Share of MTPL	0,621102219	0,751039334	0,713829709	0,308292886	0,711934106	0,428050018	1	
1-share of MTPL/Casco/Life	0,007952191	0,336660861	0,272455437	0,03398425	0,340067997	0,736532657	0,60134333	1

Source: Econometric model, calculations by author (2022)

Table 38: Correlation matrix, SH 2, Bulgaria:

	Market share of int. ins	GDP/capita	Asset share Ins Sector	Exchange/GDP	Avg salary	1-Unemployment rate	1-Share of MTPL	1-share of MTPL/Casco/Life
Market share of int. insurers	1							
GDP/capita	0,058768221	1						
Asset share Ins Sector	-0,518390616	0,644685167	1					
Exchange/GDP	0,247332875	0,040979888	-0,077437012	1				
Avg salary	0,003946768	0,994086254	0,671659078	-0,008783171	1			
1-Unemployment rate	0,392089596	0,565322887	0,304803275	0,63700396	0,513613401	1		
1-Share of MTPL	-0,179037829	-0,909541347	-0,367654763	0,096144825	-0,906729968	-0,35624914	1	
1-share of MTPL/Casco/Life	-0,318162457	-0,814041848	-0,229859601	0,074416819	-0,794627266	-0,428197163	0,890382209	1

Source: Econometric model, calculations by author (2022)

Table 39: Correlation matrix, SH 2, Czech Republic:

	Market share of int. ins	GDP/capita	Asset share Ins Sector	Exchange/GDP	Avg salary	1-Unemployment rate	1-Share of MTPL	1-share of MTPL/Casco/Life
Market share of int. insurers	1							
GDP/capita	0,722185956	1						
Asset share Ins Sector	-0,518831909	-0,181670685	1					
Exchange/GDP	0,180702299	0,666347761	-0,03191844	1				
Avg salary	0,732598796	0,987887585	-0,24259221	0,687299477	1			
1-Unemployment rate	0,40565623	0,848815166	-0,091442713	0,651377985	0,795353962	1		
1-Share of MTPL	0,840584404	0,56796979	-0,263263947	0,040145919	0,571879374	0,255586194	1	
1-share of MTPL/Casco/Life	0,499699048	0,936824895	-0,035976906	0,747290911	0,935521405	0,824232322	0,363080513	1

Source: Econometric model, calculations by author (2022)

Table 40: Correlation matrix, SH 2, Hungary:

	Market share of int. ins	GDP/capita	Asset share Ins Sector	Exchange/GDP	Avg salary	1-Unemployment rate	1-Share of MTPL	1-share of MTPL/Casco/Life
Market share of int. insurers	1							
GDP/capita	0,256705182	1						
Asset share Ins Sector	-0,69664088	0,259098936	1					
Exchange/GDP	-0,671566555	-0,363313944	0,235990138	1				
Avg salary	0,284163618	0,987633403	0,195938302	-0,384876685	1			
1-Unemployment rate	-0,367190179	0,59610792	0,57958054	0,183400858	0,547245191	1		
1-Share of MTPL	0,28811234	-0,206720578	-0,071701109	-0,438355124	-0,215458983	-0,654892511	1	
1-share of MTPL/Casco/Life	0,119810232	0,579852886	0,412300498	-0,680194731	0,551645212	0,346347773	0,16967514	1

Source: Econometric model, calculations by author (2022)

Table 41: Correlation matrix, SH 2, Poland:

	Market share of int. insurers	GDP/capita	Asset share Ins Sector	Exchange/GDP	Avg salary	1-Unemployment rate	1-Share of MTPL	1-share of MTPL/Casco/Life
Market share of int. insurers	1							
GDP/capita	-0,644468108	1						
Asset share Ins Sector	-0,283401336	-0,29353982	1					
Exchange/GDP	-0,516129033	0,359092491	0,679017094	1				
Avg salary (PLN)	-0,665687158	0,997576366	-0,278389745	0,353129039	1			
1-Unemployment rate	-0,388121372	0,864916438	-0,461595467	0,266367836	0,846332833	1		
1-Share of MTPL	0,899423469	-0,59661921	-0,236999986	-0,38536949	-0,61996572	-0,33599387	1	
1-share of MTPL/Casco/Life	-0,871879153	0,824069623	0,126121665	0,481938888	0,845996131	0,518023732	-0,821372053	1

Source: Econometric model, calculations by author (2022)

Table 42: Correlation matrix, SH 2, Romania:

	Market share of int. ins	GDP/capita	Asset share Ins Sector	Exchange/GDP	Avg salary	1-Unemployment rate	1-Share of MTPL	1-share of MTPL/Casco/Life
Market share of int. insurers	1							
GDP/capita	0,661064391	1						
Asset share Ins Sector	0,108606739	0,623828275	1					
Exchange/GDP	0,335017566	0,166529308	0,24687448	1				
Avg salary	0,594139734	0,992721704	0,632481466	0,147283314	1			
1-Unemployment rate	0,309274643	0,802579349	0,592978567	0,026141716	0,821392074	1		
1-Share of MTPL	-0,718493068	-0,864617289	-0,652527842	-0,225310487	-0,83482018	-0,577507257	1	
1-share of MTPL/Casco/Life	-0,655731331	-0,506911246	-0,072933962	-0,091338617	-0,476458231	-0,490506282	0,560064649	1

Source: Econometric model, calculations by author (2022)

Table 43: Correlation matrix, SH 2, Slovakia:

	Market share of int. ins	GDP/capita	Asset share Ins Sector	Exchange/GDP	Avg salary	1-Unemployment rate	1-Share of MTPL	1-share of MTPL/Casco/Life
Market share of int. insurers	1							
GDP/capita	-0,615410643	1						
Asset share Ins Sector	-0,024861317	-0,523931234	1					
Exchange/GDP	-0,744486899	0,888847543	-0,523572033	1				
Avg salary	-0,591344542	0,988434084	-0,590903973	0,91373455	1			
1-Unemployment rate	-0,226643425	0,867978172	-0,612379105	0,613718726	0,851991606	1		
1-Share of MTPL	-0,772666415	0,747218657	-0,083776371	0,686792499	0,697768659	0,585284674	1	
1-share of MTPL/Casco/Life	-0,536815278	0,767527256	-0,492841087	0,717790631	0,768515202	0,700391169	0,843000065	1

Source: Econometric model, calculations by author (2022)

Table 44: Correlation matrix, SH 2, Slovenia:

	Market share of int. ins	GDP/capita	Asset share Ins Sector	Exchange/GDP	Avg salary	1-Unemployment rate	1-Share of MTPL	1-share of MTPL/Casco/Life
Market share of int. insurers	1							
GDP/capita	0,791018602	1						
Asset share Ins Sector	0,564703674	0,712314301	1					
Exchange/GDP	0,616759332	0,601096316	0,522028953	1				
Avg salary	0,784437408	0,940647508	0,765629289	0,523930366	1			
1-Unemployment rate	0,241409099	0,231593591	-0,308135591	0,341752471	-0,0574068	1		
1-Share of MTPL	0,64134433	0,87506976	0,861364583	0,446792855	0,958414824	-0,256225539	1	
1-share of MTPL/Casco/Life	0,380708167	0,318455585	0,797493938	0,280373676	0,462854139	-0,507169411	0,561048163	1

Source: Econometric model, calculations by author (2022)

After having observed the correlations between key parameters, we will look at the multivariate regression analysis for the key parameters of supporting hypothesis 2. Various regressions have been performed with parameters that have been selected based upon the previous analysis. Below are the outcomes of R^2 presented per country and dependency.

For the purpose of assessing the validity of part 1 of the supporting hypothesis 2, that the specifics of financial development, economic structure and social relations within a country affect the level of international investment, the impact of

- GDP/capita, asset share of the insurance sector, the stock market/GDP, average salaries, and 1-unemployment rate

- on the market share of international insurers

is assessed.

Similarly, for the purpose of assessing the validity of part 2 of the supporting hypothesis 2, that the specifics of financial development, economic structure and social relations within a country affect the number and type of financial products, the impact of:

- GDP/capita, asset share of the insurance sector, the stock market/GDP, average salaries, and 1-unemployment rate

- on the share of non-MTPL (1-MTPL)

is assessed.

Table 45: Regression results, supporting hypothesis, part 1 and 2, R^2-factors

Country	SH2, part 1	SH2, part 2
Croatia	0,958721607	0,785751357
Bulgaria	0,708268044	0,958099497
Czech Republic	0,900228281	0,653583497
Hungary	0,855650516	0,765953756
Poland	0,745012523	0,725066495
Romania	0,869379524	0,869379524
Slovakia	0,834624534	0,754177689
Slovenia	0,77030839	0,989045967

Source: Econometric model (2022)

Chart 69: Results for multivariate regression on SH2, part 1 and 2, R^2-factors
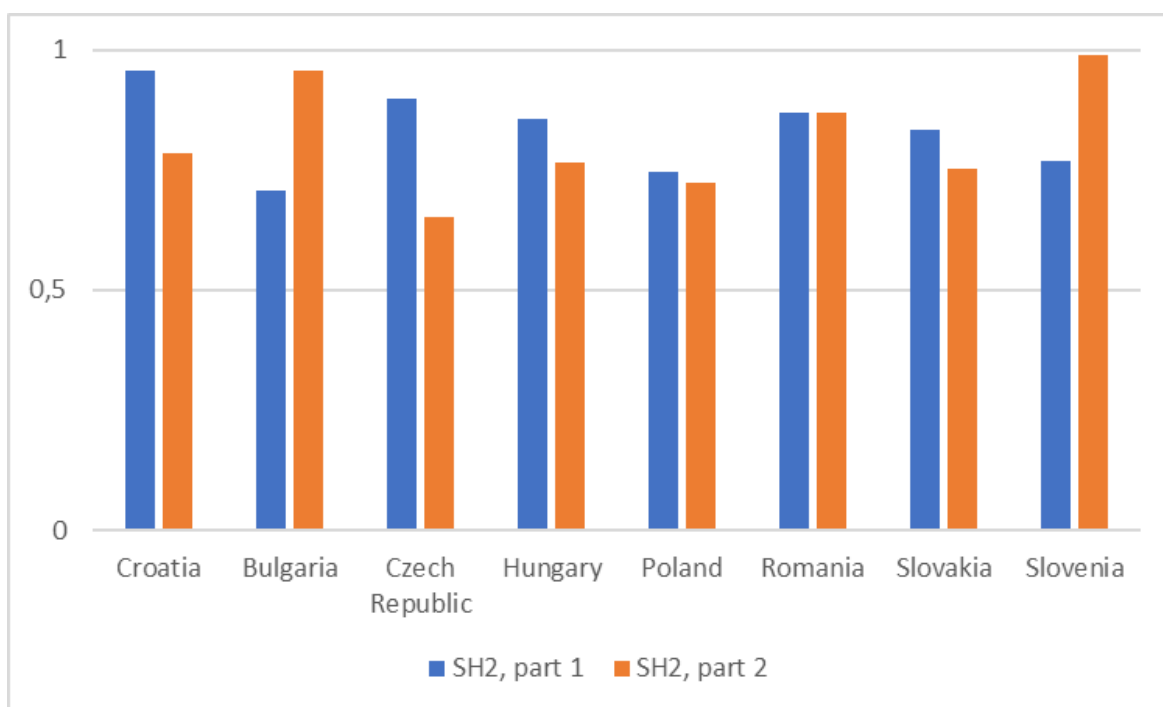
Source: Econometric model, by author (2022)

From the multivariate regression analysis, it appears that the five variables well explain the development of the dependent variable, for both parts of the supporting hypothesis 2. This holds valid across all eight countries with R^2 well above positive 0,5.

Individual correlations in the first step of this analysis revealed aspects of the heterogeneity, the joint development of these main factors and their impact on the development of the engagement of international investors (part 1) as well as the number and type of financial products (part 2). Assessing the results of the correlation analysis with both factors[208], respectively, the supporting hypothesis 2 requires distinguishing among the analysed countries:

- Part 1 of SH2 returns some parameters in some countries supporting the SH1, but not consistently across all items of the hypothesis (correlation with share of MTPL and

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[208] Share international insurers and market share international insurers
  Share of MTPL and share of MTPL/Casco/Life

share of MTPL/Casco/Life is less relevant here as it is tested specifically in part 2). This is focused on Table 34, but also considering Table 33.

- o Croatia returns six positive (strongly) correlation factors and one moderately negative factor.

- o Bulgaria doesn't return any strongly positive correlated factors, but rather uncorrelated or moderately correlated factors.

- o Czech Republic reveals five positive correlations (3 are strong) and 2 moderate negative).

- o Hungary (Table 33) is showing 3 strongly positive factors, three slightly negative and one moderate positive. Table 34 shows no strong positive correlations.

- o Poland (Table 33) is rather inconclusive in all parameters as no parameter hints towards a strong correlation, except in Table 34 the insurance penetration as well as the share of insurance assets.

- o Romania shows 6 positive correlation factors with the majority having a strong relationship, while one is moderately negative.

- o Slovakia in Table 34 reveals 6 negative factors, however, here the author would argue, that the fact that international market shares have been extremely high throughout the entire time series, minimal oscillations, which are insignificant in the course of normal market development, have disproportional effects and are therefore not reliable. Therefore, focus shall be given here on Table 33, which returns five moderately strong positive correlations and 2 moderate negative factors.

- o Slovenia reveals six positive correlation factors (five are strong), and one is moderately negative.

- Part 2 of SH2 also returns some parameters in some countries supporting the SH2, but not consistently across all items of the hypothesis. (See Tables 35 and 36)

- o Croatia reveals positive relations across all four parameters, in both versions of the model (1-share of MTPL and 1-share of MTPL, Casco, Life), 2 strongly, 2 moderate factors (with MTPL)

- o Bulgaria reveals two strongly negative, one moderately negative and one uncorrelated factor

- o Czech Republic reveals four strongly positive correlation factors, especially for 1-share MTPL, Casco, Life

- o Hungary returns three positive factors and one negative factor for 1-share MTPL, Casco, Life

- o Poland reveals four positive correlation factors for 1-share MTPL, Casco, Life (Table 36)

- o Romania returns three moderate negative factors and one uncorrelated factor for 1-share MTPL, Casco, Life

- o Slovakia returns four strongly positive correlated factors (both 1-share MTPL and for 1-share MTPL, Casco, Life)

- o Slovenia shows three positive factors (strong as well as moderate in both models) and one negative factor

Considering these results, part 1 of SH2 is accepted for Croatia, Czech Republic, Hungary, Romania, Slovakia and Slovenia, but rejected for Bulgaria and Poland. Allowing for heterogeneity especially in the effects of MTPL and its liberalisation process, the trends of positive correlations, with at least three, out of four, factors in either or both versions of the model (1-share MTPL and for 1-share MTPL, Casco, Life) supports accepting part 2 of SH2 for the countries Croatia, Czech Republic, Hungary, Poland, Slovakia and Slovenia. SH2 part 2 is rejected for Bulgaria and Romania.

7.2.3. Supporting hypothesis 3

Supporting hypothesis 3:

The engagement of international investors also significantly influenced the development of insurance markets towards a market-oriented insurance sector in the CEE region.

Supporting hypothesis 3 brings the research back to the model already established for SH1 when the effect of international investors on Croatia was analysed. Considering the analysis for the previous SH2 and throughout the dissertation, the trend of the development towards a market-oriented insurance sector, with increases in the insurance parameters, is evident in the region. We will now apply this model and test it across the other seven countries of the CEE region, again using the tools of correlation and regression. The foreign investment in the insurance market will be evaluated via two different variables, one being the annual year-end market share accumulated by the international insurers, the other being the share of the international insurers in total insurance companies active on the market. The development of the insurance market will be assessed via the indicators Gross Written Premium, insurance penetration and insurance density:

- Gross written premium (GWP) / share international insurers

- Insurance penetration / share international insurers (number)

- Insurance density / share international insurers (number)

- GWP / market share international insurers

- Insurance penetration / market share international insurers (share in GWP total)

- Insurance density / market share international insurers (share in GWP total)

- Also shown in a correlation matrix

Presented below are the data points extracted from various sources, which flow into this part of the econometric model. As the data for Croatia has already been shown, here is only shown the data for the other seven countries. This is then followed by the results of the correlation analysis.

Table 46: Data for SH3 analysis, Bulgaria, 2003-2020

Year	GWP (1.000 BGN)	GDP (1.000 BGN)	Population	Pene-tration	Density	GDP/ capita	Number insurers	Number int. insurers	Share int. insurers	GWP int. insurers	Market share int. insurers	Int. Pene-tration	Int. Density	Domestic Penetration	Domestic Density
2003	672.751	34.627.545	7.801.300	1,9%	86	4.416	28	18	64,3%	346.467	51,5%	1,0%	44	0,9%	42
2004	845.903	38.822.636	7.761.049	2,2%	109	4.919	29	19	65,5%	448.323	53,0%	1,2%	58	1,0%	51
2005	1.086.991	42.797.407	7.718.750	2,5%	141	5.420	29	19	65,5%	721.931	66,4%	1,7%	94	0,9%	47
2006	1.269.569	49.360.950	7.679.290	2,6%	165	6.376	34	21	61,8%	938.559	73,9%	1,9%	122	0,7%	43
2007	1.530.384	56.519.818	7.659.765	2,7%	200	7.379	34	21	61,8%	1.061.873	69,4%	1,9%	139	0,8%	61
2008	1.810.820	69.295.031	7.954.466	2,7%	238	8.711	37	26	70,3%	1.396.275	77,1%	2,0%	176	0,6%	52
2009	1.681.504	68.321.610	7.821.653	2,5%	222	8.735	36	25	69,4%	1.264.994	75,2%	1,9%	162	0,6%	53
2010	1.623.464	70.474.302	7.527.563	2,3%	217	9.362	35	22	62,9%	1.106.257	68,1%	1,6%	147	0,7%	69
2011	1.613.760	75.308.000	7.348.556	2,1%	220	10.248	35	21	60,0%	1.110.137	68,8%	1,5%	151	0,7%	69
2012	1.604.144	78.089.000	7.305.548	2,1%	220	10.689	44	22	50,0%	1.144.170	71,3%	1,5%	157	0,6%	63
2013	1.729.415	78.115.000	7.270.570	2,2%	238	10.744	44	22	50,0%	1.184.879	68,5%	1,5%	163	0,7%	75
2014	1.774.736	83.634.000	7.234.149	2,1%	245	11.561	46	21	45,7%	1.212.595	68,3%	1,4%	168	0,7%	78
2015	1.964.319	88.571.000	7.380.302	2,2%	266	12.001	43	19	44,2%	1.347.915	68,6%	1,5%	183	0,7%	84
2016	2.050.662	92.635.000	7.143.904	2,2%	287	12.967	41	17	41,5%	1.375.956	67,1%	1,5%	193	0,7%	94
2017	2.177.442	102.741.000	7.075.826	2,1%	308	14.520	39	17	43,6%	1.479.270	67,9%	1,4%	209	0,7%	99
2018	2.527.287	109.964.000	7.025.107	2,3%	360	15.653	36	16	44,4%	1.655.757	65,5%	1,5%	236	0,8%	124
2019	2.910.824	120.395.000	6.975.781	2,4%	417	17.259	35	16	45,7%	1.813.852	62,3%	1,5%	260	0,9%	157
2020	2.885.172	119.951.000	6.933.985	2,4%	416	17.299	35	15	42,9%	1.730.170	60,0%	1,4%	250	1,0%	167

Source: data from various reports and statistics from BNB, FSC, XPrimm

Table 47: Data for SH3 analysis, Czech Republic, 2003-2020

Year	GWP (1.000 CZK)	GDP (1.000 CZK)	Population	Pene-tration	Density	GDP/ capita	Number insurers	Number int. insurers	Share int. insurers	GWP int. insurers	Market share int. insurers	Int. Pene-tration	Int. Density	Domestic Penetration	Domestic Density
2003	105.946.000	2.577.000.000	10.193.889	4,1%	10.393	252.799	32	19	59,4%	60.518.474	57,1%	2,3%	5.937	1,8%	4.456
2004	112.578.000	2.781.000.000	10.197.101	4,0%	11.040	272.725	31	19	61,3%	66.220.631	58,8%	2,4%	6.494	1,7%	4.546
2005	117.075.000	2.978.000.000	10.211.216	3,9%	11.465	291.640	31	20	64,5%	70.692.227	60,4%	2,4%	6.923	1,6%	4.542
2006	122.090.000	3.204.000.000	10.238.905	3,8%	11.924	312.924	31	20	64,5%	74.181.884	60,8%	2,3%	7.245	1,5%	4.679
2007	132.900.000	3.530.000.000	10.298.828	3,8%	12.904	342.757	32	22	68,8%	83.859.900	63,1%	2,4%	8.143	1,4%	4.762
2008	139.852.000	3.706.000.000	10.384.603	3,8%	13.467	356.874	31	23	74,2%	136.967.152	97,9%	3,7%	13.189	0,1%	278
2009	144.171.000	3.739.000.000	10.443.936	3,9%	13.804	358.007	33	24	72,7%	140.108.609	97,2%	3,7%	13.415	0,1%	389
2010	155.996.358	3.775.000.000	10.474.410	4,1%	14.893	360.402	33	24	72,7%	150.170.444	96,3%	4,0%	14.337	0,2%	556
2011	155.092.582	3.809.000.000	10.496.088	4,1%	14.776	362.897	33	23	69,7%	151.958.519	98,0%	4,0%	14.478	0,1%	299
2012	153.598.866	4.048.000.000	10.510.785	3,8%	14.613	385.128	32	23	71,9%	150.838.878	98,2%	3,7%	14.351	0,1%	263
2013	156.579.314	4.086.000.000	10.514.272	3,8%	14.892	388.615	31	22	71,0%	154.138.314	98,4%	3,8%	14.660	0,1%	232
2014	157.817.390	4.266.000.000	10.525.347	3,7%	14.994	405.307	30	21	70,0%	155.302.317	98,4%	3,6%	14.755	0,1%	239
2015	153.395.094	4.595.800.000	10.546.059	3,3%	14.545	435.784	28	18	64,3%	150.404.329	98,1%	3,3%	14.262	0,1%	284
2016	147.216.232	4.773.200.000	10.566.332	3,1%	13.933	451.737	26	16	61,5%	144.087.960	97,9%	3,0%	13.637	0,1%	296
2017	150.836.603	5.055.000.000	10.594.438	3,0%	14.237	477.137	26	15	57,7%	147.052.790	97,5%	2,9%	13.880	0,1%	357
2018	155.045.584	5.346.399.448	10.629.928	2,9%	14.586	502.957	28	21	75,0%	150.550.116	97,1%	2,8%	14.163	0,1%	423
2019	165.927.920	5.721.652.414	10.671.870	2,9%	15.548	536.143	25	19	76,0%	160.189.150	96,5%	2,8%	15.010	0,1%	538
2020	167.976.719	5.599.223.967	10.698.896	3,0%	15.700	523.346	27	18	66,7%	161.243.155	96,0%	2,9%	15.071	0,1%	629

Source: data from various reports and statistics from CNB, ČAP, XPrimm, World Bank

Table 48: Data for SH3 analysis, Hungary, 2003-2020

Year	GWP (mnHUF)	GDP (mnHUF)	Population	Pene-tration	Density	GDP/capita	Number insurers	Number int. insurers	Share int. insurers	GWP int. insurers	Market share int. insurers	Int. Pene-tration	Int. Density	Domestic Penetration	Domestic Density
2003	559.400	18.409.000	10.129.552	3,0%	55.225	1.817.356	29	17	58,6%	454.513	81,3%	2,5%	44.870	0,6%	10.355
2004	599.000	20.717.000	10.107.146	2,9%	59.265	2.049.738	28	17	60,7%	497.709	83,1%	2,4%	49.243	0,5%	10.022
2005	686.500	22.055.000	10.087.065	3,1%	68.057	2.186.464	27	17	63,0%	552.289	80,5%	2,5%	54.752	0,6%	13.305
2006	830.200	23.562.000	10.071.370	3,5%	82.432	2.339.503	26	18	69,2%	671.466	80,9%	2,8%	66.671	0,7%	15.761
2007	930.300	25.374.000	10.055.780	3,7%	92.514	2.523.325	29	18	62,1%	755.869	81,3%	3,0%	75.168	0,7%	17.346
2008	882.800	27.258.344	10.038.188	3,2%	87.944	2.715.465	32	22	68,6%	828.002	93,8%	3,0%	82.485	0,2%	5.459
2009	830.500	26.529.876	10.022.650	3,1%	82.862	2.646.992	32	23	70,6%	768.869	92,6%	2,9%	76.713	0,2%	6.149
2010	843.800	27.225.000	10.000.023	3,1%	84.380	2.722.494	30	21	70,0%	764.488	90,6%	2,8%	76.449	0,3%	7.931
2011	817.300	28.549.802	9.971.727	2,9%	81.962	2.863.075	32	22	68,8%	734.214	89,8%	2,6%	73.630	0,3%	8.332
2012	768.100	28.305.000	9.920.362	2,7%	77.427	2.853.222	32	21	65,6%	680.490	88,6%	2,4%	68.595	0,3%	8.831
2013	809.400	30.247.000	9.893.082	2,7%	81.815	3.057.389	30	20	66,7%	709.174	87,6%	2,3%	71.684	0,3%	10.131
2014	850.200	32.592.000	9.866.468	2,6%	86.171	3.303.310	32	21	65,6%	732.531	86,2%	2,2%	74.245	0,4%	11.926
2015	869.200	34.324.000	9.843.028	2,5%	88.306	3.487.138	32	21	65,6%	751.387	86,4%	2,2%	76.337	0,3%	11.969
2016	918.900	36.127.000	9.814.023	2,5%	93.631	3.681.161	30	20	66,7%	783.904	85,3%	2,2%	79.876	0,4%	13.755
2017	989.600	39.233.000	9.787.966	2,6%	101.104	4.008.289	27	19	70,4%	855.462	86,4%	2,2%	87.399	0,3%	13.704
2018	1.035.100	43.350.000	9.775.564	2,4%	105.886	4.434.527	28	20	71,4%	914.080	88,3%	2,1%	93.507	0,3%	12.380
2019	1.167.800	47.524.000	9.771.141	2,5%	119.515	4.863.710	26	20	76,9%	1.008.741	86,4%	2,1%	103.237	0,3%	16.278
2020	1.235.300	47.743.000	9.749.763	2,5%	126.701	4.896.837	24	18	75,0%	1.067.047	86,4%	2,2%	109.443	0,4%	17.257

Source: data from various reports and statistics from MNB, MABISC, Xprimm, Theglobaleconomy

Table 49: Data for SH3 analysis, Poland, 2003-2020

Year	GWP (1.000 PLN)	GDP (1.000 PLN)	Population	Pene-tration	Density	GDP/ capita	Number insurers	Number int. insurers	Share int. insurers	GWP int. insurers	Market share int. insurers	Int. Pene-tration	Int. Density	Domestic Penetration	Domestic Density
2003	25.882.465	847.152.100	38.191.000	3,1%	678	22.182	77	49	63,6%	18.609.493	71,9%	2,2%	487	0,9%	190
2004	27.772.477	933.091.500	38.174.000	3,0%	728	24.443	71	47	66,2%	20.023.956	72,1%	2,1%	525	0,8%	203
2005	31.020.901	990.530.500	38.157.000	3,1%	813	25.959	69	47	68,1%	22.552.195	72,7%	2,3%	591	0,9%	222
2006	37.581.034	1.069.431.400	38.125.000	3,5%	986	28.051	65	43	66,2%	28.223.357	75,1%	2,6%	740	0,9%	245
2007	43.816.098	1.187.508.100	38.116.000	3,7%	1.150	31.155	67	43	64,2%	34.132.740	77,9%	2,9%	895	0,8%	254
2008	59.109.677	1.285.570.700	38.136.000	4,6%	1.550	33.710	66	41	62,1%	46.460.206	78,6%	3,6%	1.218	1,0%	332
2009	51.168.684	1.372.024.500	38.167.000	3,7%	1.341	35.948	65	42	64,6%	42.060.658	82,2%	3,1%	1.102	0,7%	239
2010	54.148.095	1.446.843.500	38.530.000	3,7%	1.405	37.551	65	40	61,5%	41.910.626	77,4%	2,9%	1.088	0,8%	318
2011	57.149.635	1.565.251.300	38.538.000	3,7%	1.483	40.616	61	40	65,6%	44.062.369	77,1%	2,8%	1.143	0,8%	340
2012	62.626.384	1.623.442.500	38.533.000	3,9%	1.625	42.131	59	41	69,5%	48.660.700	77,7%	3,0%	1.263	0,9%	362
2013	57.862.686	1.646.723.900	38.496.000	3,5%	1.503	42.776	58	40	69,0%	45.422.209	78,5%	2,8%	1.180	0,8%	323
2014	54.926.969	1.711.244.200	38.479.000	3,2%	1.427	44.472	56	38	67,9%	38.229.170	69,6%	2,2%	994	1,0%	434
2015	55.101.881	1.801.112.000	38.437.000	3,1%	1.434	46.859	57	38	66,7%	38.295.807	69,5%	2,1%	996	0,9%	437
2016	56.039.183	1.863.486.900	38.433.000	3,0%	1.458	48.487	61	40	65,6%	36.705.665	65,5%	2,0%	955	1,0%	503
2017	62.338.742	1.989.834.600	38.434.000	3,1%	1.622	51.773	61	40	65,6%	40.146.150	64,4%	2,0%	1.045	1,1%	577
2018	62.169.792	2.121.555.000	38.411.000	2,9%	1.619	55.233	60	39	65,0%	39.975.176	64,3%	1,9%	1.041	1,0%	578
2019	63.815.049	2.293.199.300	38.383.000	2,8%	1.663	59.745	59	37	62,7%	40.841.631	64,0%	1,8%	1.064	1,0%	599
2020	63.421.468	2.326.656.500	38.265.000	2,7%	1.657	60.804	59	37	62,7%	40.462.897	63,8%	1,7%	1.057	1,0%	600

Source: data from various reports and statistics from PIU, KNF, NBP, World Bank, Statistics Poland, FRED

Table 50: Data for SH3 analysis, Romania, 2003-2020

Year	GWP (1.000 lei)	GDP (1.000 lei)	Population	Pene-tration	Density	GDP/ capita	Number insurers	Number int. insurers	Share int. insurers	GWP int. insurers	Market share int. insurers	Int. Pene-tration	Int. Density	Domestic Penetration	Domestic Density
2003	2.673.816	191.917.600	21.574.326	1,4%	124	8.896	46	24	52,2%	1.091.986	40,8%	0,6%	51	0,8%	73
2004	3.476.543	244.688.300	21.451.748	1,4%	162	11.406	42	25	59,5%	1.658.311	47,7%	0,7%	77	0,7%	85
2005	4.417.165	286.861.900	21.319.685	1,5%	207	13.455	42	27	64,3%	2.164.411	49,0%	0,8%	102	0,8%	106
2006	5.729.284	342.762.600	21.193.760	1,7%	270	16.173	40	28	70,0%	3.055.427	53,3%	0,9%	144	0,8%	126
2007	7.175.789	425.691.100	20.882.982	1,7%	344	20.385	42	30	71,4%	4.169.133	58,1%	1,0%	200	0,7%	144
2008	8.942.920	539.834.600	20.537.875	1,7%	435	26.285	44	29	65,9%	7.863.509	87,9%	1,5%	383	0,2%	53
2009	8.940.851	530.894.400	20.367.487	1,7%	439	26.066	45	28	62,2%	7.926.064	88,7%	1,5%	389	0,2%	50
2010	8.305.402	528.514.500	20.246.871	1,6%	410	26.104	43	27	62,8%	7.508.084	90,4%	1,4%	371	0,2%	39
2011	7.822.300	558.889.900	20.147.528	1,4%	388	27.740	43	27	62,8%	7.135.502	91,2%	1,3%	354	0,1%	34
2012	8.256.914	591.799.100	20.058.035	1,4%	412	29.504	41	30	73,2%	6.446.998	78,1%	1,1%	321	0,3%	90
2013	8.122.446	634.967.800	19.983.693	1,3%	406	31.774	38	32	84,2%	6.758.687	83,2%	1,1%	338	0,2%	68
2014	8.085.676	669.703.900	19.908.979	1,2%	406	33.638	37	33	90,0%	6.728.091	83,2%	1,0%	338	0,2%	68
2015	8.534.919	711.929.900	19.815.616	1,2%	440	35.928	35	30	85,7%	7.640.855	89,5%	1,1%	386	0,1%	45
2016	9.380.935	763.652.500	19.702.267	1,3%	503	38.760	31	27	87,1%	8.386.100	89,4%	1,1%	426	0,1%	50
2017	9.701.744	857.895.700	19.588.715	1,2%	528	43.795	31	27	87,1%	8.288.022	85,4%	1,0%	423	0,2%	72
2018	10.144.526	951.728.500	19.473.970	1,1%	545	48.872	29	26	89,7%	8.467.156	83,5%	0,9%	435	0,2%	86
2019	10.990.225	1.058.973.200	19.371.648	1,1%	599	54.666	28	25	90,0%	8.847.550	80,5%	0,8%	457	0,2%	111
2020	11.500.479	1.055.548.800	19.286.123	1,2%	630	54.731	28	25	90,0%	8.905.264	77,4%	0,8%	462	0,2%	135

Source: data from various reports and statistics from NBR, ASF, XPrimm, World Bank, various research articles

Table 51: Data for SH3 analysis, Slovakia, 2003-2020

Year	GWP (1.000 EUR)	GDP (1.000 EUR)	Population	Pene-tration	Density	GDP/capita	Number insurers	Number int. insurers	Share int. insurers	GWP int. insurers	Market share int. insurers	Int. Pene-tration	Int. Density	Domestic Penetration	Domestic Density
2003	1.348.084	41.479.498	5.373.374	3,3%	251	7.719	27	23	85,2%	1.335.951	99,1%	3,2%	249	0,0%	2
2004	1.240.670	46.175.205	5.372.280	2,7%	231	8.595	27	24	88,9%	1.228.264	99,0%	2,7%	229	0,0%	2
2005	1.367.362	50.485.664	5.372.807	2,7%	254	9.397	27	25	92,6%	1.355.055	99,1%	2,7%	252	0,0%	2
2006	1.558.953	56.361.425	5.373.054	2,8%	290	10.490	27	24	88,9%	1.541.805	98,9%	2,7%	287	0,0%	3
2007	1.869.635	63.163.352	5.374.622	3,0%	348	11.752	26	23	88,5%	1.845.330	98,7%	2,9%	343	0,0%	5
2008	2.107.511	68.590.534	5.379.233	3,1%	392	12.751	24	22	91,7%	2.075.898	98,5%	3,0%	386	0,0%	6
2009	2.027.107	64.095.519	5.386.406	3,2%	376	11.899	22	20	90,9%	1.992.646	98,3%	3,1%	370	0,1%	6
2010	2.067.104	68.492.145	5.391.428	3,0%	383	12.704	20	18	90,0%	2.027.829	98,1%	3,0%	376	0,1%	7
2011	2.109.993	71.477.095	5.398.384	3,0%	391	13.240	20	18	90,0%	2.065.683	97,9%	2,9%	383	0,1%	8
2012	2.114.318	73.360.844	5.407.579	2,9%	391	13.566	18	16	88,9%	2.065.689	97,7%	2,8%	382	0,1%	9
2013	2.169.677	74.217.289	5.413.393	2,9%	401	13.710	17	15	90,9%	2.100.247	96,8%	2,8%	388	0,1%	13
2014	2.180.788	76.092.675	5.418.649	2,9%	402	14.043	17	15	88,2%	2.119.726	97,2%	2,8%	391	0,1%	11
2015	2.227.700	79.888.147	5.423.801	2,8%	411	14.729	16	15	93,8%	2.172.008	97,5%	2,7%	400	0,1%	10
2016	2.235.203	81.014.252	5.430.798	2,8%	412	14.918	16	15	93,8%	2.186.029	97,8%	2,7%	403	0,1%	9
2017	2.399.920	84.442.865	5.439.232	2,8%	441	15.525	16	15	93,8%	2.354.321	98,1%	2,8%	433	0,1%	8
2018	2.515.071	89.430.026	5.446.771	2,8%	462	16.419	15	14	93,3%	2.467.285	98,1%	2,8%	453	0,1%	9
2019	2.561.110	94.048.033	5.454.147	2,7%	470	17.243	13	12	92,3%	2.515.010	98,2%	2,7%	461	0,0%	8
2020	2.496.108	92.079.253	5.458.827	2,7%	457	16.868	12	11	91,7%	2.453.674	98,3%	2,7%	449	0,0%	8

Source: data from various reports and statistics from NBS, SLASPO, BSSE, Theglobaleconomy, World Bank

Table 52: Data for SH3 analysis, Slovenia, 2003-2020

Year	GWP (1.000 EUR)	GDP (1.000 EUR)	Population	Pene-tration	Density	GDP/capita	Number insurers	Number int. insurers	Share int. insurers	GWP int. insurers	Market share int. insurers	Int. Pene-tration	Int. Density	Domestic Penetration	Domestic Density
2003	1.205.815	25.613.000	1.995.033	4,7%	604	13.156	17	4	23,5%	75.966	6,3%	0,3%	38	4,4%	566
2004	1.328.266	27.628.000	1.996.433	4,8%	665	13.878	17	5	29,4%	88.994	6,7%	0,3%	45	4,5%	621
2005	1.441.354	29.114.000	1.997.590	5,0%	722	14.551	17	4	23,5%	99.453	6,9%	0,3%	50	4,6%	672
2006	1.611.200	31.470.000	2.003.358	5,1%	804	15.676	18	5	27,8%	116.006	7,2%	0,4%	58	4,8%	746
2007	1.799.400	35.073.000	2.010.377	5,1%	895	17.373	18	5	27,8%	145.751	8,1%	0,4%	72	4,7%	823
2008	1.912.600	37.926.000	2.025.866	5,0%	944	18.757	18	5	27,8%	168.309	8,8%	8,3%	83	86,1%	861
2009	1.946.900	36.255.000	2.032.362	5,4%	958	17.758	20	7	35,0%	183.009	9,4%	9,0%	90	86,8%	868
2010	1.948.500	36.364.000	2.046.976	5,4%	952	17.749	21	8	38,1%	190.758	9,8%	9,3%	93	85,9%	859
2011	1.959.100	37.059.000	2.050.189	5,3%	956	18.052	22	9	40,9%	197.869	10,1%	9,7%	97	85,9%	859
2012	1.956.100	36.253.000	2.055.496	5,4%	952	17.626	21	9	42,9%	203.434	10,4%	9,9%	99	85,3%	853
2013	1.905.800	36.454.000	2.058.821	5,2%	926	17.700	22	9	40,9%	203.921	10,7%	9,9%	99	82,7%	827
2014	1.891.500	37.634.000	2.061.085	5,0%	918	18.253	22	9	40,9%	206.174	10,9%	10,0%	100	81,8%	818
2015	1.910.900	38.853.000	2.062.874	4,9%	926	18.830	23	9	39,1%	212.874	11,1%	10,3%	103	82,3%	823
2016	1.942.200	40.443.000	2.064.188	4,8%	941	19.589	23	10	43,5%	213.642	11,0%	10,3%	103	83,7%	837
2017	2.029.300	43.011.000	2.065.895	4,7%	982	20.820	22	10	45,5%	221.194	10,9%	10,7%	107	87,5%	875
2018	2.145.500	45.864.000	2.066.880	4,7%	1.038	22.136	23	11	47,8%	231.714	10,8%	11,2%	112	92,6%	926
2019	2.309.600	48.397.000	2.080.908	4,8%	1.110	23.167	22	10	45,5%	545.066	23,6%	26,2%	262	84,8%	848
2020	2.366.700	46.918.000	2.095.861	5,0%	1.129	22.312	21	10	47,6%	554.518	23,4%	26,5%	265	86,5%	865

Source: data from various reports and statistics from AZN, Statistics office Slovenia, ZAV Združenje, Bank Slovenije

Table 53: Correlation coefficients on share of international insurers, time series 2003-2020

Country	GWP	Ins. Penetration	Ins. Density
Croatia	0,806033205	0,107201427	0,785591958
Bulgaria	-0,708357288	0,394945671	-0,730034603
Czech Republic	0,538270016	-0,022326568	0,558377014
Hungary	0,847420884	-0,366048861	0,84609487
Poland	-0,100280583	-0,069411739	-0,107199508
Romania	0,741447872	-0,746056493	0,778111353
Slovakia	0,587731629	-0,490928837	0,584498148
Slovenia	0,844953813	-0,040102308	0,824004705

Chart 70: Correlation coefficients on share of international insurers, time series 2003-2020
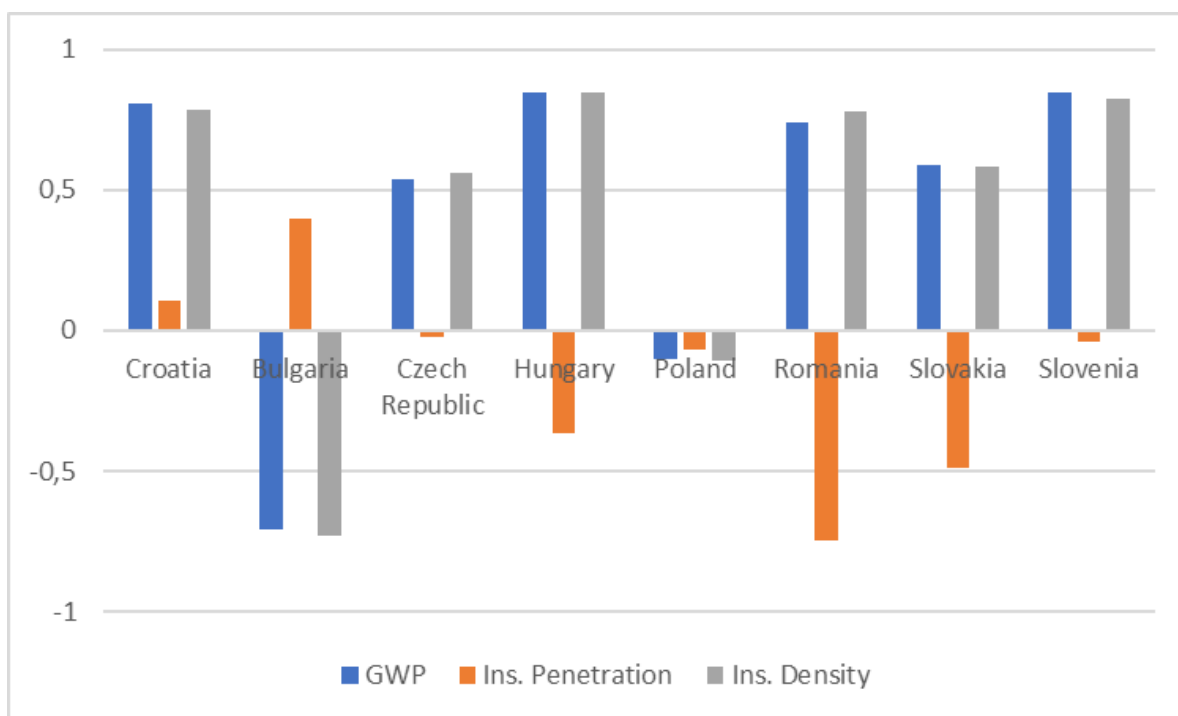
Source: Econometric model, calculations and chart by author (2022)

For the majority of the countries, the share of in the international insurers appears to have a correlation with the development of the gross written premium in a market as well with the insurance density (6 out of 8), but not with the insurance penetration.

Table 54: Correlation coefficients on market share of international insurers, time series 2003-2020

Country	GWP	Ins. Penetration	Ins. Density
Croatia	0,847235683	-0,195319586	0,858237261
Bulgaria	0,160704884	0,484776189	0,116135031
Czech Republic	0,904899493	-0,453995367	0,903736675
Hungary	0,265166182	-0,231777557	0,26353148
Poland	-0,241942987	0,81980354	-0,240896089
Romania	0,822147783	-0,307297878	0,785259575
Slovakia	-0,652929529	0,052698393	-0,655713987
Slovenia	0,778201331	-0,116020442	0,760877214

Chart 71: Correlation coefficients on market share of international insurers, time series 2003-2020
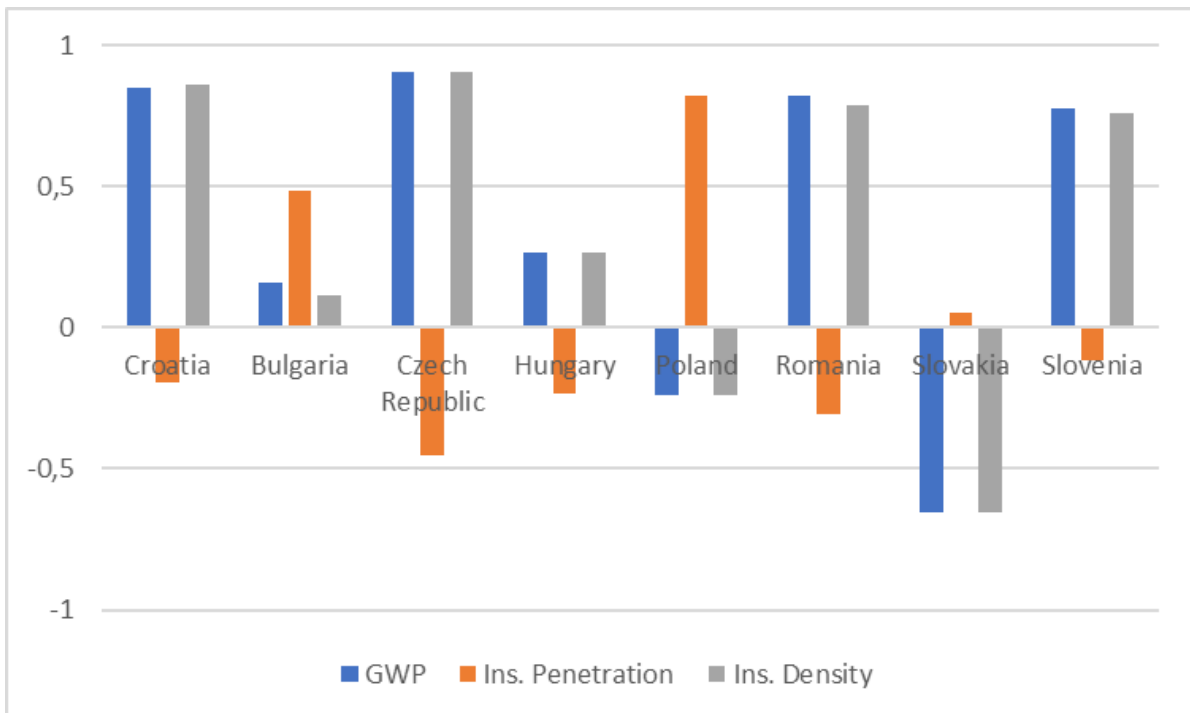
Source: Econometric model, calculations and chart by author (2022)

Here the picture is less conclusive, also pointing towards the differences in the markets and their development. Croatia, the Czech Republic, Romania and Slovenia seem to have similar significant relations between the development of the international insurers' market shares and the insurance penetration, whereas Bulgaria, Hungary and Slovakia have almost no relation. In Poland international insurers appear to have a significant effect on the insurance penetration.

Below are presented the correlation matrices for the countries, except Croatia as this was already shown previously.

Table 55: Correlation matrix for SH3 parameters, time series 2003-2020, Bulgaria

	GWP (1.000 BGN)	GDP (1.000 BGN)	Penetration (GWP/GDP)	Density (GWP/capita)	Share of int. insurers	Market share of int. insurers	Int. Penetration	Int. Density
GWP (1.000 BGN)	1							
GDP (1.000 BGN)	0,974611801	1						
Penetration (GWP/GDP)	0,136906118	-0,076622174	1					
Density (GWP/capita)	0,998455338	0,979759117	0,09958711	1				
Share of int. insurers	-0,708357288	-0,810605389	0,394945671	-0,730034603	1			
Market share of int. insurers	0,160704884	0,105534964	0,484776189	0,116135031	0,109782402	1		
Int. Penetration	0,140003121	-0,01698107	0,862259031	0,092406323	0,318548898	0,858363599	1	
Int. Density	0,987977185	0,968584526	0,150836918	0,981606316	-0,70060715	0,294850061	0,226536278	1

Source: Econometric model, calculations by author (2022)

Table 56: Correlation matrix for SH3 parameters, time series 2003-2020, Czech Republic

	GWP (1.000 CZK)	GDP (1.000 CZK)	Penetration (GWP/GDP)	Density (GWP/capita)	Share of int. insurers	Market share of int. insurers	Int. Penetration	Int. Density
GWP (1.000 CZK)	1							
GDP (1.000 CZK)	0,847900665	1						
Penetration (GWP/GDP)	-0,552374883	-0,905388737	1					
Density (GWP/capita)	0,998744533	0,823568877	-0,516986218	1				
Share of int. insurers	0,538270016	0,292057113	-0,022326568	0,558377014	1			
Market share of int. insurers	0,904899493	0,727285814	-0,453995367	0,903736675	0,489248552	1		
Int. Penetration	0,621881429	0,175990281	0,193148941	0,64634346	0,537846812	0,785701	1	
Int. Density	0,961750715	0,782063426	-0,486878089	0,960609354	0,520099356	0,985878197	0,749971763	1

Source: Econometric model, calculations by author (2022)

Table 57: Correlation matrix for SH3 parameters, time series 2003-2020, Hungary

	GWP (mnHUF)	GDP (mnHUF)	Penetration (GWP/GDP)	Density (GWP/capita)	Share of int. insurers	Market share of int. insurers	Int. Penetration	Int. Density
GWP (mnHUF)	1							
GDP (mnHUF)	0,914737968	1						
Penetration (GWP/GDP)	-0,389610922	-0,721100048	1					
Density (GWP/capita)	0,999201499	0,929683023	-0,425022301	1				
Share of int. insurers	0,847420884	0,790772437	-0,366048861	0,84609487	1			
Market share of int. insurers	0,264521939	0,261118947	-0,231515089	0,262884974	0,503990387	1		
Int. Penetration	-0,302990566	-0,641107532	0,920990231	-0,339353075	-0,189730737	0,157413541	1	
Int. Density	0,981663787	0,919683463	-0,446295092	0,982352233	0,887129475	0,437461203	-0,291863082	1

Source: Econometric model, calculations by author (2022)

Table 58: Correlation matrix for SH3 parameters, time series 2003-2020, Poland

	GWP (1000 PLN)	GDP (1000 PLN)	Penetration (GWP/GDP)	Density (GWP/capita)	Share of int. insurers	Market share of int. insurers	Int. Penetration	Int. Density
GWP (1000 PLN)	1							
GDP (1000 PLN)	0,866287671	1						
Penetration (GWP/GDP)	0,102716319	-0,399983362	1					
Density (GWP/capita)	0,999895278	0,865557671	0,106196682	1				
Share of int. insurers	-0,100280583	-0,117007903	-0,069411739	-0,107199508	1			
Market share of int. insurers	-0,241942987	-0,642803758	0,81980354	-0,240896089	0,123643488	1		
Int. Penetration	-0,001941916	-0,489881275	0,979705149	0,001101627	-0,02071633	0,916611217	1	
Int. Density	0,923135675	0,62495446	0,434470116	0,923380693	-0,046818445	0,148605245	0,36416464	1

Source: Econometric model, calculations by author (2022)

Table 59: Correlation matrix for SH3 parameters, time series 2003-2020, Romania

	GWP (1.000 lei)	GDP (1.000 lei)	Penetration (GWP/GDP)	Density (GWP/capita)	Share of int. insurers	Market share of int. insurers	Int. Penetration	Int. Density
GWP (1.000 lei)	1							
GDP (1.000 lei)	0,926049642	1						
Penetration (GWP/GDP)	-0,448955996	-0,730485402	1					
Density (GWP/capita)	0,993121327	0,959847855	-0,528091735	1				
Share of int. insurers	0,741447872	0,862983604	-0,746056493	0,778111353	1			
Market share of int. insurers	0,822147783	0,671126286	-0,307297878	0,785259575	0,495901636	1		
Int. Penetration	0,445217342	0,107983201	0,385820825	0,352788005	-0,09124397	0,75065984	1	
Int. Density	0,969628624	0,892947768	-0,481201077	0,96159257	0,687312849	0,91959257	0,533175764	1

Source: Econometric model, calculations by author (2022)

Table 60: Correlation matrix for SH3 parameters, time series 2003-2020, Slovakia

	GWP (1.000 EUR)	GDP (1.000 EUR)	Penetration (GWP/GDP)	Density (GWP/capita)	Share of int. insurers	Market share of int. insurers	Int. Penetration	Int. Density
GWP (1.000 EUR)	1							
GDP (1.000 EUR)	0,974675292	1						
Penetration (GWP/GDP)	-0,15038334	-0,360058863	1					
Density (GWP/capita)	0,999831759	0,97133324	-0,138981916	1				
Share of int. insurers	0,587731629	0,649879527	-0,490928837	0,584498148	1			
Market share of int. insurers	-0,652929529	-0,611863029	0,052698393	-0,655713987	-0,278846595	1		
Int. Penetration	-0,222267038	-0,424426156	0,993423366	-0,211367939	-0,51669682	0,166597337	1	
Int. Density	0,999532936	0,971473687	-0,139049952	0,999650282	0,587309324	-0,635620333	-0,209116638	1

Source: Econometric model, calculations by author (2022)

Table 61: Correlation matrix for SH3 parameters, time series 2003-2020, Slovenia

	GWP (1.000 EUR)	GDP (1.000 EUR)	Penetration (GWP/GDP)	Density (GWP/capita)	Share of int. insurers	Market share of int. insurers	Int. Penetration	Int. Density
GWP (1.000 EUR)	1							
GDP (1.000 EUR)	-0,759971548	1						
Penetration (GWP/GDP)	0,142377751	-0,152698548	1					
Density (GWP/capita)	0,99880305	-0,746517348	0,164839457	1				
Share of int. insurers	0,844953813	-0,799936153	-0,040102308	0,824004705	1			
Market share of int. insurers	0,778201331	-0,490540144	-0,116020442	0,760877214	0,670141524	1		
Int. Penetration	0,875058453	-0,720644157	-0,044307323	0,857535832	0,796738607	0,956425116	1	
Int. Density	0,81355189	-0,510610869	-0,093471472	0,798509292	0,687408658	0,997329553	0,963112981	1

Source: Econometric model, calculations by author (2022)

Similarly, as for SH1 for Croatia, focusing the descriptive statistics on the correlation between insurance density and market share of international insurers gives the following output in

scatterplots with marginal histograms and quantile-quantile plot in more detail for the other countries:[209]

Chart 72: Output PEARSON correlation, scatterplots, normality tests, Bulgaria

Normality Tests

```
> ad.x
    Anderson-Darling normality test
data:  x
A = 0.82699, p-value = 0.02617


> ad.y
    Anderson-Darling normality test
data:  y
A = 0.40221, p-value = 0.3222
```
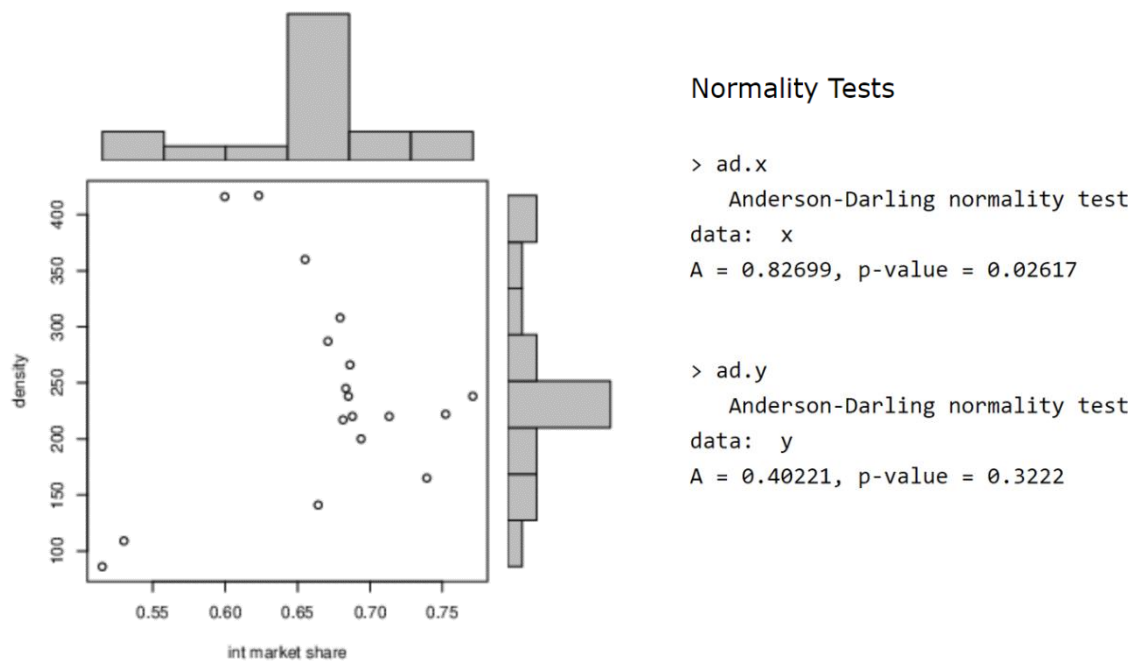
Source: wessa.net (2022)

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[209] Wessa P., (2017), Pearson Correlation (v1.0.13) in Free Statistics Software (v1.2.1), Office for Research Development and Education, URL https://www.wessa.net/rwasp_correlation.wasp/

Chart 73: Output PEARSON correlation, QQ-plots, Bulgaria

QQplot of variable x

QQplot of variable y
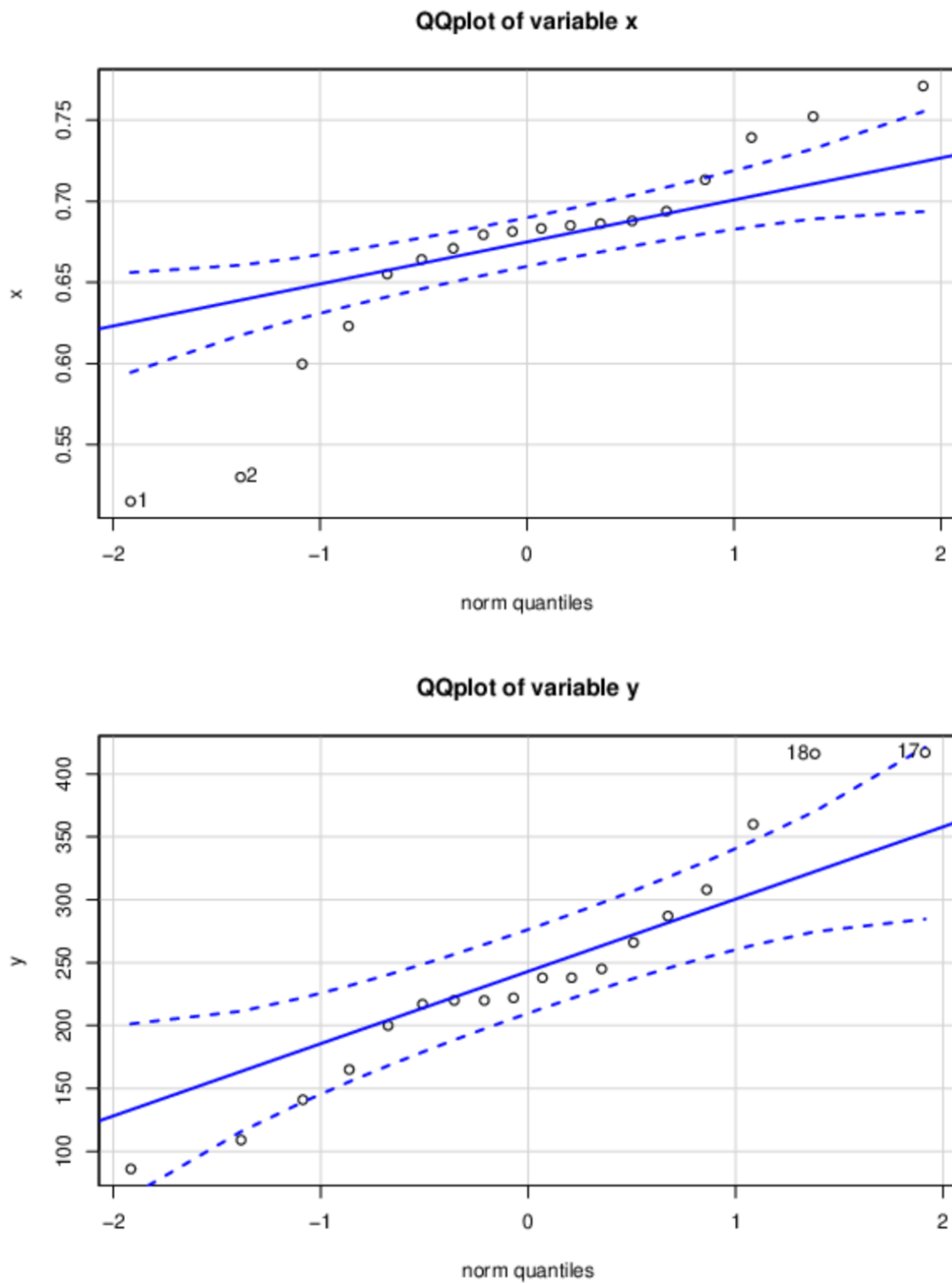
Source: wessa.net (2022)

Chart 74: Output PEARSON correlation, scatterplots, normality tests, Czech Republic
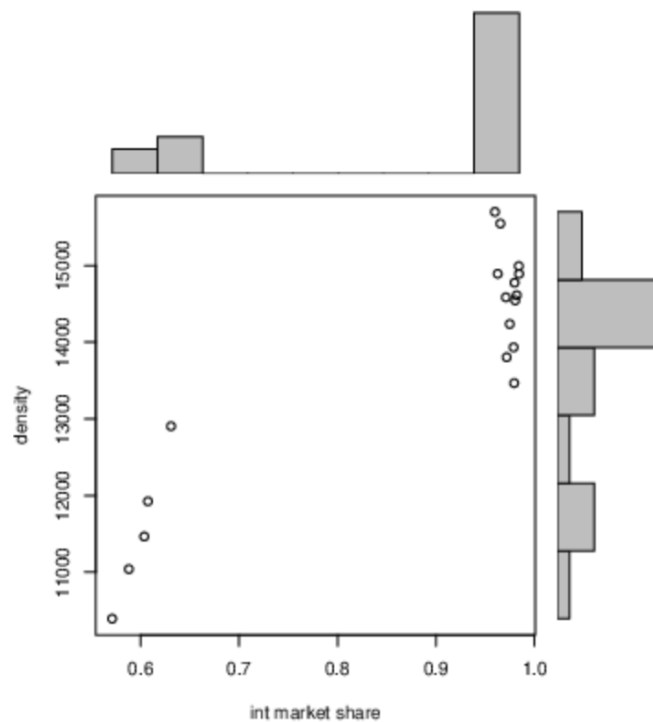
Normality Tests

```
> ad.x
    Anderson-Darling normality test
data:  x
A = 3.3792, p-value = 7.546e-09


> ad.y
    Anderson-Darling normality test
data:  y
A = 0.86508, p-value = 0.02086
```

Source: wessa.net (2022)

Chart 75: Output PEARSON correlation, QQ-plots, Czech Republic

QQplot of variable x

QQplot of variable y
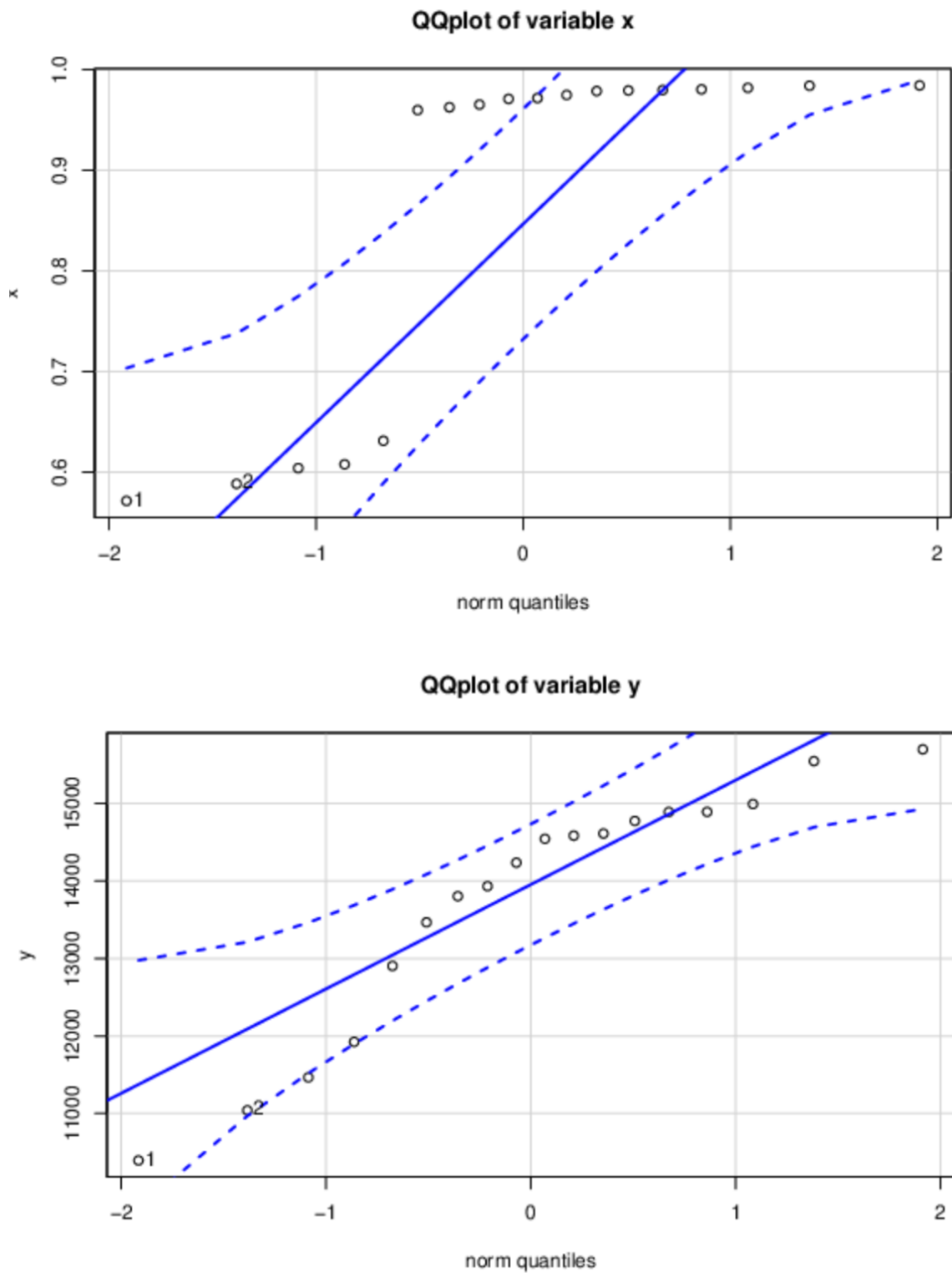
Source: wessa.net (2022)

Chart 76: Output PEARSON correlation, scatterplots, normality tests, Hungary
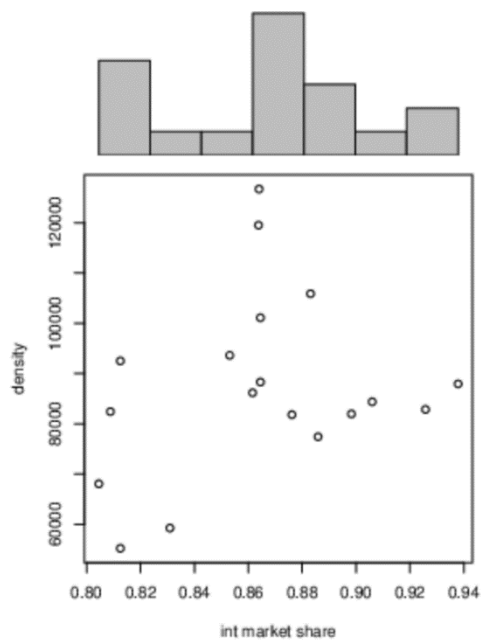
Normality Tests

```
> ad.x
    Anderson-Darling normality test
data:  x
A = 0.36309, p-value = 0.4019


> ad.y
    Anderson-Darling normality test
data:  y
A = 0.46249, p-value = 0.2272
```

Source: wessa.net (2022)

Chart 77: Output PEARSON correlation, QQ-plots, Hungary

QQplot of variable x

QQplot of variable y
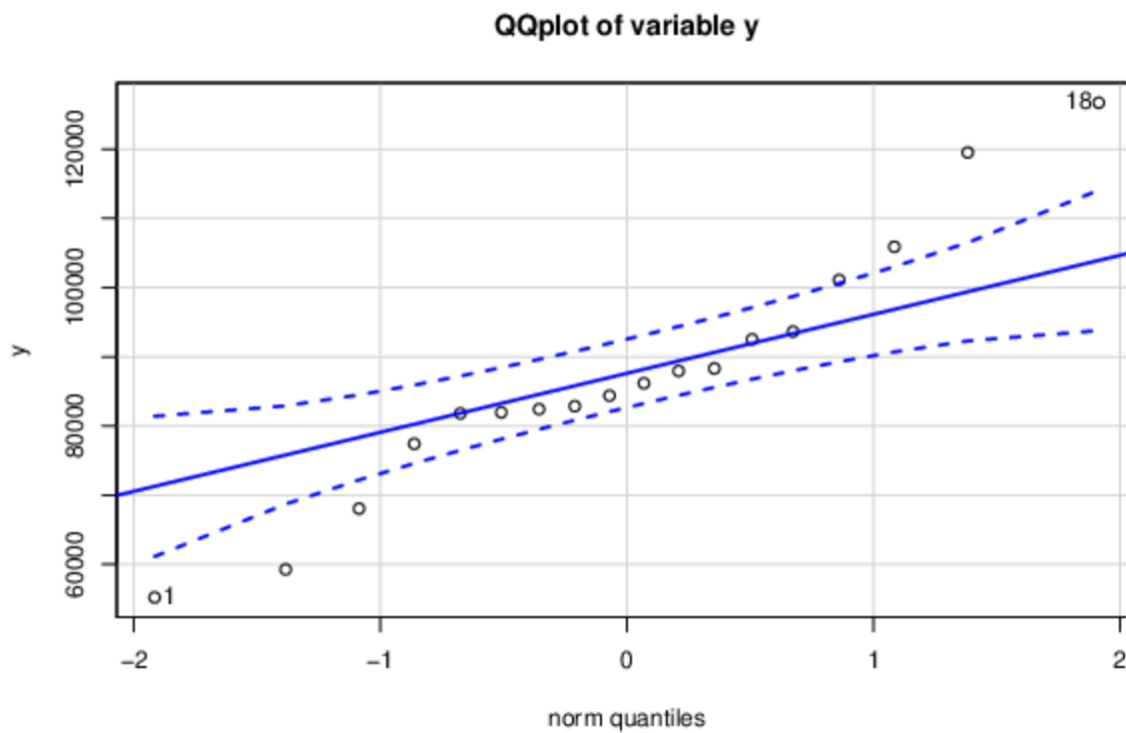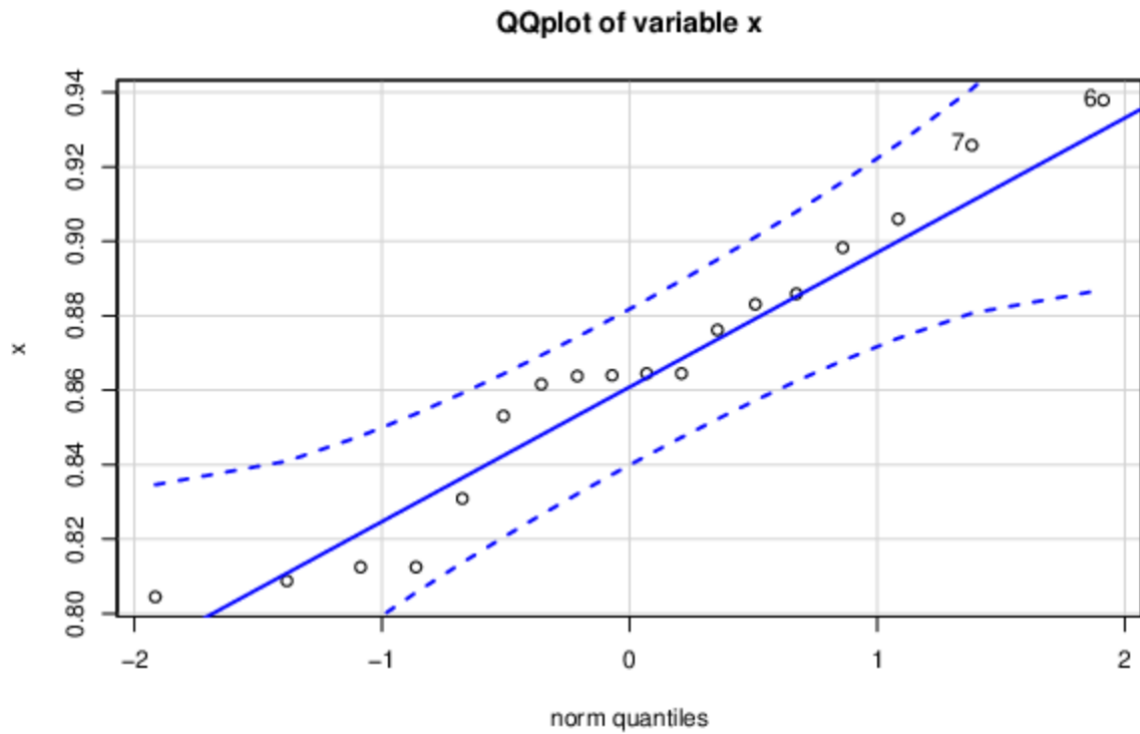
Source: wessa.net (2022)

Chart 78: Output PEARSON correlation, scatterplots, normality tests, Poland
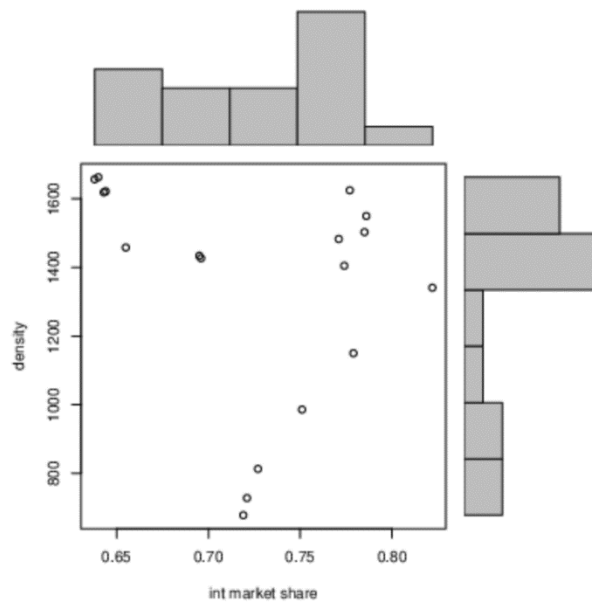
Normality Tests

```
> ad.x
    Anderson-Darling normality test
data:  x
A = 0.62412, p-value = 0.08763


> ad.y
    Anderson-Darling normality test
data:  y
A = 1.2031, p-value = 0.002797
```

Source: wessa.net (2022)

Chart 79: Output PEARSON correlation, QQ-plots, Poland

QQplot of variable x

QQplot of variable y
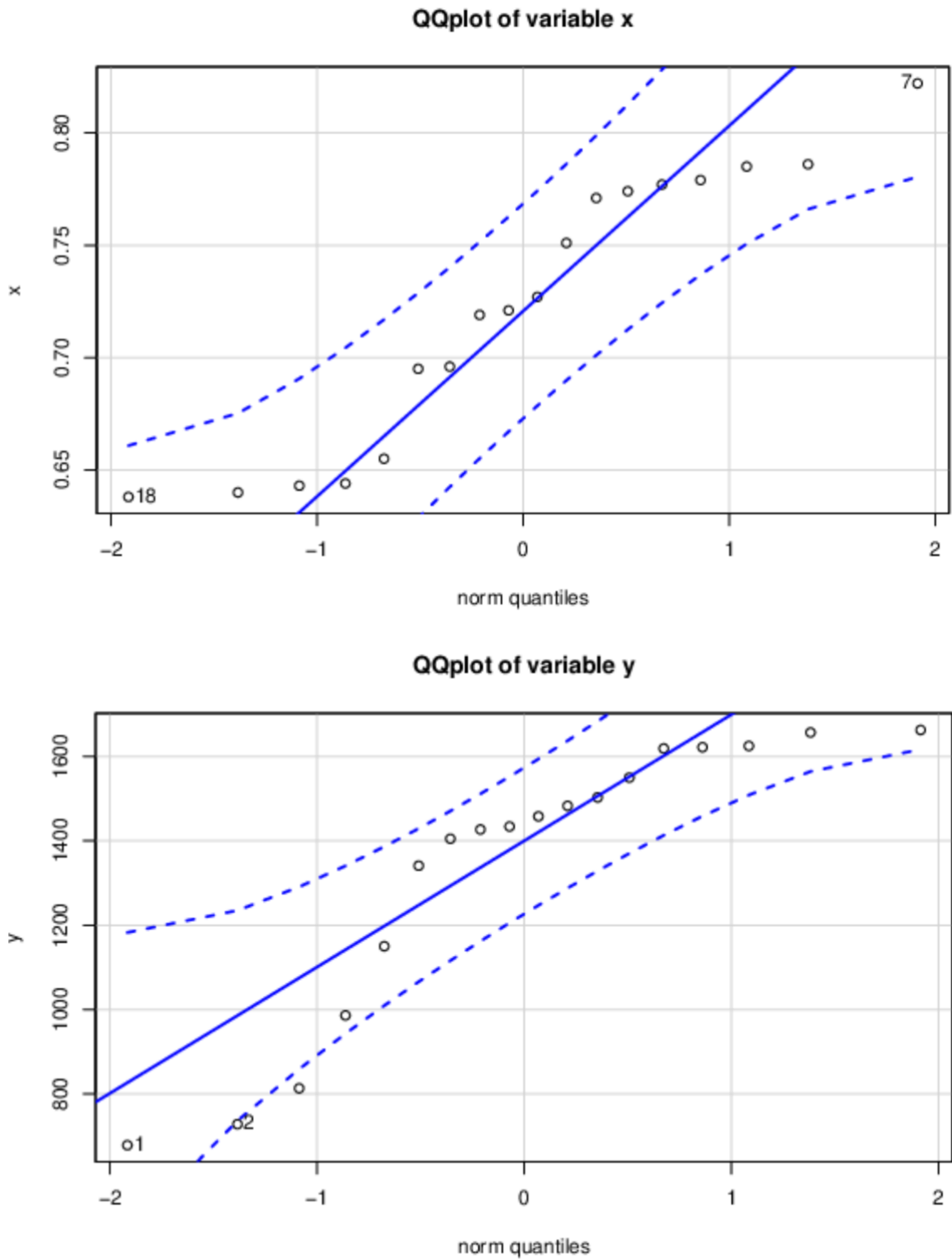
Source: wessa.net (2022)

Chart 80: Output PEARSON correlation, scatterplots, normality tests, Romania
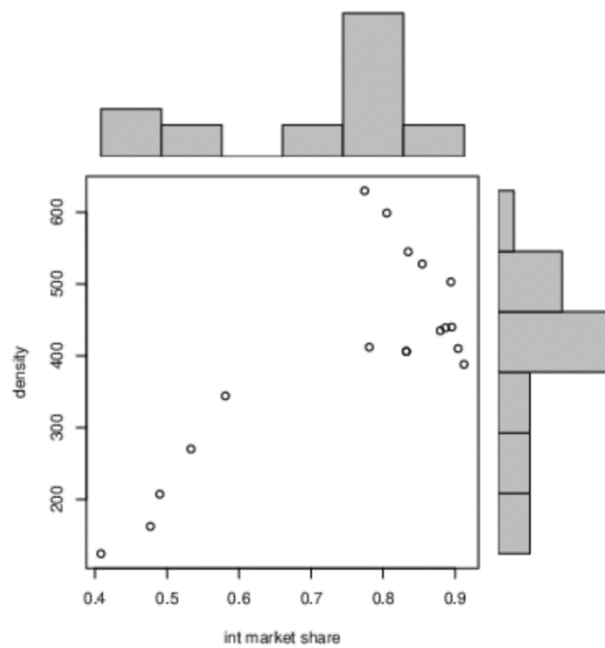
Normality Tests

```
> ad.x
    Anderson-Darling normality test
data:  x
A = 1.5714, p-value = 0.000315


> ad.y
    Anderson-Darling normality test
data:  y
A = 0.44547, p-value = 0.251
```

Source: wessa.net (2022)

Chart 81: Output PEARSON correlation, QQ-plots, Romania

QQplot of variable x

QQplot of variable y
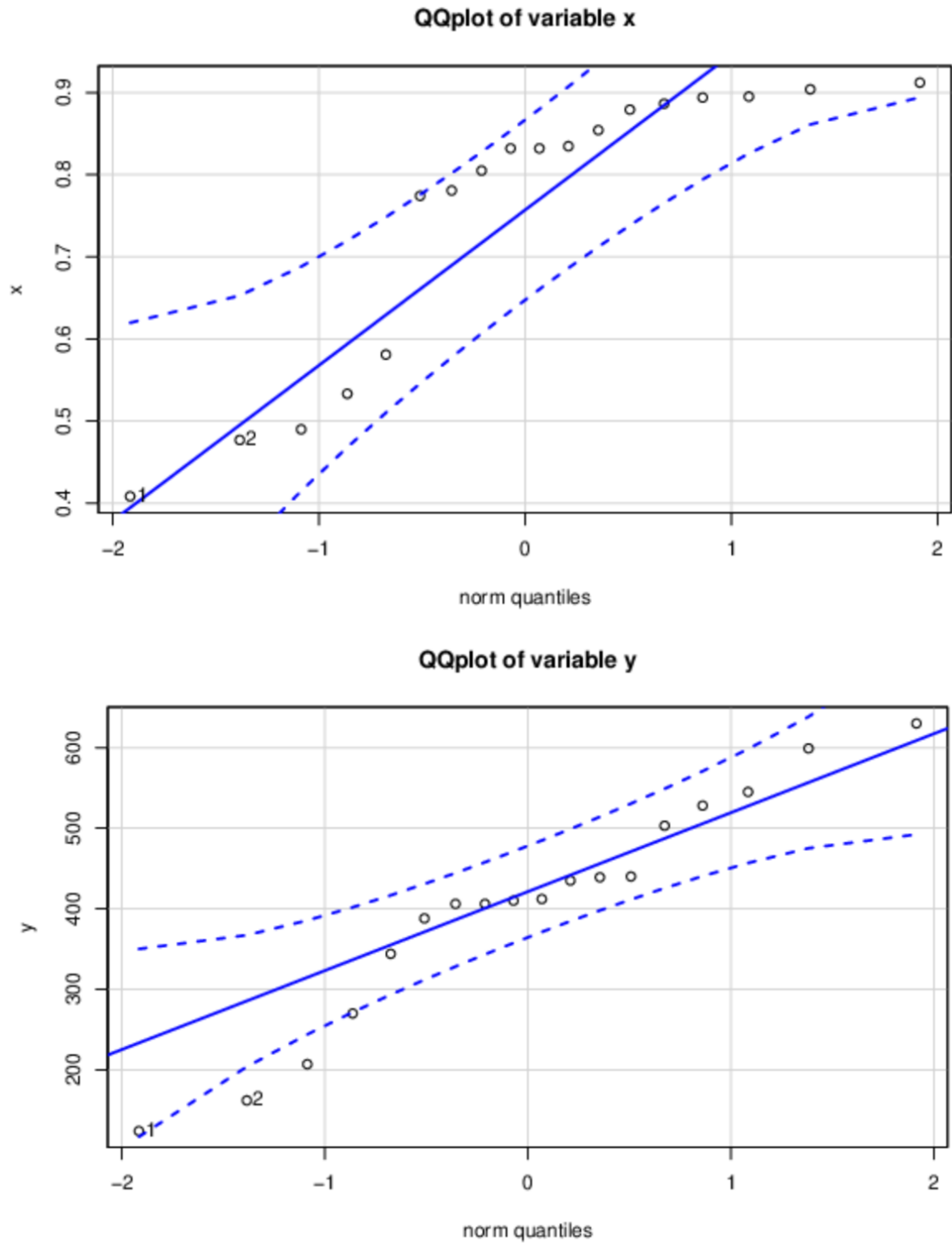
Source: wessa.net (2022)

Chart 82: Output PEARSON correlation, scatterplots, normality tests, Slovakia
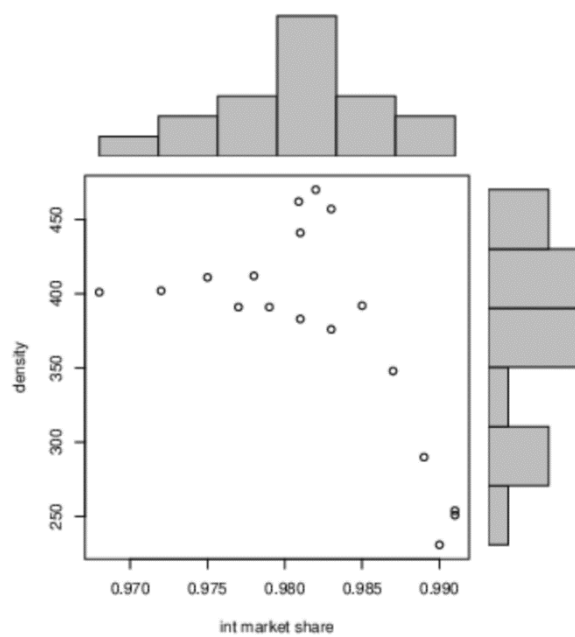
Normality Tests

```
> ad.x
    Anderson-Darling normality test
data:  x
A = 0.22455, p-value = 0.7908


> ad.y
    Anderson-Darling normality test
data:  y
A = 0.87323, p-value = 0.01987
```

Source: wessa.net (2022)

Chart 83: Output PEARSON correlation, QQ-plots, Slovakia

QQplot of variable x

norm quantiles

QQplot of variable y

norm quantiles
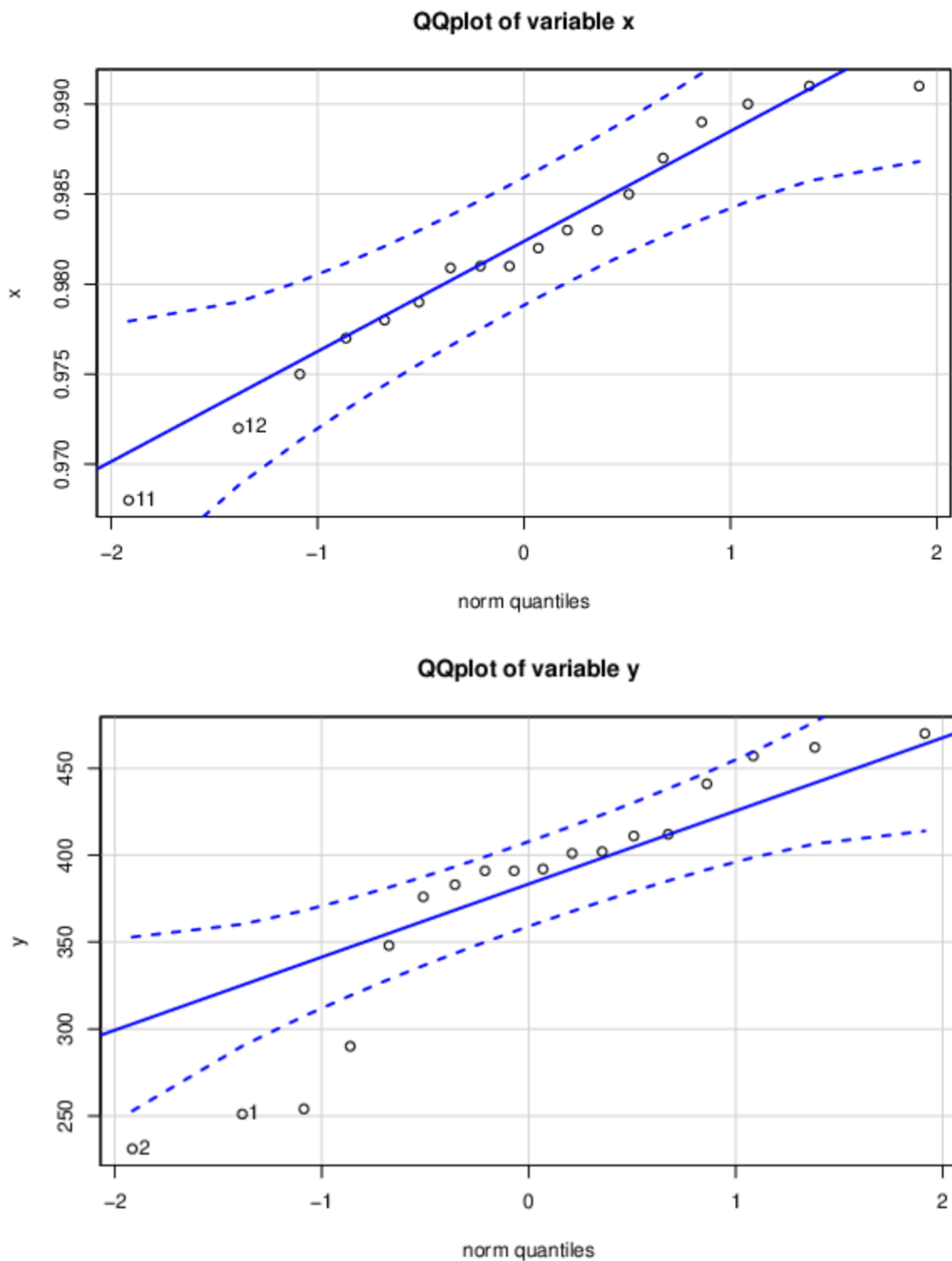
Source: wessa.net (2022)

Chart 84: Output PEARSON correlation, scatterplots, normality tests, Slovenia
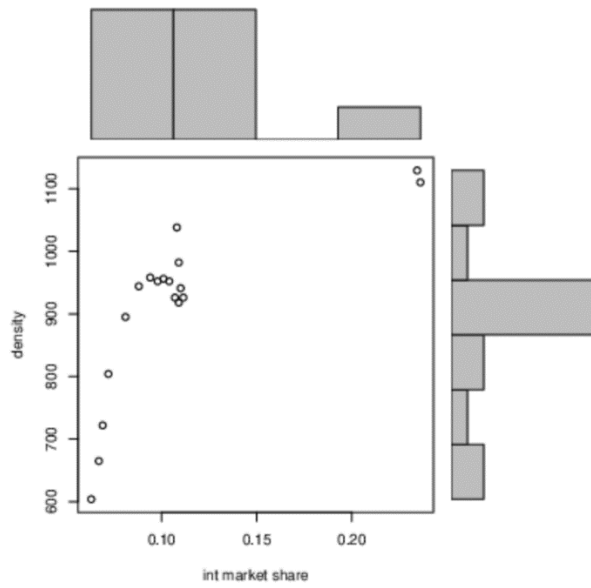
Normality Tests

```
> ad.x
    Anderson-Darling normality test
data:  x
A = 2.2467, p-value = 5.828e-06


> ad.y
    Anderson-Darling normality test
data:  y
A = 0.9458, p-value = 0.01291
```

Source: wessa.net (2022)

Chart 85: Output PEARSON correlation, QQ-plots, Slovenia

QQplot of variable x

QQplot of variable y
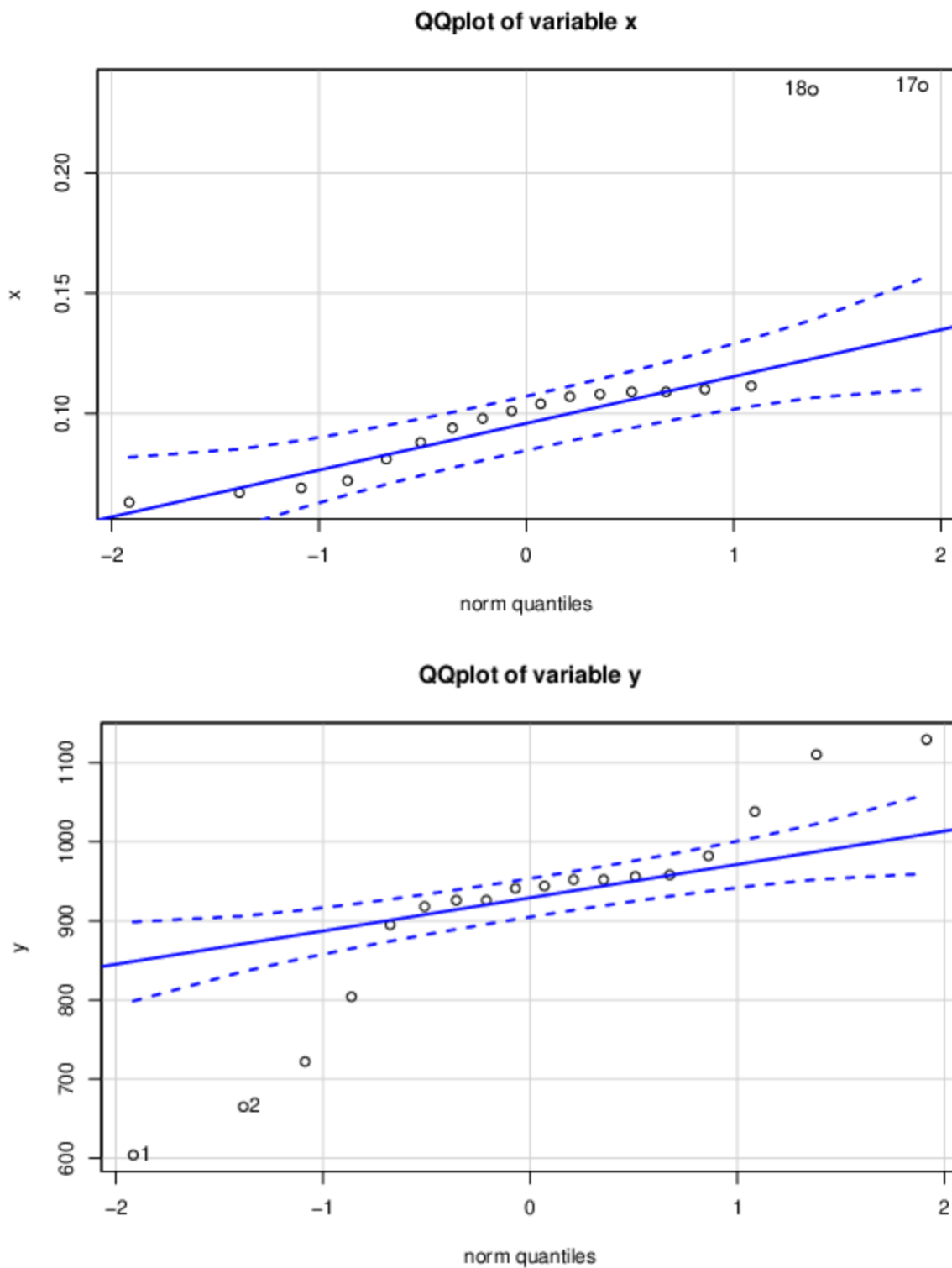
Source: wessa.net (2022)

Chart 86: Scatter for (market) share of international insurers vs insurance density, Croatia (already shown)
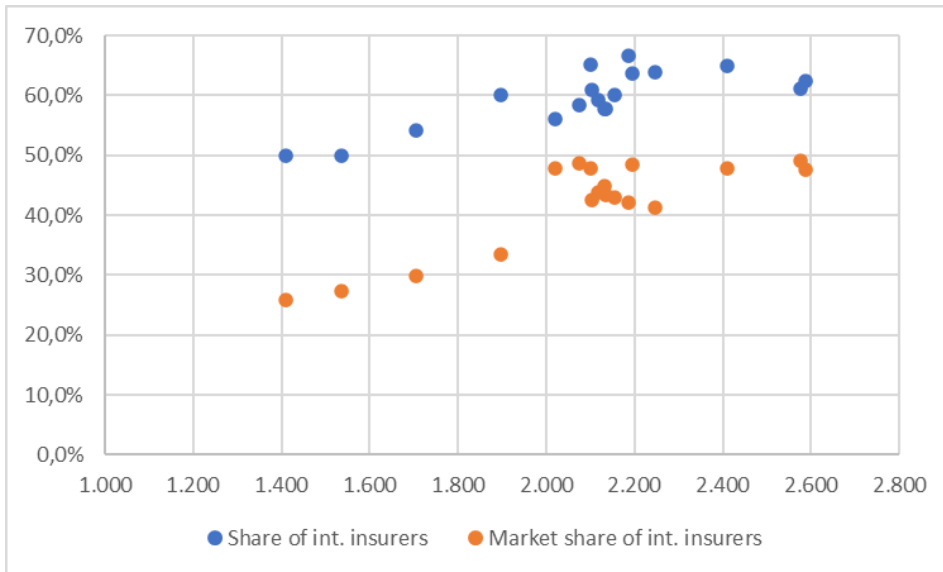
Source: Econometric model, by author (2022)

Chart 87: Scatter for (market) share of international insurers vs insurance density, Bulgaria
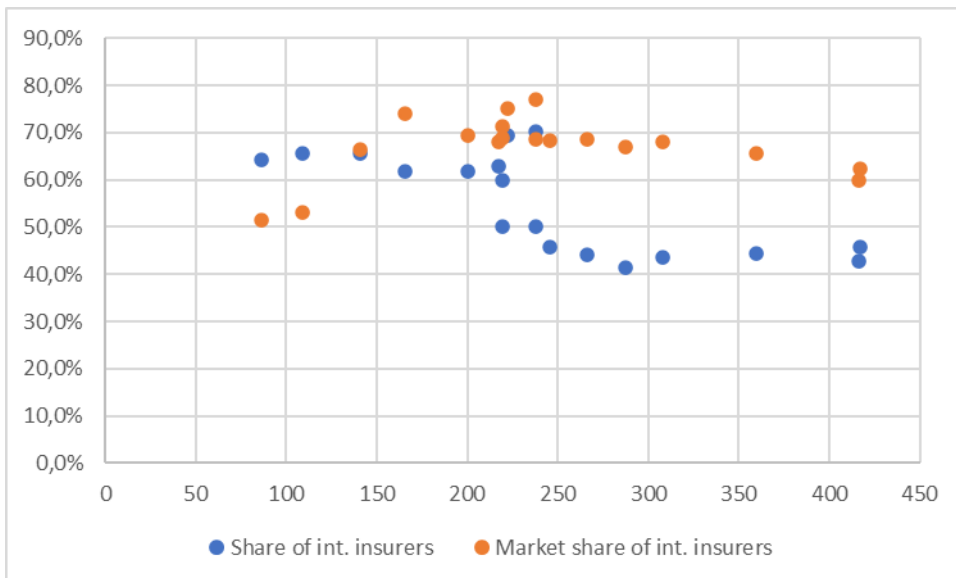
Source: Econometric model, by author (2022)

Chart 88: Scatter for (market) share of international insurers vs insurance density, Czechia
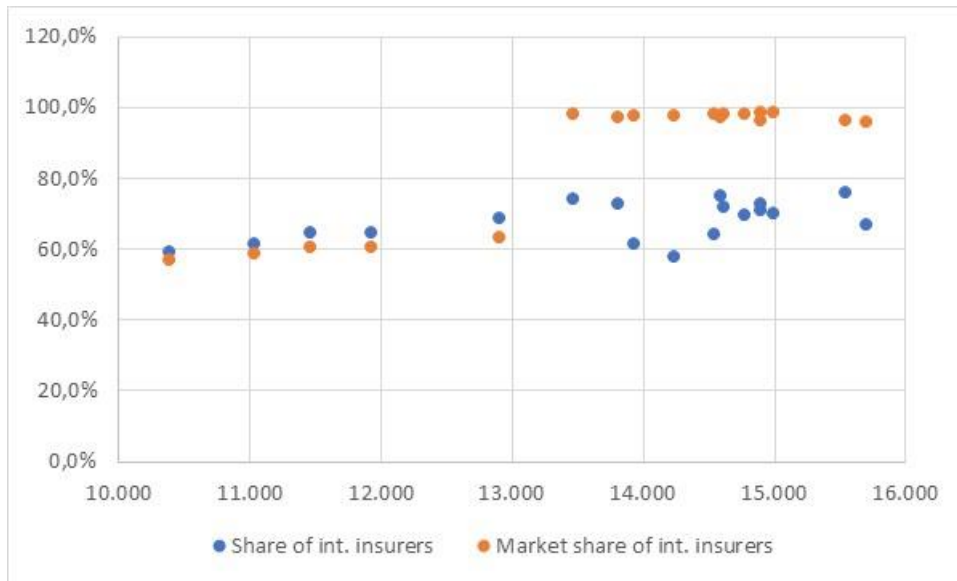
Source: Econometric model, by author (2022)

Chart 89: Scatter for (market) share of international insurers vs insurance density, Hungary
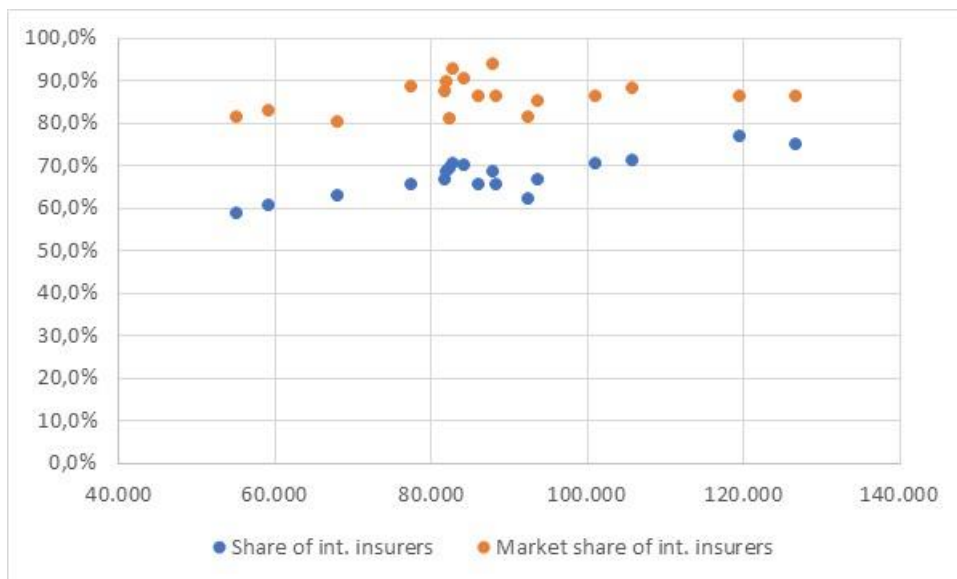
Source: Econometric model, by author (2022)

Chart 90: Scatter for (market) share of international insurers vs insurance density, Poland
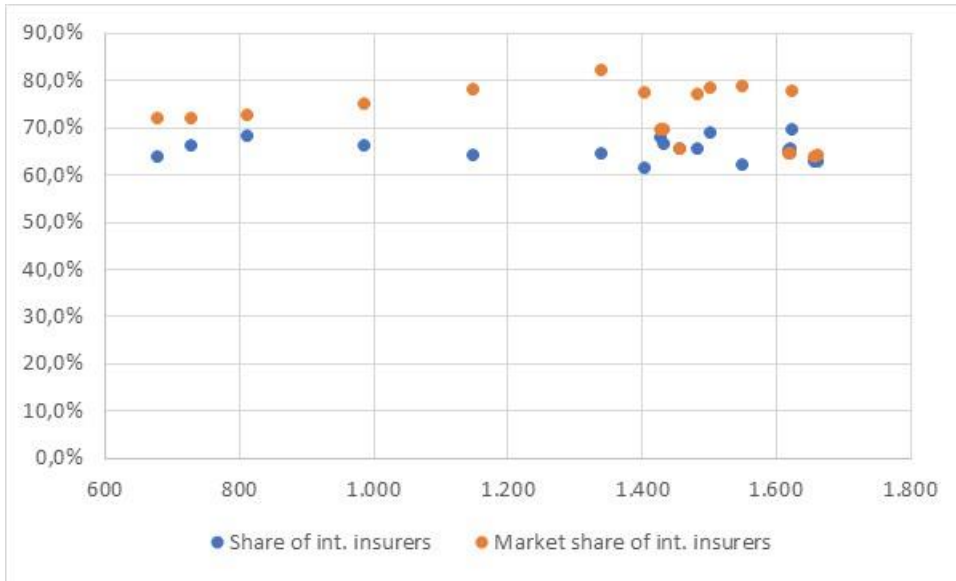
Source: Econometric model, by author (2022)

Chart 91: Scatter for (market) share of international insurers vs insurance density, Romania
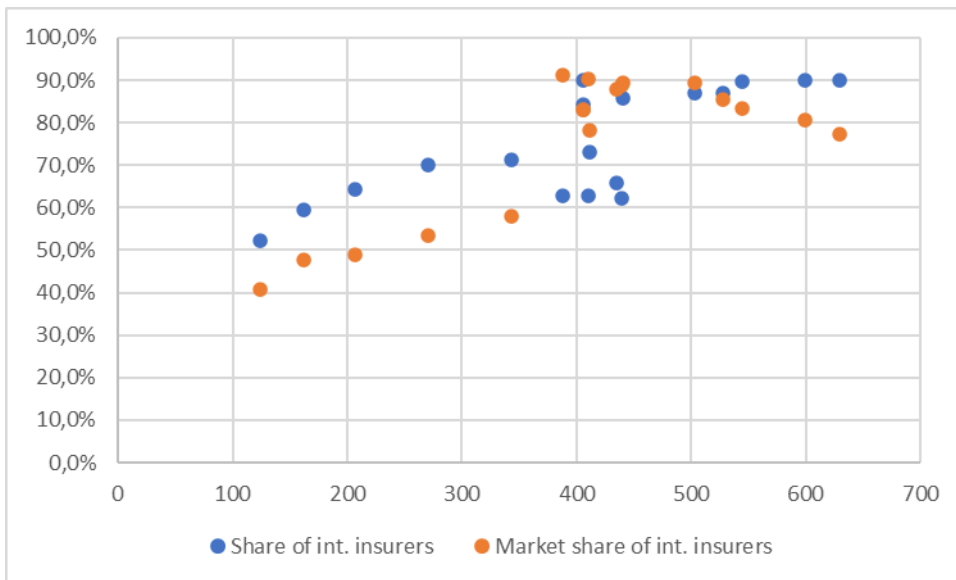
Source: Econometric model, by author (2022)

Chart 92: Scatter for (market) share of international insurers vs insurance density, Slovakia
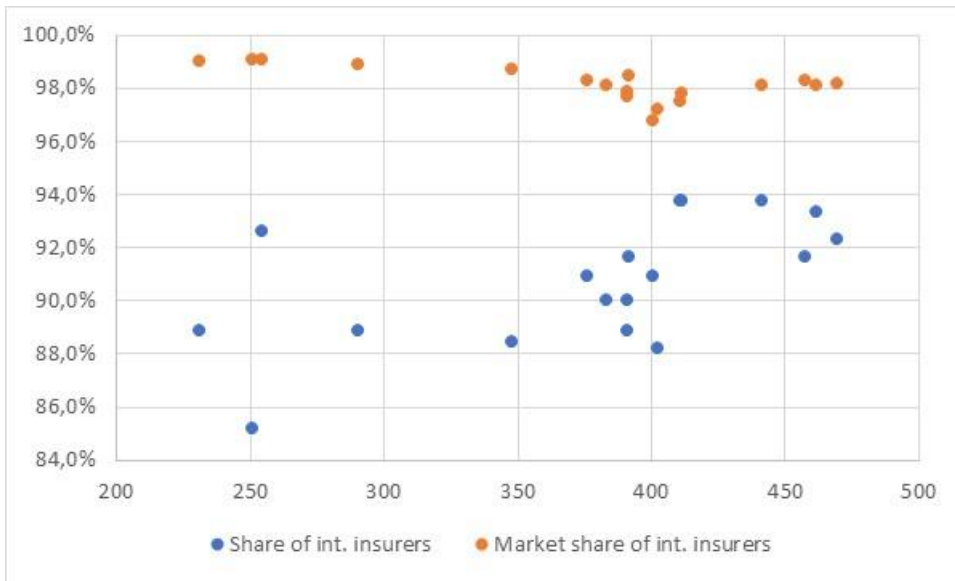
Source: Econometric model, by author (2022)

Chart 93: Scatter for (market) share of international insurers vs insurance density, Slovenia
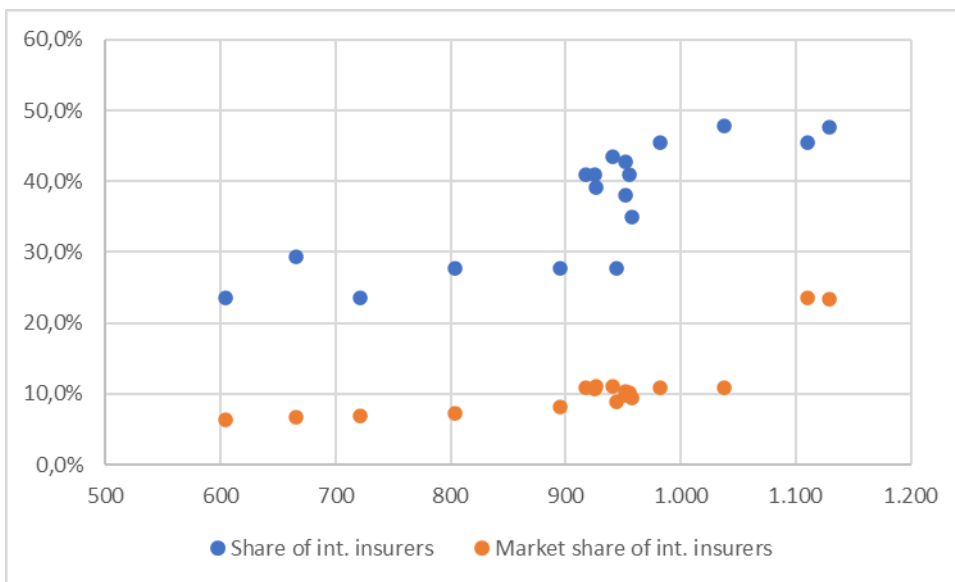
Source: Econometric model, by author (2022)

As for SH1, now we also attempt the multivariate regression on insurance density, as influenced by share and market share of international insurers and compare the R^2 factors across the countries.

Table 62: Regression results R^2, (Market) share of international insurers, on insurance density and penetration, 2003-2020

Country	R^2 (on density)	R^2 (on penetration)	R^2 (on GWP)
Croatia	0,802817935	0,155671799	0,805963129
Bulgaria	0,571946338	0,353209040	0,559331756
Czech Republic	0,834499181	0,258589003	0,830845759
Hungary	0,751727917	0,136956699	0,753550092
Poland	0,064116937	0,701694756	0,063564640
Romania	0,816992318	0,561809111	0,823636044
Slovakia	0,604888796	0,248697665	0,604755156
Slovenia	0,758027970	0,016033498	0,795499571

Chart 94: Regression results R^2, (market) share of international insurers, on insurance density and penetration, 2003-2020
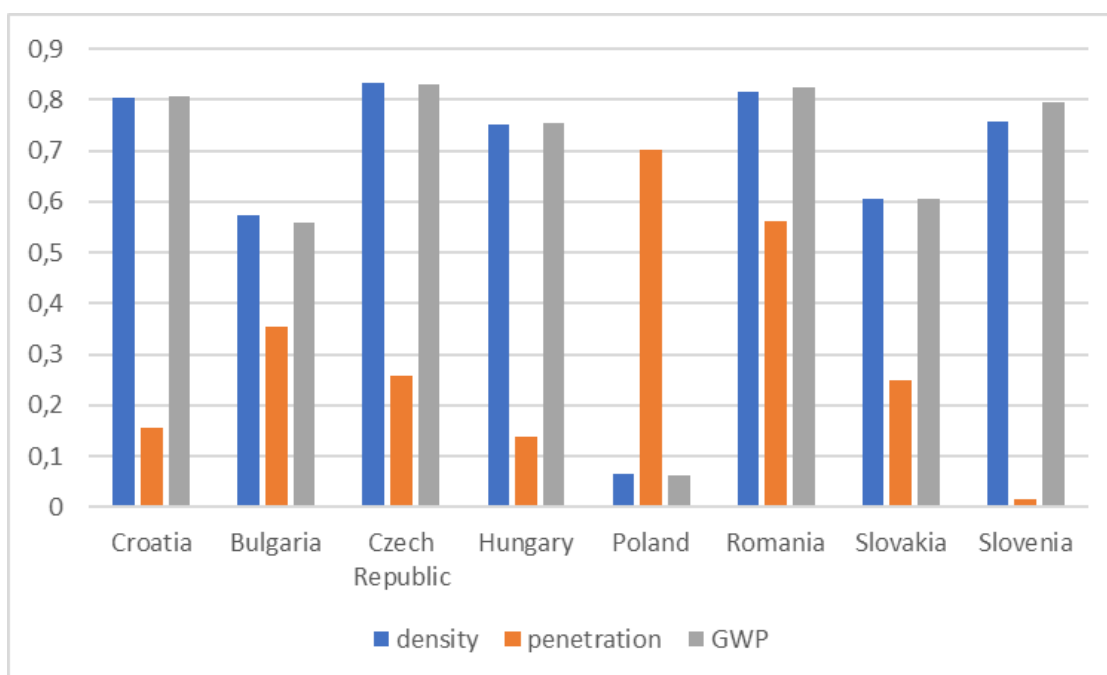
Source: Econometric model, calculations and chart by author (2022)

Chart 95: Multivariate regression, for first 4 countries

Croatia (repeated from SH1):
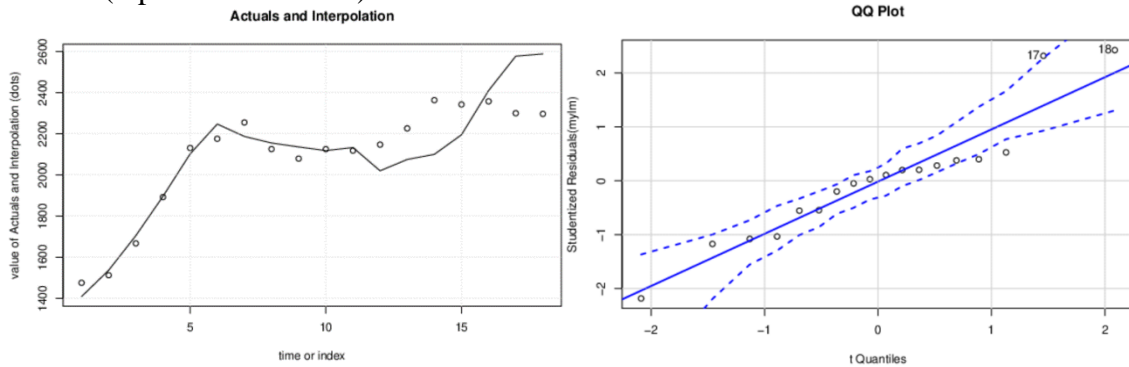
Bulgaria:
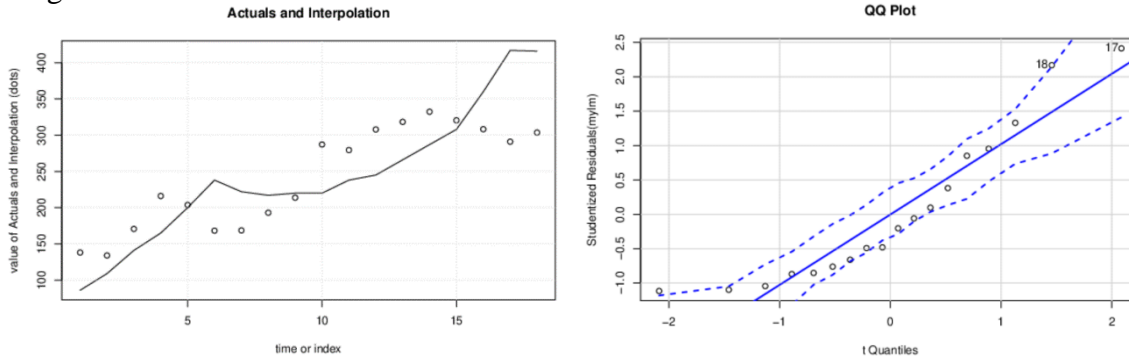
Czech Republic:
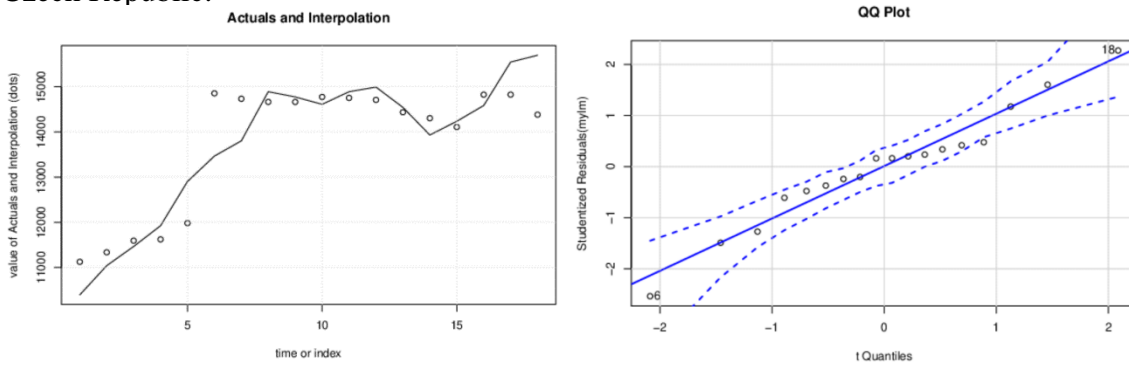
Hungary:
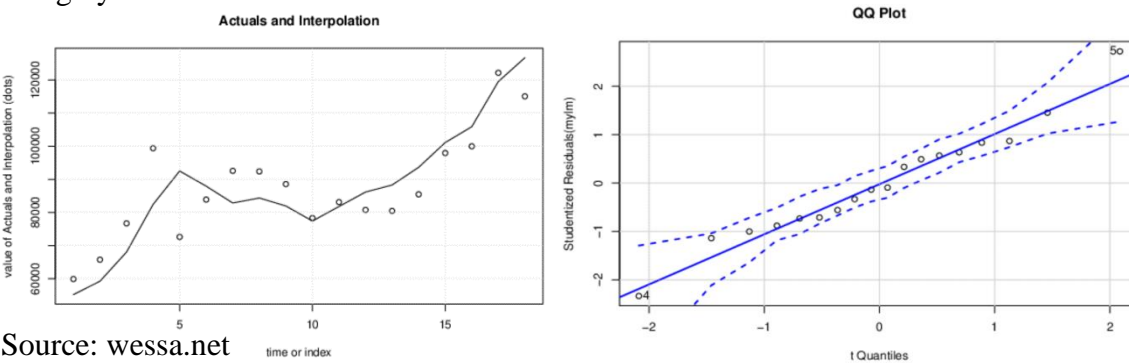
Source: wessa.net

Chart 96: Multivariate regression, for second 4 countries

Poland:
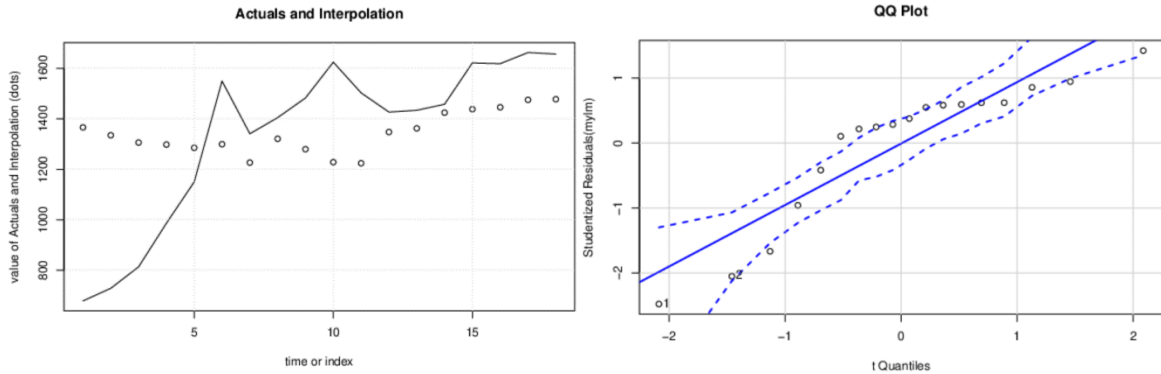
Romania:
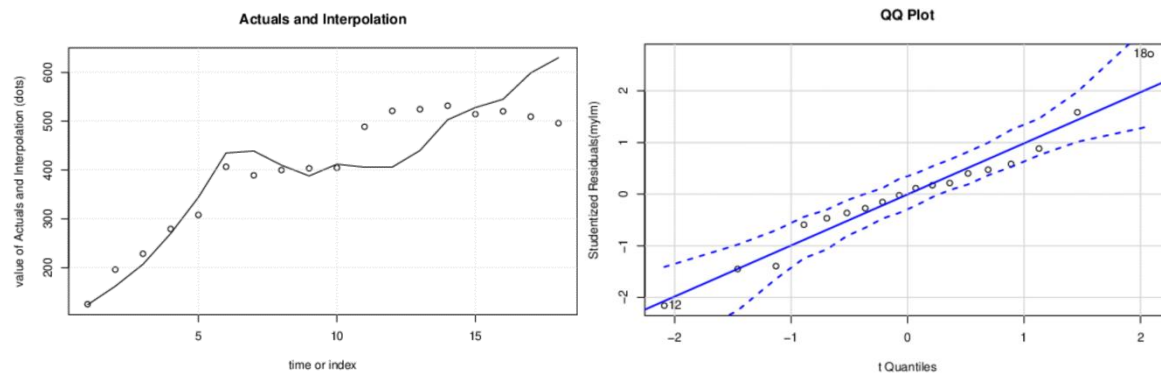
Slovakia:
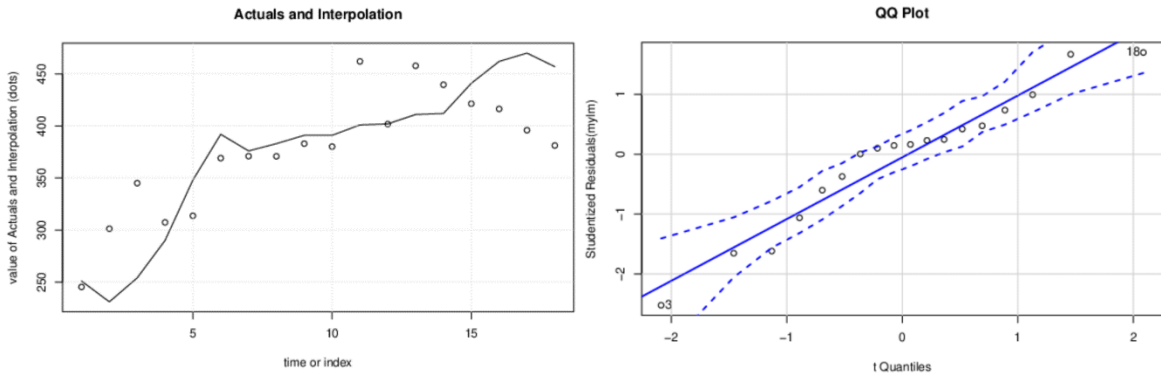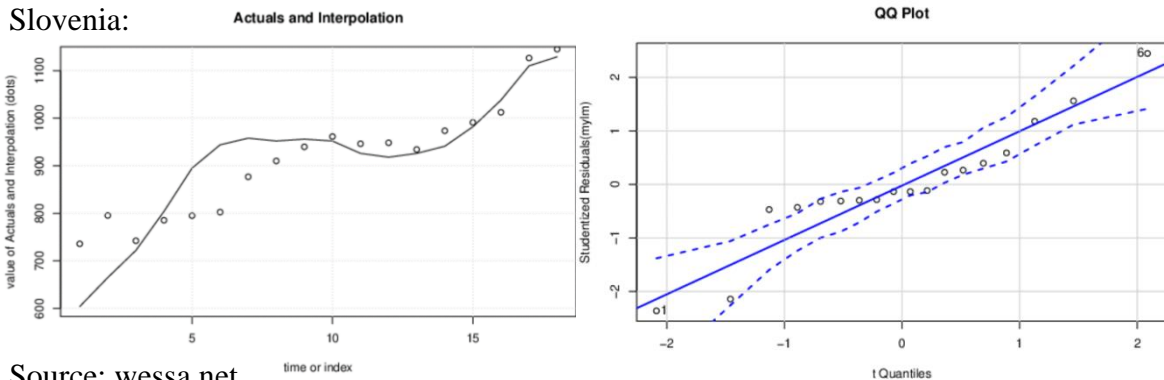
Slovenia:

Source: wessa.net

Based on this regression analysis a significant impact of international insurers' engagement appears, visible

- On insurance density as well as on GWP in Croatia, Czech Republic, Bulgaria, Hungary, Romania, Slovakia, Slovenia.
- On insurance penetration in Poland.

Poland returns a different picture, curiously, with a stronger effect on insurance penetration. As will be pointed out in the next chapter, all the markets are different, which also holds true for Poland, the largest market in the region. This country has seen state intervention measures in the past and is also dominated by a capital-strong state insurer, but has also seen some exits of international insurers over the past years. This might explain the vastly different behaviour. Still, also in the case of Poland, an impact on insurance markets development is observable, but in this case, interestingly, on penetration.

Although some of the correlation factors revealed inconclusive relations, the regression indicates that the participation and (market) share of international insurers has an impact on the insurance market of the region and their development towards advanced insurance markets. Examining the results of the correlation analysis in detail, the following can be concluded: considering the initially already very high market share of international groups in Slovakia and the high sensitivity of minor oscillations here, the share of international insurers (Table 53) appears more appropriate again for Slovakia. This returns a moderately strong positive correlation. Similarly, Hungary shows a strong positive correlation with the share of international insurers. The development of international market shares in Croatia, Czech Republic, Romania and Slovenia confirms a strong positive relationship with insurance density. The data for Poland confirms, as already mentioned, the strong correlation with the insurance penetration, which is another important indicator. Only Bulgaria returns either strong negative or rather uncorrelated results. Therefore, SH3 is accepted for Croatia, Czech Republic, Hungary, Poland, Romania, Slovakia and Slovenia, but rejected for Bulgaria.

7.2.4. Main Hypothesis

> **Hypothesis:**
>
> International investments in the Croatian insurance market have specific economic and financial effects, and these market development impact indicators are similar to those of selected CEE countries.

Building on the analysis and the results of the supporting hypotheses 1 and 3, the validation of the main hypothesis can be broken down and individualized for each of the selected countries. Whereas the first supporting hypothesis is focused on the Croatian market, the other hypotheses address the developments across all the selected countries of the CEE region.

The relationships of the market development impact indicators are not identical across the region, but considering the diversity of the region, economically, politically, culturally, this is also not to be expected. These differences even lead to significant differences in the insurance markets themselves as has been demonstrated in the analysis above. If allowing insurance penetration in SH3, in addition to insurance density and GWP, as critical parameters for assessment, the slightly diverging country of Poland, leads to a similar conclusion regarding the impact of international investors. Slovakia with its extremely high share of international insurers is being impacted by the slightest oscillations around these already very high percentages. Therefore, as argued in the previous chapter on the validation of SH3, the data does not support the validation of supporting hypothesis 3 for Bulgaria.

The results of the previous statistical analysis are heterogenous in so far as the countries analysed and their data are heterogenous. The results are similar where the data of the countries is returning similarity and they are specific, where the data of the countries are specific. Despite returning common themes, the research also has its limitation which are discussed in the final chapter. Overall, the correlations and impacts researched in the econometric model, confirm a

common trend across the CEE region. Below, in Table 63, is the final assessment on the validation / rejection of all hypotheses.

As the supporting hypothesis 1 has been validated (Croatia), supporting hypothesis 3 then affirms for which countries also the main hypothesis is valid. Therefore, the main hypothesis is rejected for Bulgaria but validated for the other countries. The Supporting Hypothesis 2 has been broken down into two parts and in both parts rejected again for Bulgaria; in addition, part 1 is rejected for Poland and part 2 for Romania.

Table 63: Validation of hypotheses

Country	SH1	SH2 (1)	SH2 (2)	SH3	Hypothesis
Croatia	✔	✔	✔	✔	✔
Bulgaria	n/a	✖	✖	✖	✖
Czech Republic	n/a	✔	✔	✔	✔
Hungary	n/a	✔	✔	✔	✔
Poland	n/a	✖	✔	✔	✔
Romania	n/a	✔	✖	✔	✔
Slovakia	n/a	✔	✔	✔	✔
Slovenia	n/a	✔	✔	✔	✔

Source: by author (2022)

8. ANALYSIS AND INTERPRETATIONS

The CEE region and their insurance markets are dominated by international insurance groups. This is not only the case today, but more or less throughout the past thirty years as after the fall of the Iron Curtain and the opening of the markets western investors set foot onto the new markets fairly quickly. However, the intensity has been different across the countries. For example, Slovenia for many years had a rather small share of international premium within its market and only recently Generali's acquisition of Adriatic Slovenica moderately increased this market share. On the other hand, Slovakia had been almost entirely in the hands of foreign companies throughout the observation period with international companies holding a market share of close to 100%. Czech Republic reveals a similar picture after the takeover of the former state insurer Ceska Pojistovna by Generali. Bulgaria has seen many international investors but proves a difficult terrain for them as their share of the market rescinds with a rise of domestic players and curiously, an increasing reliance on MTPL. Hungary was one of the first markets for many of the international groups and has constantly seen a market share of international insurers of close to 90%. Poland, as the region's largest market, has attracted all of the international insurers, although a few of them have already left again. State interventions (pension fund business, unit-linked business) combined with a very strong state insurer seem to somewhat limit the success of the international companies. Romania, also initially one of the promising markets due to its size and population, has proven to be a challenging market and together with Bulgaria in many parameters least developed.

Croatia seems to hold many characteristics of all the other countries, although it is one of the smaller markets. Due to its proximity, it has been the primary destination for the Austrian insurance companies and not for the Dutch/Belgium and Anglo-Saxon insurance and bancassurance groups which can be observed in many of the other countries. Moreover, Croatia is home to the largest domestic private insurance group, compared to the other markets (Agram group).

The following charts compare the development of some of the market development impact indicators across the researched countries.

Chart 97: Insurance penetration, 2003-2020
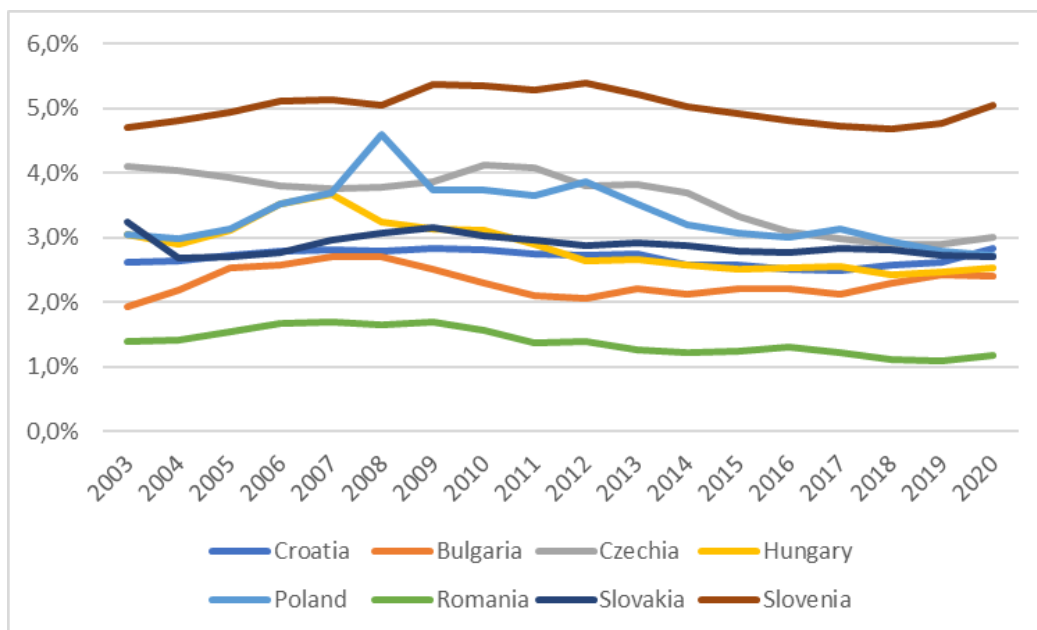
Source: Econometric model, by author (2022)

Chart 98: Insurance density, 2003-2020
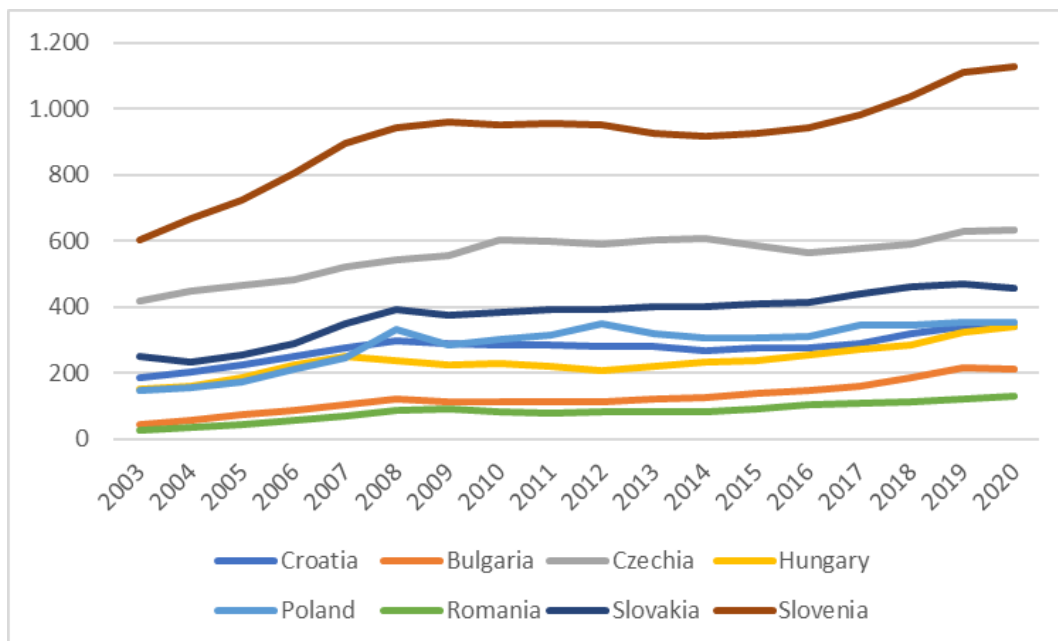
Source: Econometric model, by author (2022)

Chart 99: Share of international insurers, 2003-2020
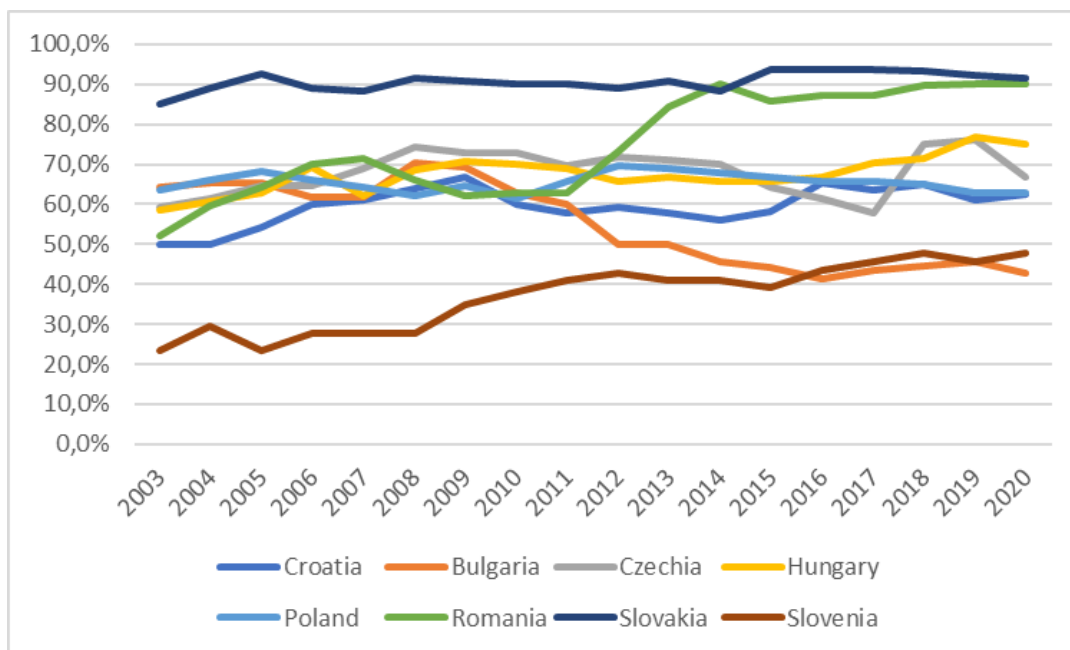
Source: Econometric model, by author (2022)

Chart 100: Market share of international insurers, 2003-2020
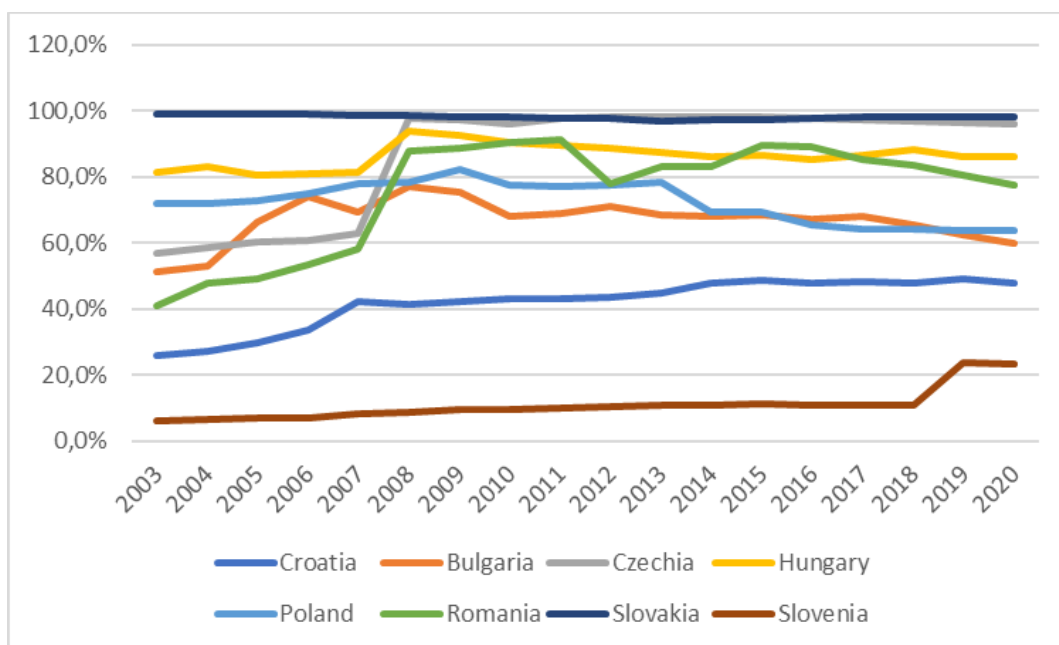
Source: Econometric model, by author (2022)

Chart 101: Share of MTPL in GWP, 2003-2020
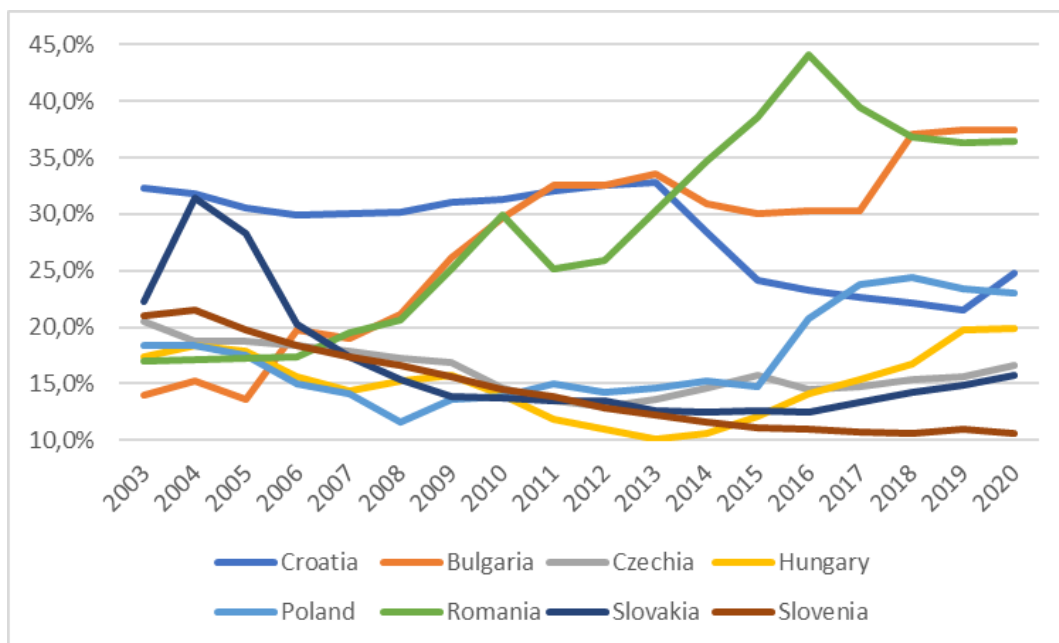
Source: Econometric model, by author (2022)

Chart 102: Share of MTPL/Casco/Life in GWP, 2003-2020
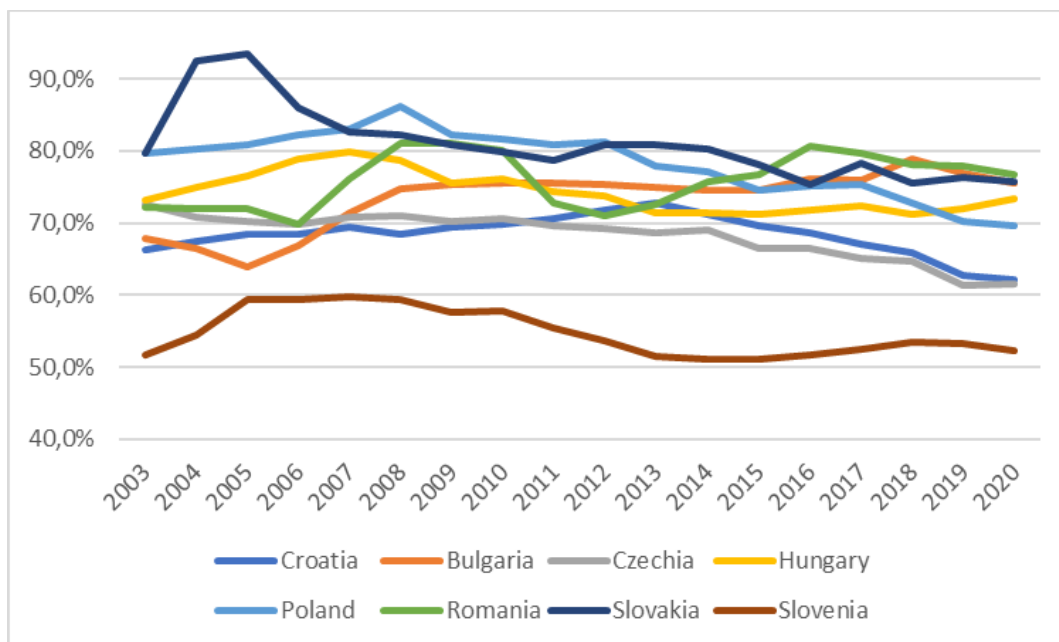
Source: Econometric model, by author (2022)

The econometric model with more than 4.000 data points and the applied tools of correlation and regression has demonstrated that a relationship between the engagement of international investors and the development of market impact indicators exists. Furthermore, the development of these indicators, as shown above, reveal, similarly to the statistical analysis performed, that there is some common trend across the region, although on individual parameters differences can occur.

Interestingly, despite the general dominance of international investors in the insurance markets across the region, Croatia is the country with the second lowest market share held by international groups. This is due to the market leader and former monopolist Croatia osiguranje being purchased by a Croatian investment company in the privatization, and due to the strong position of the privately-held domestic Agram group.

Croatia, despite the effects of the liberalisation process in MTPL, which started in 2013 but lasted many years, holds the third highest share of MTPL in total gross written premium. Only the countries Bulgaria and Romania are still more dependent on the obligatory form of vehicle third party liability insurance, also a testimony to levels of market maturity.

The international investors engaged in the region are usually originating from western economies and the home-grown CEE insurance groups are somewhat limited. PZU, although the largest insurer of the region due to its domestic market position, is entirely focused on Poland. Euroins group from Bulgaria is attempting to build a regional insurance group, currently active in a few CEE but also CIS countries. The majority of the investors are coming from Austria, Germany, Italy, Belgium and the Netherlands.

As discussed throughout the dissertation, the CEE region is not homogenic but contains different countries with their individual economies. Although they all started from a very similar starting point after the fall of the Iron Curtain, their development and the results over the past thirty years have been quite diverging. In fact, all eight examined countries have their

peculiarities influenced by their own individual stories as countries and insurance markets, which might have been influenced by

- Their sizes as a market, therefore driven by the size of the population,

- Pure macro-economic factors,

- Non-financial factors,

- Regulatory changes and events,

- Political environment and culture,

- Market specificities, the behaviour of the monopolist, maturity, size, government interventions,

- But also, by the actions of individual persons or companies.

Some of these factors are harder to catch, and construct a model around them, than others. The econometric model of this research attempted to prove the impact of the origin of the market participants on the insurance markets in the region. Also here, differences occur as demonstrated in the charts above, whether it is the share of the MTPL premium or the market share of international companies itself. Two extremes are Slovakia with a constant market share of international players close to 100%, and Slovenia, where the international stake just recently started to build up.

In particular, the share of MTPL is a good indicator for market maturity and financial deepening related to the insurance sector as well. For example, the highest insurance spending per capita (density) can be found in Slovenia, but it has the lowest share of MTPL in its premium. The other two "insurance-richer" countries, the Czech Republic and Slovakia, reveal similar tendencies. Also, for Croatia, the drop in MTPL premium after the liberalisation of prices led many insurers to focus also on other products and forced them to raise their game. However, this transition required several years.

In order to see whether the two parameters, share of MTPL and market share of international insurance companies, are related, the following scatter charts are plotted per country.

Chart 103: Scatter share of MTPL vs market share of international insurers, 2003-2020, Croatia
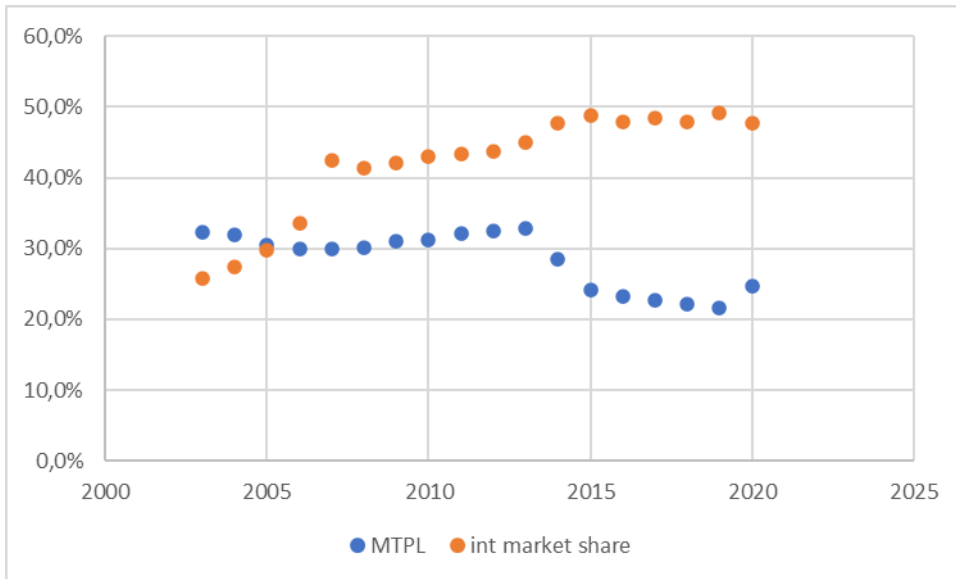
Source: Econometric model, by author (2022)

Chart 104: Scatter share of MTPL vs market share of international insurers, 2003-2020, Bulgaria
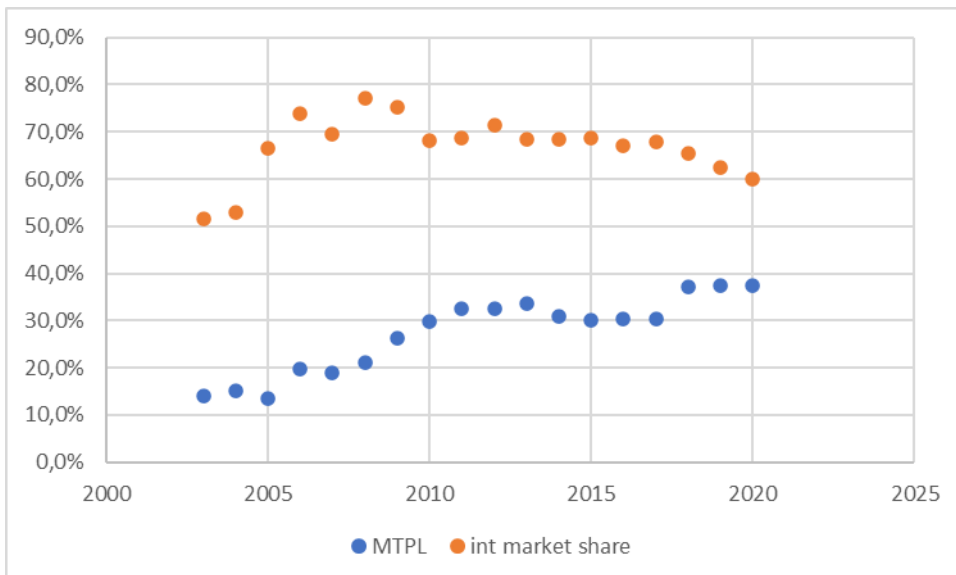
Source: Econometric model, by author (2022)

Chart 105: Scatter share of MTPL vs market share of international insurers, 2003-2020, Czech Republic
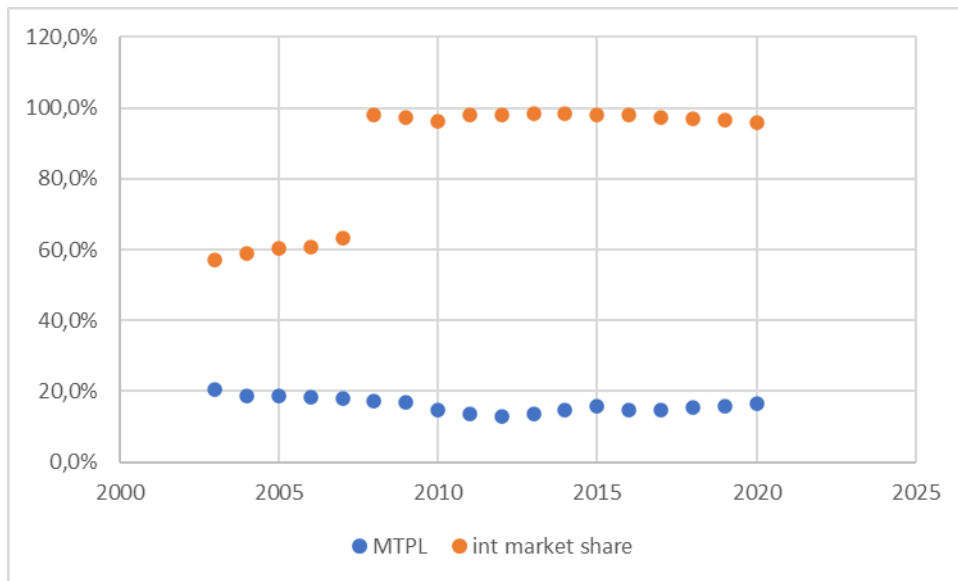
Source: Econometric model, by author (2022)

Chart 106: Scatter share of MTPL vs market share of international insurers, 2003-2020, Hungary
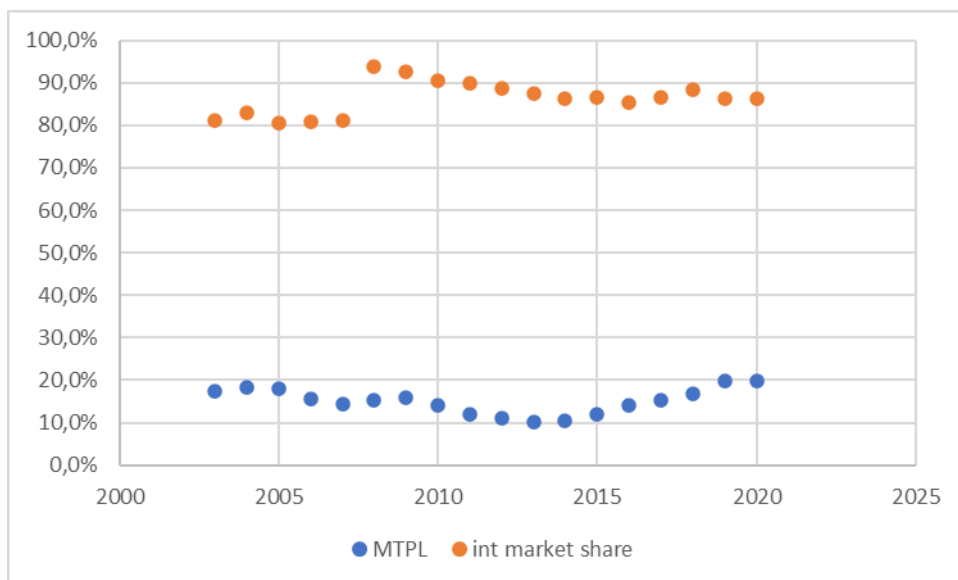
Source: Econometric model, by author (2022)

Chart 107: Scatter share of MTPL vs market share of international insurers, 2003-2020, Poland
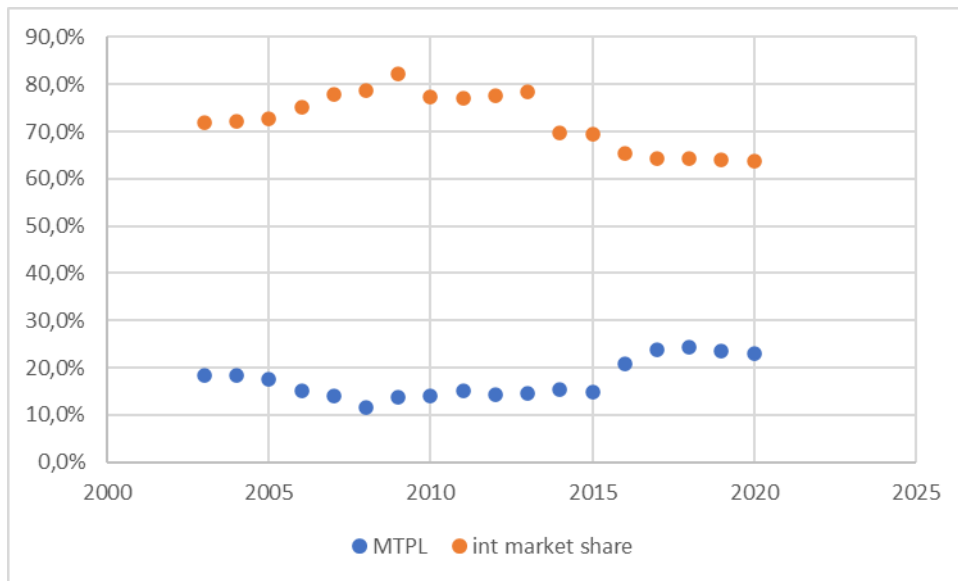
Source: Econometric model, by author (2022)

Chart 108: Scatter share of MTPL vs market share of international insurers, 2003-2020, Romania
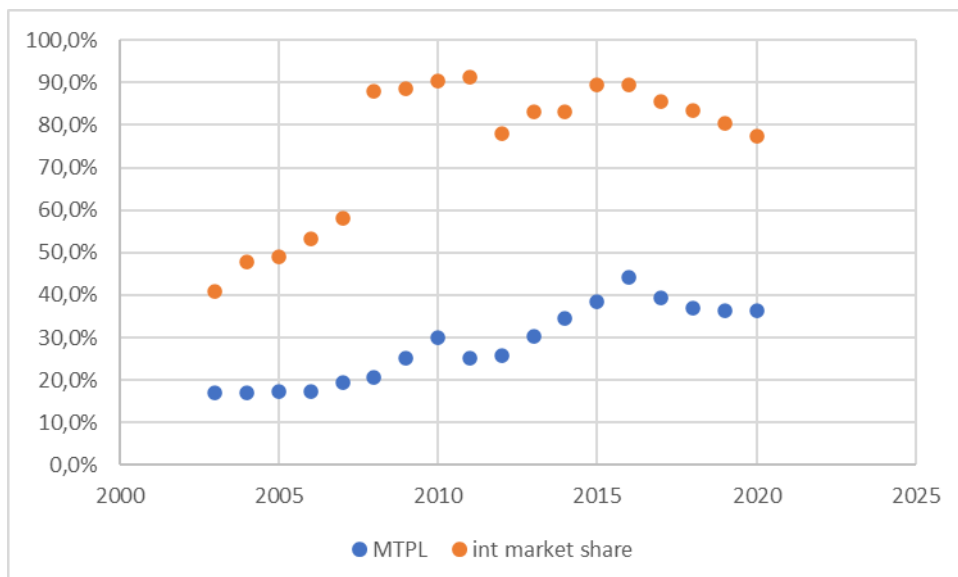
Source: Econometric model, by author (2022)

Chart 109: Scatter share of MTPL vs market share of international insurers, 2003-2020, Slovakia
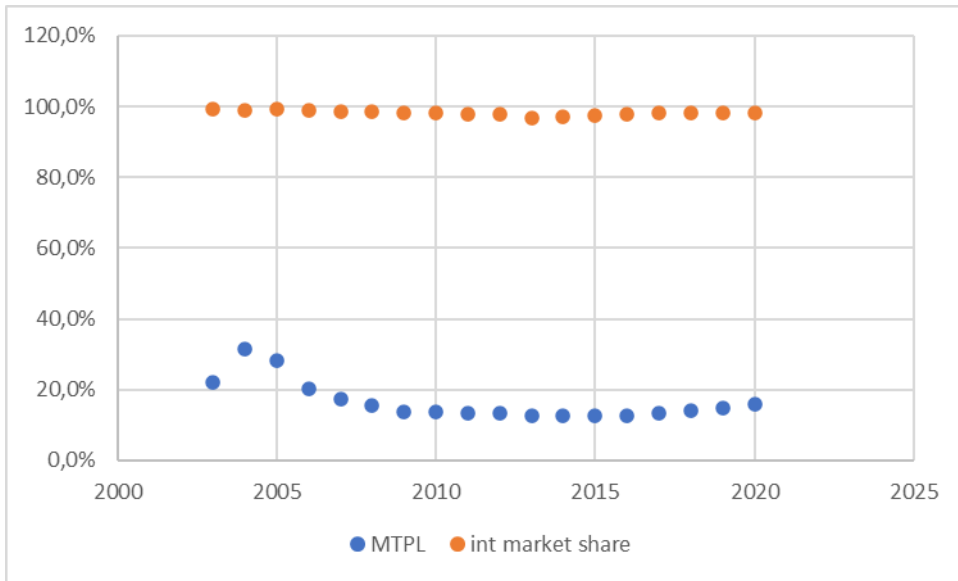
Source: Econometric model, by author (2022)

Chart 110: Scatter share of MTPL vs market share of international insurers, 2003-2020, Slovenia
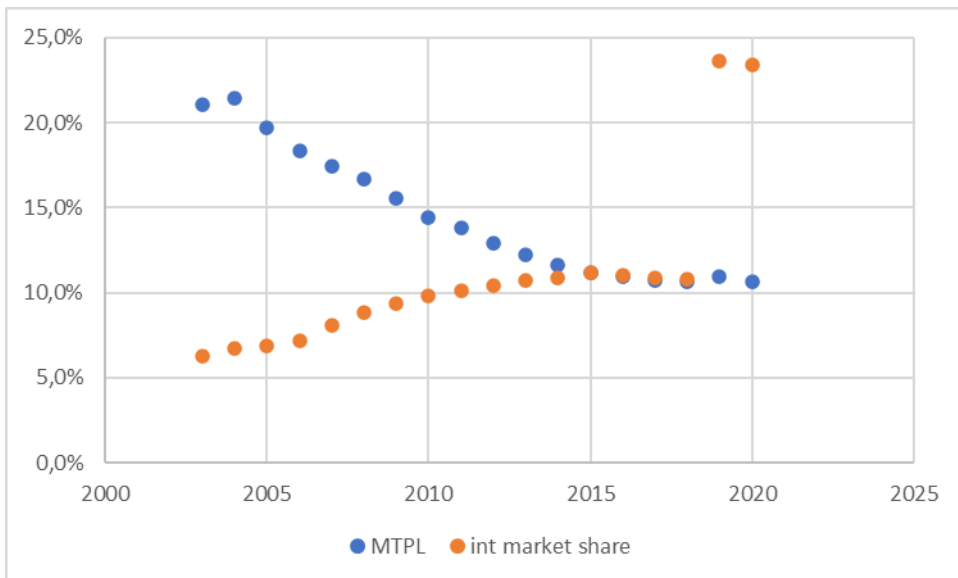
Source: Econometric model, by author (2022)

These charts on the relation between the share of MTPL and the market share of international insurers points towards the direction that the more international insurers are engaged in a market, the more drops the share of MTPL premium. Even in countries, where the market share of international players is actually rescinding, there appears a trend that the MTPL business becomes more relevant again. This, in fact, confirms the hypotheses as well, although from the reverse. Where there is less international involvement, markets are less developing towards advanced insurance markets.

For market observers this may not come as a big surprise. MTPL is an obligatory form of insurance, and from the perspectives of education, sales training, customer service and claims handling, it is the least demanding, compared to other product lines. International insurers, with their know-how from other, often developed markets, are able to push also into other business segments and have a different strategy in respect of MTPL. The domestic players, often incumbents, are trying hard to defend their market positions and retain their most important business segment, often by reducing prices in MTPL. This all leads to a spiral that is reducing MTPL prices, often to levels where either the regulator has to step in, or the market turns the business around.

Finally, the chart below depicts the development of the insurance density across the eight countries[210], broken down into

- International insurance density with GWP written by international insurers,
- Domestic insurance density with GWP written by domestic insurers.

Across all these countries the insurance density is much more driven by the gross written premium generated by the international insurance groups. From 2003 until 2008 the international insurers' premium per capita more than doubled, whereas domestic premium somewhat stagnated. Since then the development has been more on a similar trajectory, partially

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[210] Approximation in EUR: YE FX rate applied across all countries/years

driven by the already high international market shares as well as the rise of domestic premium, as seen in some countries.

Chart 111: International vs domestic insurance density, 8 countries, in EUR, 2003-2020
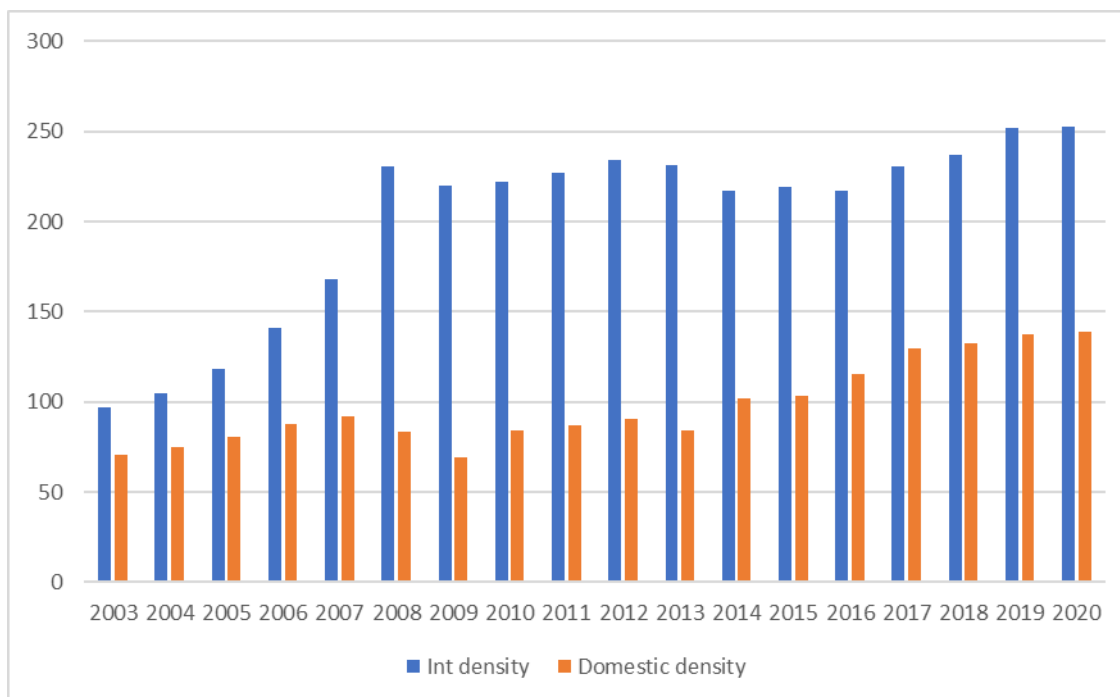
Source: Econometric model, by author (2022)

In summary, international insurance companies, with their know-how, their resources and their strategies have had and still have significant impact on the development of the insurance markets in the CEE region, which is also visible in the positive correlation with their engagement and the market development impact indicators presented herein.

Keeping in mind the title of the doctoral dissertation "Impact of international investments on the Croatian insurance market, compared to selected CEE-countries" there are now sufficient data available to assess this impact. The empirical data allows comparing the changes of the international insurance groups' market share with the changes in insurance density as well as the change in financial deepening of a country. For example, for Croatia the data suggests, that

the average annual change of the international market share amounted to +1,3%, and was accompanied with an annual average increase of insurance density of 3,8% as well as a financial deepening and therefore decrease of the dependency on MTPL of 0,4% annually. This is presented for Croatia in Table 64.

Table 64: Comparison of (1) change in international market share with (2) change in insurance density and (3) Share in MTPL, Croatia

Year	Delta Int. MS	Delta density	Delta 1-Share MTPL
2004	1,5%	9,1%	0,4%
2005	2,4%	10,9%	1,3%
2006	3,7%	11,2%	0,6%
2007	9,0%	10,9%	-0,1%
2008	-1,1%	6,9%	-0,2%
2009	0,7%	-2,7%	-0,9%
2010	1,0%	-1,5%	-0,2%
2011	0,3%	-0,9%	-0,8%
2012	0,4%	-0,8%	-0,4%
2013	1,2%	0,7%	-0,3%
2014	2,8%	-5,3%	4,4%
2015	1,0%	2,7%	4,3%
2016	-0,9%	1,2%	0,8%
2017	0,6%	4,5%	0,7%
2018	-0,7%	9,8%	0,5%
2019	1,3%	6,9%	0,5%
2020	-1,4%	0,4%	-3,2%
average	**1,3%**	**3,8%**	**0,4%**

Source: Econometric model (2022)

Performing the same analysis for the other seven countries of the region, returns similar results for most countries, depicted in Table 65. Across the seven countries (except Croatia) the international groups increased their market share by 0,8% annually, while in the same time insurance penetration increased by 6,0% annually. This implies a factor of 7,4 in the relation of international market share and insurance penetration, meaning that an increase of 1%-point of market share by international insurance groups comes together with an increase of insurance penetration of 7,4% annually. For Croatia, this amounts to only 2,9%.

Furthermore, the increase of 1%-point in the international market share in Croatia sees a decrease of the share of MTPL by 0,3%. The result for the other seven countries is less conclusive as it returns a negative number (here: increase of MTPL), which is largely the result of the countries Bulgaria and Romania, which is also conclusive with the research presented in the previous chapter. Eliminating both countries returns the same factor as for Croatia, 0,3.

Table 65: Comparison of (1) change in international market share with (2) change in insurance density and (3) Share in MTPL, averages 2003-2020, all eight countries

	Delta Int. MS	Delta density %	Delta 1-Share MTPL
Croatia	1,3%	3,8%	0,4%
Faktor		*2,9*	*0,3*
Bulgaria	0,5%	10,2%	-1,4%
Czechia	2,3%	2,5%	0,2%
Hungary	0,3%	5,3%	-0,2%
Poland	-0,5%	6,0%	-0,3%
Romania	2,2%	10,7%	-1,1%
Slovakia	0,0%	3,8%	0,4%
Slovenia	1,0%	3,8%	0,6%
Average 7	**0,8%**	**6,0%**	**-0,2%**
Faktor		*7,4*	*-0,3*
Average 5	**0,6%**	**4,3%**	**0,2%**
without BG, RO			
Faktor		*7,0*	*0,3*

Source: Econometric model (2022)

A final conclusion of this research can be drawn by comparing the factors of delta international market share vs delta insurance density between Croatia and the other seven countries. This interestingly reveals that the impact of international insurers on the development of the insurance markets, measured by insurance density, in the seven countries (Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovakia, Slovenia) is more than double than it is in Croatia.

9. CONCLUSION

The discipline of insurance is vital for the functioning of local and global economies and plays a crucial role in aggregating and managing risks for individuals, corporations and societies as well as organizing an important part of the asset accumulation and investment process. Although modern insurance has been around for hundreds of years with already very large institutions being active around the globe, the worldwide insurance market is still rather fragmented. Increasing regulatory requirements, digitalisation and technological innovation, as well as increased consumer expectations are putting pressure on the insurance sector and force them to carefully consider their investments.

Insurance companies are pooling risks and thereby applying and relying on the law of the large number. By attempting to create larger portfolios and groups of risks, they benefit from the effects of diversification which allows for more accurate projections of the deviations from expectations of insured losses and claims events. This insurance reality is now intrinsically fostered in the risk management principles of regulation and supervision via the Solvency II regime.

In search for opportunities for growth and the possibilities to create larger pools of risks, insurers have also turned to the markets of developing countries. The lower insurance penetrations and densities promised potential for growth, with the insurers benefiting from the economy and from the growth of the insurance markets.

As shown in this dissertation, the CEE region is an interesting market for international insurance companies, with the majority of the market being in international hands. Most of the key international insurance groups are, or have been, active in the region. With the fall of the Iron Curtain after the dissolution of the Soviet Union, many western insurers, predominantly coming from Austria, Germany, Italy or Belgium, rushed into the new markets of the CEE region, attempting to participate in the expected growth and reap the benefits from a convergence

towards advanced insurance markets. International investors have been at the center of a variety of strategic steps, whether they have set up early green field operations and helped educate and develop the market or whether they participated in privatisations of former state monopolist insurers within the sector or made many of the M&A transactions in the region, or brought new products into the countries and developed strategic distribution agreements with other corporations like banks.

On the other hand, recent transactions have also shown that these international players are not all here to stay forever. As already mentioned, just over the course of the last few years, for example, big players like AXA, Aegon, Ergo and Aviva have made their exits from some CEE countries or even the entire region. The CEE region is full of international market entries and exits. It remains for some other research to dive deeper into the analysis as to which considerations have prompted these companies to exit, or even to enter in the first place.

This also serves as a reminder, that, as corporations are usually following an opportunistic approach, developing countries are in fact an opportunity, but developing them requires investment and for these corporations to gain a positive outlook. The individual markets of the region are rather small, the economies have not all proven to be resistant to crisis and therefore it is not feasible for all market players to gain the relevant size for the economies-of-scale in order to achieve the desired returns on the investments. This means, the CEE region has proven to also be a challenging market for the international insurers as many of them have already made their exit again.

This, after all, does not change the fact that the insurance market in the CEE region is in international hands and is very likely to remain like that.

The econometric model with data from the eight countries Croatia, Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovakia and Slovenia showed, that there are, usually positive, and significant relations between the development of the insurance markets and the engagement of international insurance companies. In particular, the development of the insurance density appears to develop strongly with the presence of international investors. Furthermore,

specificities of economies, financial development and cultural relations also influence on the other hand the level of international investment into an insurance market, but also the development of the insurance market itself.

Although the trends are visible across the region, confirming parts of the hypotheses, there are differences in the development of the individual insurance markets. Political decisions, regulatory approach, transactions that happen or did not happen, the general structure of economies or even the standards in society and how they perceive insurance, all these factors influence the development of the insurance sector.

Curiously, the levels of foreign investment across the region varies significantly. While for example, in Slovakia, almost the entire market is held by international players, which is already the case for the longest time since the opening of these markets, similarly to Hungary or the Czech Republic, the situation appears different for Slovenia or even Croatia, where international insurers are far from dominating the market.

This research shows that the CEE region indeed is very heterogenic. Each country has its specificities in respect of economic and financial development, social relations, supervision and regulation and historic market development. Often, development is influenced by events or individuals, but to translate this into the statistical analysis has its limitations although they also influence the results of the analysis.

Together with this individuality of the regions' markets but also due to the huge data set and the resulting possibilities for analysing relationships, this research serves as a beginning for further research into the distinct topics. It would be worth examining the reasons behind the diverging levels of international engagement across the region, for example, as to why Slovakia has almost 100% of the market written by international groups, whereas in other countries this is lower. Each topic of the hypotheses, whether the financial or economic development, cultural relations, product diversity or wealth, deserves to be broken down, in order to further deepen the analysis of the relations between the examined parameters and the engagement of

international investors, levels of profitability in the markets and the reasons for international investors to exit markets again.

One reason why international insurers are usually coming from the West, and not the other way around, is, that they are having the benefit of larger home markets and larger portfolios. As pointed out previously, size, economies-of-scale and diversification are important ingredients for the strategic success of an insurer.

On an important note, despite the undeniable impact of the international insurance groups on the insurance markets development in this region, the author would be very reluctant in painting domestic companies as inferior in terms of know-how, skills or capacities. In fact, also in these local insurers work talented entrepreneurs and people, who are developing and optimising their business as much as possible, which is a testimony to the reality that also individuals can have impact on markets. However, innovation is often the result of market pressures and if missing, then the tendency for stagnation increases.

Looking ahead into the future, the regional dominance of the international insurers certainly is expected to continue and, despite temporary shifts, to keep increasing. There are still some (former) domestic state insurers which might be put up for sale in the future, if drained state budgets after the effects of the pandemic, require additional funding.

As an outlook for the Croatian insurance market, this paper can offer its own views based on this analysis and the performed research. First, since the market is rather small, growth, whether organic or inorganic, will still be critical for the future. Profitability in the still very important business segment, MTPL, has returned after prices started to increase in 2020 and in addition the COVID-19 pandemic had positive effects on the claims development of the motor business. This is even more relevant, since in recent years, a large part of volumes is being generated by

the bancassurance channel and Consumer Protection Insurance (CPI), which carries rather limited margins. Therefore, vital for the insurance sector is the development of the non-motor Non Life business lines, which should bring additional volumes and profitability. Second, the global insurance industry will come under significant market pressure from innovators and technologically advanced players, potentially better in addressing customer expectations. This will not be an immediate threat to the Croatian insurance incumbents; however, it is also not reasonable to expect the trend passing by the Croatian market. Therefore, it is critical that also Croatian insurance companies keep innovating, diversifying into other insurance product lines and strengthen their customer experiences. Third, the two local and largest players make interesting targets for international investors. Any such transaction, whether related to Croatia osiguranje or to Agram group, would drastically change the market and its dynamics.

The objective of this paper was to determine the impact of international investors on the development of the insurance markets in the CEE-region. The scientific contribution of this dissertation lies in the design of models based on empirical data, quantification of directions and parameters of research variables in the development of insurance markets of selected Central and Eastern European countries in relation to the engagement and investments of international insurance groups.

The limitations of this research are on the one hand inherent in the heterogeneity of the countries which might neglect other factors of influence, perhaps also non-quantifiable, that have an impact on the development of the insurance markets in these selected countries. In particular, the timeframe, although elected to include an extended timeframe from 2003-2020, does not capture the various starting levels of these insurance markets.[211] Despite the transition to advanced market economies started around similar a timeframe at the end of the Eighties with the Fall of the Iron Curtain, already less than fifteen years later, there existed several differences in these insurance markets. Markets then were already showing signs of heterogeneity. Especially, the level of engagement of international insurance groups as a starting point in 2003

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[211] Consistent availability of consistent data did not support an analysis extending the selected time series.

is relevant here. As demonstrated, Slovakia, throughout the entire time series, was characterized with high levels of international market shares, whereas Croatia and Slovenia, was well below one third. Therefore, the incremental impact, in the sense of a delta in international market shares, and its impact on these markets, is bringing with it its limitations when comparing these countries. Here, part of the impact of international engagement had already happened previously in Slovakia, whereas in Croatia, this would happen within the time series analysed. Therefore, further research into this topic shall consider the diverging starting positions, in particular in the engagement of the international investors.

A primary applicability of this research can resonate with governments and policy makers wishing to understand the impact and side effects of their political decisions. This dissertation points towards the impact of international investors on local insurance markets and also elaborates on the importance of the insurance sector for economic development. Political decision makers find a comparison in key market impact indicators between these selected countries, based on empirical data.

The research displayed here may also serve well these very participants which were analysed in this paper. International insurance groups might get a better understanding of their own impact on these markets but connecting these results with their own internal key performance indicators, might allow them to come to new conclusions in respect of market attractivity. This could further help them to develop an individualized econometric model capturing market potentials. Such a model would certainly have its merits, considering the large amount of international investors which have already exited again a once entered market, and therefore corrected a previously taken management decision.

The research throughout this paper confirms the relevance of the engagement of international investors for the development of the insurance markets of the region. The data of the econometric model has also shown heterogeneity among the countries. Finally, this research reveals, that the impact of international insurers on the development of the insurance markets, measured by insurance density, in the seven countries (Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovakia, Slovenia) is more than double than it is in Croatia.

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- World Bank

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- Sofia Stock Exchange

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Czech Republic:

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SUMMARY

The region of Central and Eastern Europe is not a homogenous economic nor political region, and neither are its insurance markets. These insurance markets have initially been characterized by monopolistic state insurers in socialistic or communistic countries but have been transitioning to market economies and attracting significant international investment after the fall of the Iron Curtain. The purpose of the research is to determine the impact of international investors on the development of the insurance markets in the CEE-region. The scientific contribution of this dissertation lies in the design of models based on empirical data, quantification of directions and parameters of research variables in the development of insurance markets of selected Central and Eastern European countries in relation to the engagement and investments of international insurance groups.

The methodology relies on specific market impact indicators that are extracted from the original sources for the selected countries (Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Slovakia, Slovenia) and relevant parameters calculated. Methods of descriptive statistics, mainly the tools of correlation and regression are applied on these parameters.

The research reveals a heterogenic picture for the countries of the region, with diverging levels of engagement of international investors. The development of Croatia's insurance market in relation to the engagement of international insurance groups is analysed and compared to the development with selected countries of the CEE region. It looks at the development from 2003 to 2020 in eight countries and finds a common relation of the markets' characteristics and the levels of engagement of international investors (market share accumulated by international insurers) by analysing the strategies of the main international market participants across the region as well as the statistical relationships of selected market development indicators, such as insurance penetration and insurance density.

The findings include a strong positive relationship between the development of these insurance market impact indicators and the share as well as market share of the international insurance

groups for the countries of Croatia, Czech Republic, Hungary, Poland, Romania, Slovakia and Slovenia. It also shows that the impact of international insurers on the development of the insurance markets, measured by insurance density, in the seven countries (Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovakia, Slovenia) is more than double than it is in Croatia.

SAŽETAK

Disciplina osiguranja ključna je za funkcioniranje lokalnih i globalnih gospodarstava i igra važnu ulogu u agregiranju i upravljanju rizicima za pojedince, korporacije i društva, kao i u organizaciji važnog dijela procesa akumulacije imovine i ulaganja. Iako moderno osiguranje postoji već stotinama godina s već vrlo velikim institucijama koje su aktivne diljem svijeta uključujući ovu regiju, svjetsko tržište osiguranja još je uvijek prilično fragmentirano. Sve veći regulatorni zahtjevi na različitim razinama, digitalizacija i tehnološke inovacije, kao i povećana očekivanja potrošača vrše pritisak na sektor osiguranja, što ima za posljedicu da osiguravajuća društva iznimno pažljivo planiraju svoja ulaganja.

Osiguravajuća društva udružuju rizike i na taj način primjenjuju i oslanjaju se na zakon velikih brojeva. Pokušavajući stvoriti veće portfelje i skupine rizika, oni imaju koristi od učinaka diverzifikacije koja omogućuje točnije projekcije odstupanja od očekivanja osiguranih gubitaka i šteta. Ova osigurateljna realnost sada je suštinski potpomognuta načelima upravljanja rizicima regulacije i nadzora putem režima Solventnost II.

U potrazi za prilikama za rast i mogućnostima stvaranja većih košara rizika, osiguravatelji su se okrenuli i tržištima zemalja u razvoju. Niži udio osiguranja u BDP-u i premije osiguranja po stanovniku (insurance penetration i insurance density) bili su temelj velikih očekivanja i potencijal za rast, pri čemu su osiguravatelji imali koristi od razvoj gospodarstva i rasta tržišta osiguranja.

Kao što je prikazano u ovoj disertaciji, regija srednje i istočne Europe zanimljivo je tržište za međunarodna osiguravajuća društva, pri čemu je većina tržišta već u međunarodnim rukama. Većina važnih osiguravajućih grupa je ili je bila aktivna u regiji. Padom željezne zavjese nakon raspada Sovjetskog Saveza, mnogi zapadni osiguravatelji, uglavnom iz Austrije, Njemačke, Italije ili Skandinavije, pojurili su na nova tržišta regija srednje i istočne Europe, pokušavajući sudjelovati u očekivanom rastu i ubrati koristi od konvergencije prema naprednim tržištima osiguranja.

Od pada željezne zavjese, zemlje srednje i istočne Europe (CEE) su u posljednja tri desetljeća prelazile iz gospodarstva s centralnim upravljanjem na napredno tržišno gospodarstvo, iako različitim brzinama. To vrijedi i za njihova tržišta osiguranja. Međunarodni investitori značajno su utjecali na razvoj industrije osiguranja u ovoj regiji. Ova doktorska disertacija ispituje je li utjecaj međunarodnih ulaganja u osiguranje bio drugačiji na hrvatskom tržištu nego na drugim tržištima u regiji. Međunarodni investitori odigrali su ključnu ulogu u razvoju centraliziranih gospodarstava prema naprednim tržišnim gospodarstvima.

CEE-regija kao takva nije homogena regija, već heterogeno područje različitih država s vlastitim gospodarstvima, a time i sa svojim pojedinačnim tržištima osiguranja, koja se mogu značajno razlikovati. Imaju barem jednu – zajedničku karakteristiku budući da su sve ove zemlje s gospodarstvima u razvoju te su bile na putu prema naprednom tržišnom gospodarstvu u posljednja tri desetljeća, uključujući napore za tržišno orijentiran sektor osiguranja. Međutim, iako je Hrvatska dio regije zemlje srednje i istočne Europe, njezin obrazac razvoja mogao bi biti drugačiji u određenim sektorima i/ili u sektoru osiguranja.

Otvaranje prema međunarodnim investitorima pokazalo se vitalnim za zemlje CEE-regije u njihovoj tranziciji prema tržišnim gospodarstvima. Brojni međunarodni ulagači i osiguravajuća društva tražili su prilike za rast u ovoj regiji i preuzeli su vitalne uloge u širokom rasponu strateških koraka, bilo da su pokrenuli rane greenfield investicije i pomogli u obrazovanju i razvoju tržišta ili su sudjelovali u privatizacije unutar sektora ili mnoge transakcije spajanja i preuzimanja (M&A) u regiji, donijeli nove proizvode u zemlje ili razvili strateške sporazume o distribuciji s drugim korporacijama. Mnoge od najvažnijih osiguravajućih grupa su ili su bile aktivne u regiji, a tržište je već većinom u međunarodnim rukama.

Slično, s obzirom na to da je i Hrvatska još mlada tržišna ekonomija u razvoju, njezini najvažniji koraci u razvoju otvorenog sektora osiguranja mogu se pronaći u njezinoj nedavnoj prošlosti. Na primjer, Hrvatska je liberalizirala cijene na svom tržištu autoodgovornosti (AO) tek nakon što su mnoge druge zemlje već prošle kroz takav proces. Ovaj važan proces za razvoj prema tržišno orijentiranom sektoru osiguranja dogodio se tek 2013. godine, odmah nakon ulaska Hrvatske u Europsku uniju. Nadalje, u slično vrijeme dogodila se i prodaja većinskog dijela

državnog udjela u najvećem hrvatskom osiguravajućem društvu Croatia osiguranju. Ipak, i nakon ove privatizacije država drži udio od oko 30,6% u hrvatskom tržišnom lideru.

Važne prekretnice u razvoju hrvatskog tržišta osiguranja prikazane su u grafikonu 12, a uključuju sljedeće korake, koji su često u korelaciji s uključivanjem međunarodnih ulagača.

Figure 12: Ilustracija važnih koraka u razvoju hrvatskog tržišta osiguranja nakon otvaranja tržišta
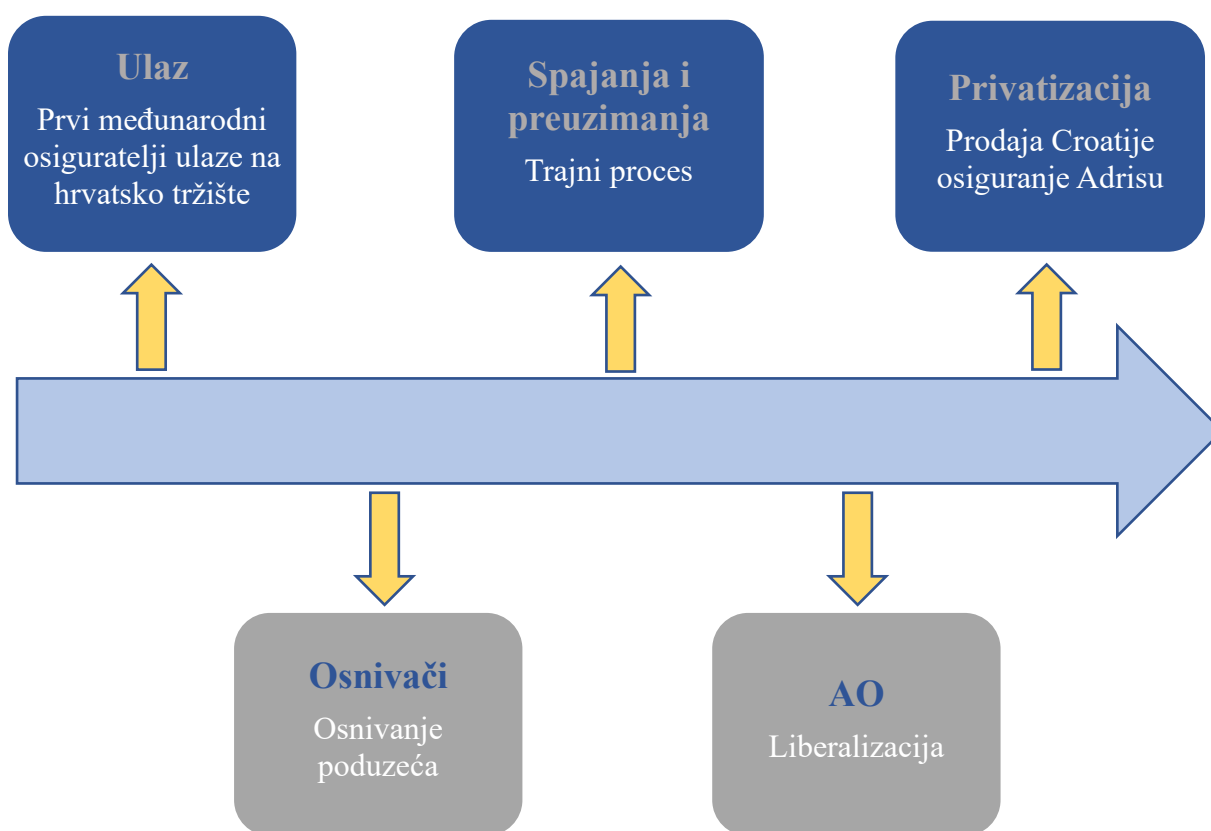
Izvor: po autoru (2022)

Međutim, regija srednje i istočne Europe, kao i Republika Hrvatska, pokazale su se kao izazovna tržišta za međunarodne osiguravatelje jer su mnogi od njih već ponovno izašli s tržišta. To ne mijenja važnost međunarodnih igrača za tržište osiguranja u Hrvatskoj i regiji srednje i istočne Europe.

Ovaj istraživački rad daje pregled globalnog, regionalnog i hrvatskog tržišta osiguranja na kojima djeluju mnoge međunarodne osiguravajuće grupe. Tržišta osiguranja istočne Europe, iako još uvijek relativno mala u globalnom tržištu, pokazuju veliki potencijal za rast premije, ali i profitabilnosti i stoga su vrlo atraktivni za međunarodne ulagače koji traže rast i diverzifikaciju, nakon što prevladaju potencijalne prepreke za ulazak na nova tržišta.

Cilj je ove disertacije istražiti i definirati ekonometrijski model na temelju dostupnih podataka u vezi s definiranim znanstvenim problemima te pronaći i kvantificirane odgovore na njih, te stoga povezati prisutnost međunarodnih ulagača s razvojem tih tržišta osiguranja. Istraživanje ima za cilj procijeniti i ocijeniti utjecaj angažmana međunarodnih ulagača i glavnih međunarodnih osiguravajućih grupa na razvoj hrvatskog tržišta osiguranja u usporedbi s njihovim utjecajem na tržišta osiguranja odabranih zemalja u regiji CEE te definirati relevantne parametre za ovu ocjenu.

Istraživanje je u velikoj mjeri usmjereno na kvantitativnu analizu podataka koje objavljuju različita tijela relevantna u industriji osiguranja regije CEE, a to su udruge osiguranja, lokalni regulatori, nacionalne banke, međunarodne osiguravajuće grupe, druge udruge kao i drugi pružatelji statističkih podataka. Statistička analiza s alatima korelacije i regresije u središtu je ovog dijela, gdje će se ispitati odnos između odabranih razvojnih parametara.

Geografski fokus istraživanja usmjeren je na Hrvatsku, kao i na odabrane zemlje regije srednje i istočne Europe koje su već ušle u Europsku uniju, a vremenski period pokriva razdoblje od više godina. Uz Hrvatsku, analizirane su i Bugarska, Češka, Mađarska, Poljska, Rumunjska, Slovačka i Slovenija. Osim kvantitativne analize podataka, bit će i kvalitativna procjena učinka aktivnosti koje provode različiti osiguravatelji.

Kako bi se to postiglo, formulirane su sljedeće hipoteze:

Glavna hipoteza:

Međunarodna ulaganja na hrvatsko tržište osiguranja imaju specifične ekonomske i financijske učinke, a ti su pokazatelji utjecaja na razvoj tržišta slični onima u odabranim zemljama srednje i istočne Europe.

Pomoćna hipoteza 1:

Pokazatelji razvoja hrvatskog tržišta osiguranja povezani su sa stranim ulaganjima na tržište osiguranja.

Pomoćna hipoteza 2:

Specifičnosti financijskog razvoja, gospodarske strukture i društvenih odnosa unutar zemlje utječu na razinu međunarodnih ulaganja te na broj i vrstu financijskih proizvoda.

Pomoćna hipoteza 3:

Angažman međunarodnih ulagača također je značajno utjecao na razvoj tržišta osiguranja prema tržišno orijentiranom sektoru osiguranja u CEE regiji.

Hrvatsko tržište osiguranja

Hrvatsko tržište osiguranja analizira se i daje uvid u razvoj premije, tržišne sudionike i razvoj strukture proizvoda te sagledava važnost tržišta osiguranja u hrvatskom gospodarstvu definiranim parametrima.

Tržištem dominira nekoliko većih igrača s prisutnim nekoliko manjih tvrtki, što pokazuje i učinak procesa konsolidacije koji se događao tijekom proteklih godina. Pet najvećih tvrtki drži tržišni udio od 77%. Dva najveća osiguravatelja su tvrtke u hrvatskom vlasništvu, dok je od

ukupno 14 grupa (ne pojedinačne kompanije osiguranja) koje djeluju u Hrvatskoj, 11 dio međunarodnih grupacija. Tržišni udio pojedinih osigurateljnih grupa u 2020. godini prikazan je na grafikon 112 dolje.

Chart 112: Tržišni udio, prema ukupnoj zaračunatoj bruto premiji, grupe osiguranja, 2020
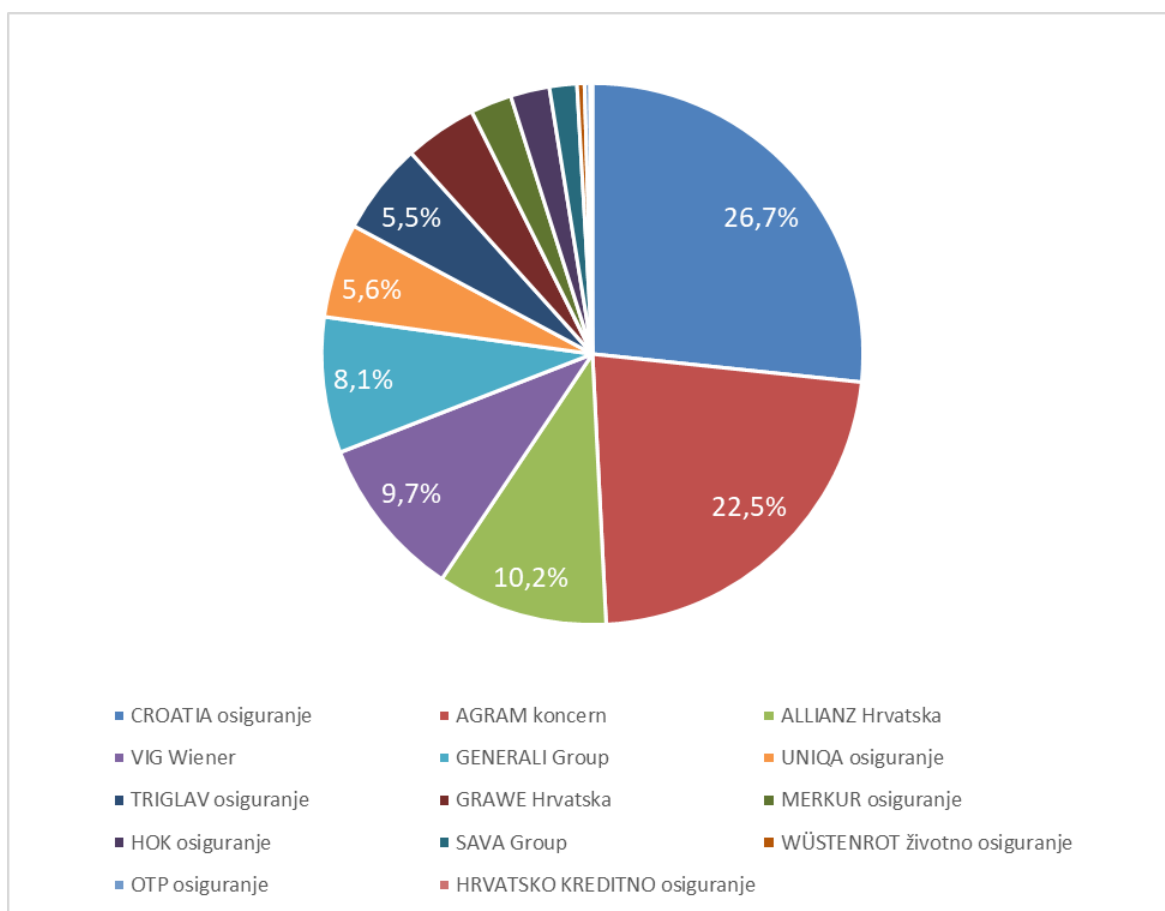
Izvor: po autoru, HUO podaci (2022)

Gotovo tri četvrtine (73,2%) premije osiguranja ostvaruje se u poslovnim segmentima neživotnih osiguranja, dok se samo jedna četvrtina (26,8%) odnosi na premije vezane za životno osiguranje. S udjelom većim od jedne trećine, osiguranje vezano uz motorna vozila, odgovornost prema trećim osobama (AO) i materijalnu štetu na vozilima (kasko) i dalje je najveći segment poslovanja osiguravatelja aktivnih na hrvatskom tržištu. Ostali oblici neživotnog osiguranja (na primjer kućanstvo, nezgoda, zdravstvena zaštita) još uvijek su relativno nedovoljno zastupljeni u Hrvatskoj.

Chart 113: Struktura ukupne bruto zaračunate premije 2019 (osiguranje motornih vozila podijeljen na AO i Kasko)
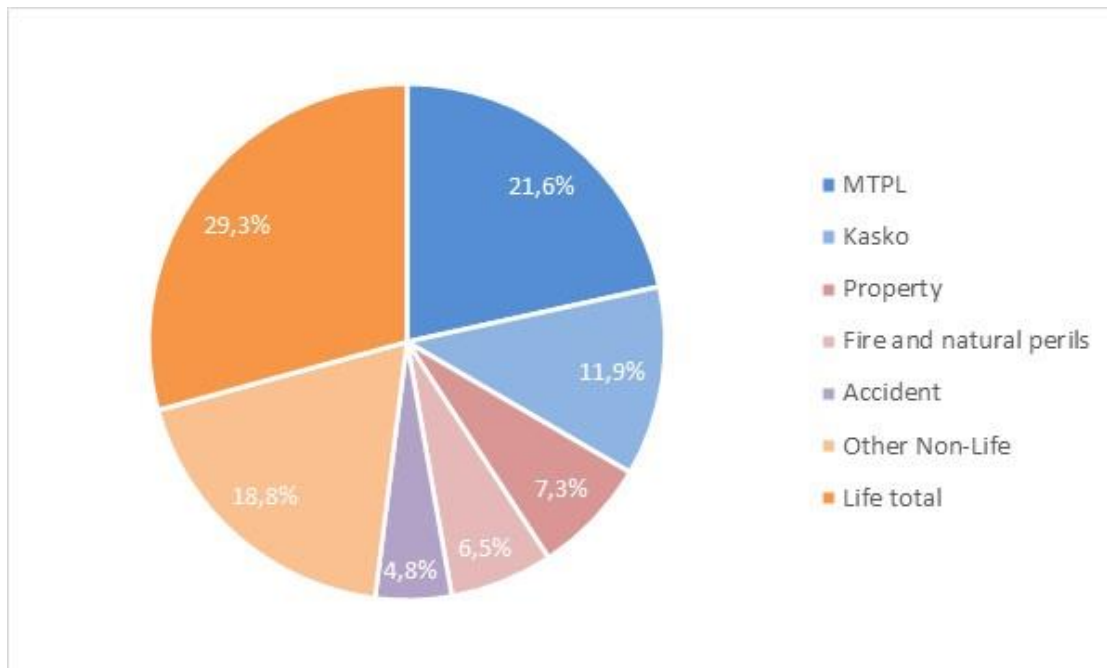
Izvor: po autoru, HUO Godišnji Izvješće 2019. (2022)

U 2003. godini udio AO-a i dalje je bio jedna trećina cjelokupnog tržišta, dok je u 2019. godini ovaj dio poslovanja pao na 21,6%. Osiguranje motornih vozila ukupno je palo s 44% u 2003. godini na 33% u 2019. godini. S druge strane, životno osiguranje poraslo je s 22% na 29%, a ne-motorni-proizvodi neživotnih osiguranja porasli su za 3,5 postotnih bodova.

U usporedbi s drugim zemljama u Europi, relativno dugo, do 2013. godine, cijene su bile regulirane u osiguranju AO motornih vozile. Činjenica da prava cjenovna konkurencija nije bila moguća, dok su svi nudili iste cijene, pa je razina premije AO ostala relativno visoka. Nakon što je pokrenut proces liberalizacije konkurencija cijene je postala moguća i za taj segment osiguranja, premije su pale, a njezin udio je smanjen. Istodobno su osiguratelji pokušali nadoknaditi izgubljenu premiju ulaganjem u rast u druge segmente proizvoda, poput životnog osiguranja, zdravstvenog osiguranja ili osiguranja kredita. Pokretač ove preorijentacije bila je skupina međunarodnih osiguravatelja, s jedne strane, oni su bili pokretači liberalizacije cijena AO-a, jer nisu imali usporedivo udoban strateški položaj u važnom segmentu osiguranja AO poput dva dominantna domaća igrača i bez konkurencije cijena takvu situaciju je bilo teško promijeniti. Drugo, međunarodne tvrtke pokretale su razvoj i u drugim segmentima poslovanja.

Ovim razvojem i djelovanjem međunarodnih osiguravatelja, ali i tržišta u cjelini, promijenio se miks u tržišnom portfelju proizvoda, pri čemu je udio osiguranja motornih vozila pao, dok se udio ostalih povećao.

Razvoj relevantnosti sektora osiguranja u hrvatskom gospodarstvu može se vidjeti u nastavku, na grafikonu 114. Udio osiguranja sada se vratio na mjesto gdje je već bio 2009. godine, uz povećanje premija osiguranja po stanovniku, osim u fazi liberalizacije tržišta poslovanja s AO.

Chart 114: Premija osiguranje u BDP i po stanovniku, Hrvatska, 2003.-2020., HRK
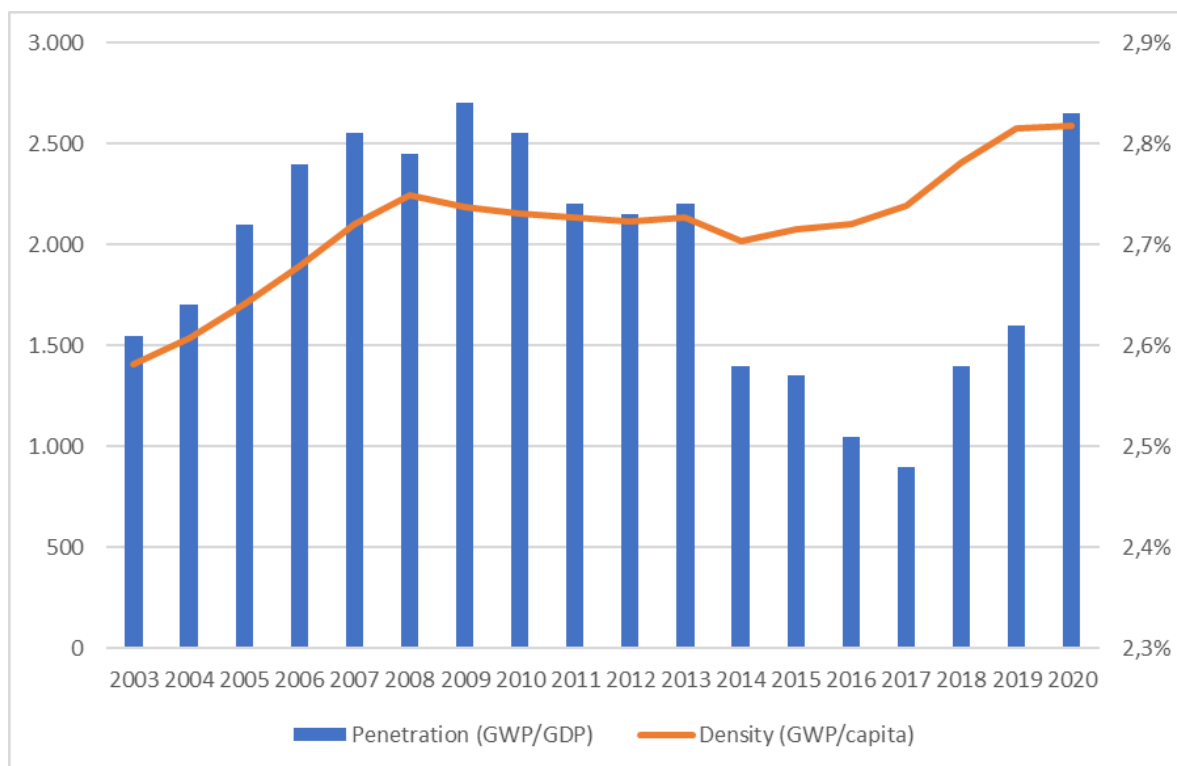
Izvor: Ekonometrijski model (2022)

Krajem 2020. godine međunarodna osiguravajuća društva držala su tržišni udio nešto ispod 50% iako su dvije trećine osiguravatelja bile međunarodne. Ovakav razvoj događaja rezultat je toga što su dva najveća osiguravatelja ostala domaća, čak i nakon privatizacije bivšeg državnog osiguravatelja Croatia osiguranja.

Na grafikonu 115 dolje vidi se promjena s tržišnog udjela od 25,9% u 2003. godini, tržišni udio međunarodnih grupa u Hrvatskoj porastao je u roku od nekoliko godina na 42,6% do kraja 2007. godine, također potaknut akvizicijama. Zatim je razvoj tržišnog udjela nekoliko godina stagnirao, dok je ponovno krenuo u 2014. godini, kada su se posebno tradicionalni lokalni osiguravatelji borili s nadomještanjem bruto zaračunate premije izgubljene u sniženjima cijena nakon liberalizacije tržišta AO. Tržišni udio međunarodnih osiguravatelja ubrzo je krajem 2018. godine prešao prag od 50%, nakon čega je ponovno pao na 48,4% do kraja 2020. godine.

Chart 115: Udio međunarodnih osiguravatelja u ukupnim osiguravateljima / tržišni udio
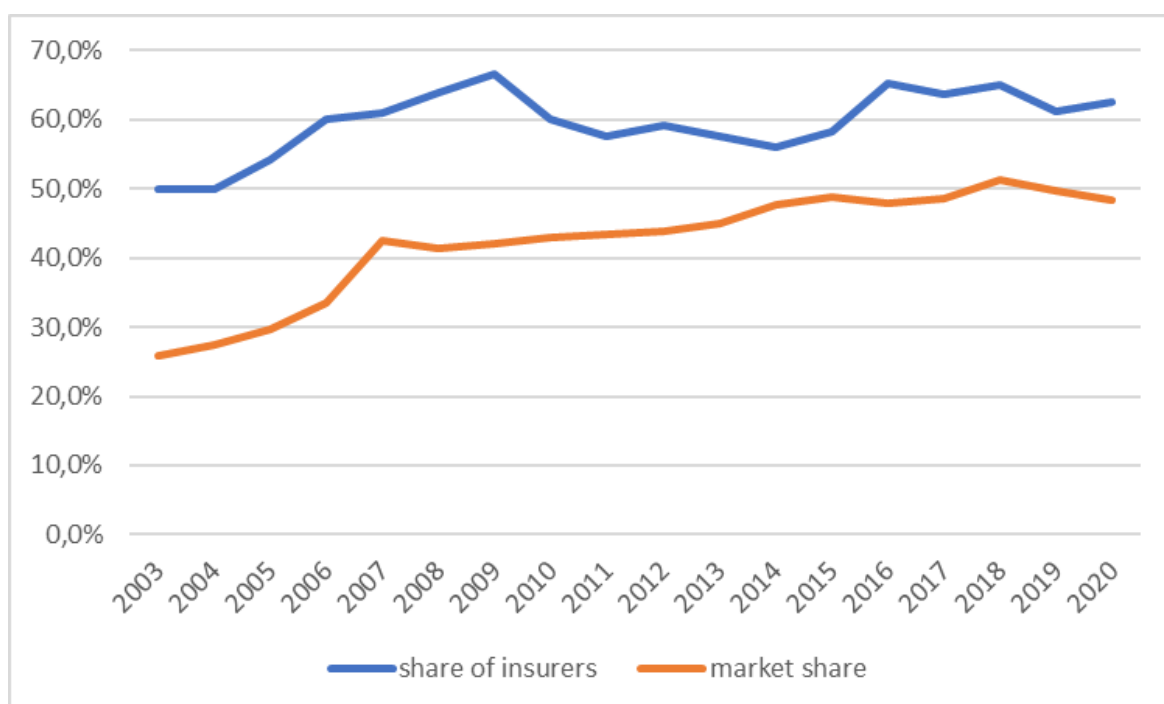
Izvor: po autoru, HUO, podaci iz mjesečnih izvještaja, prosinac, 2003-2020 (tvrtke i podružnice) (2022)

Tržišta osiguranja u regiji

Veličina tržišta osiguranja u regiji srednje i istočne Europe iznosi oko 36 milijardi eura, od čega dvije trećine potječu iz poslovnih linija neživotnih osiguranja, a samo jedna trećina iz poslovanja životnih osiguranja. Segment životnog osiguranja zapravo je u posljednjem desetljeću smanjivao važnost, ali i apsolutne brojke, na što utječu trendovi nakon financijske

krize iz 2008. godini, kao i razvoj u pojedinim zemljama, npr. regulatorne promjene u Poljskoj, koja je imala značajan utjecaj na poslovanje životnog osiguranja.

U većini ispitanih zemalja dominantan je udio međunarodnih osiguravatelja, ali varira od gotovo 100% u Slovačkoj do 50% u Sloveniji, a što se može vidjeti na grafikonu 116 dolje.

Chart 116: Broj aktivnih osiguravatelja u CEE regiji, 2020
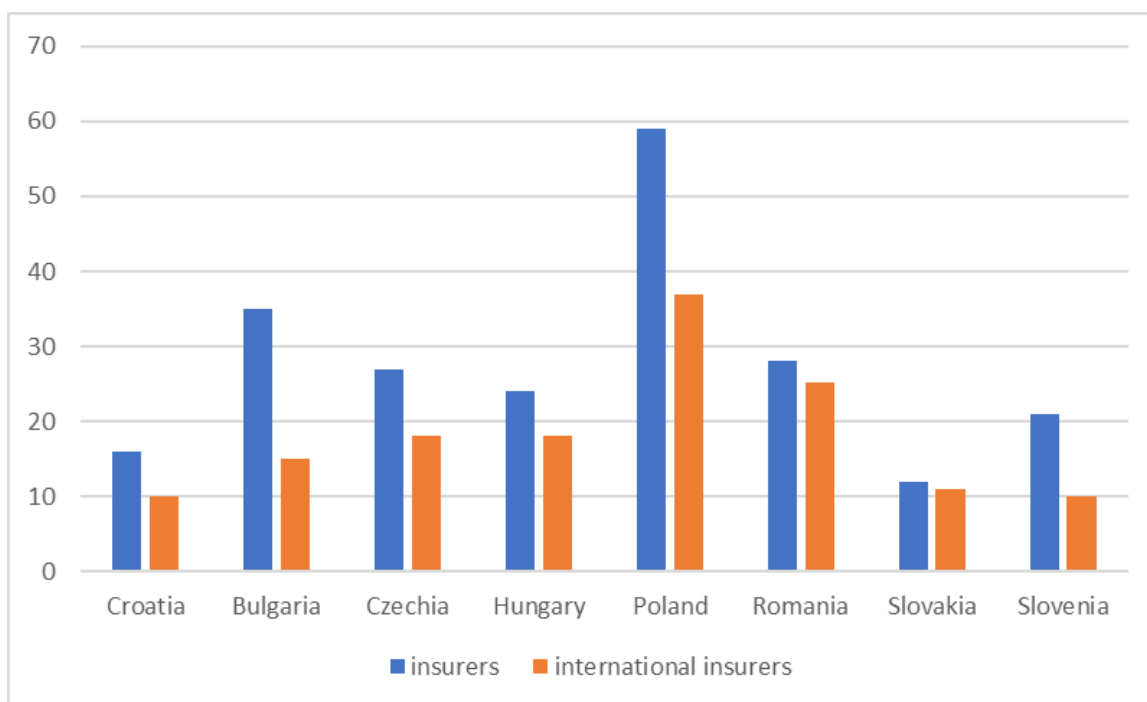
Izvor: Ekonometrijski model (2022)

Poljska je najveće tržište osiguranja u regiji, a slijede je Češka, Mađarska i Slovačka. Podjela se vidi u grafikonu 117 dolje. Poslije toga slijedi grafikon 118 koji pokazuje usporedbu razine razvijenosti sektora osiguranja odabranih zemalja u parametrima gustoće i penetracije osiguranja.

Chart 117: Udio bruto zaračunate premije, po zemljama, 2020
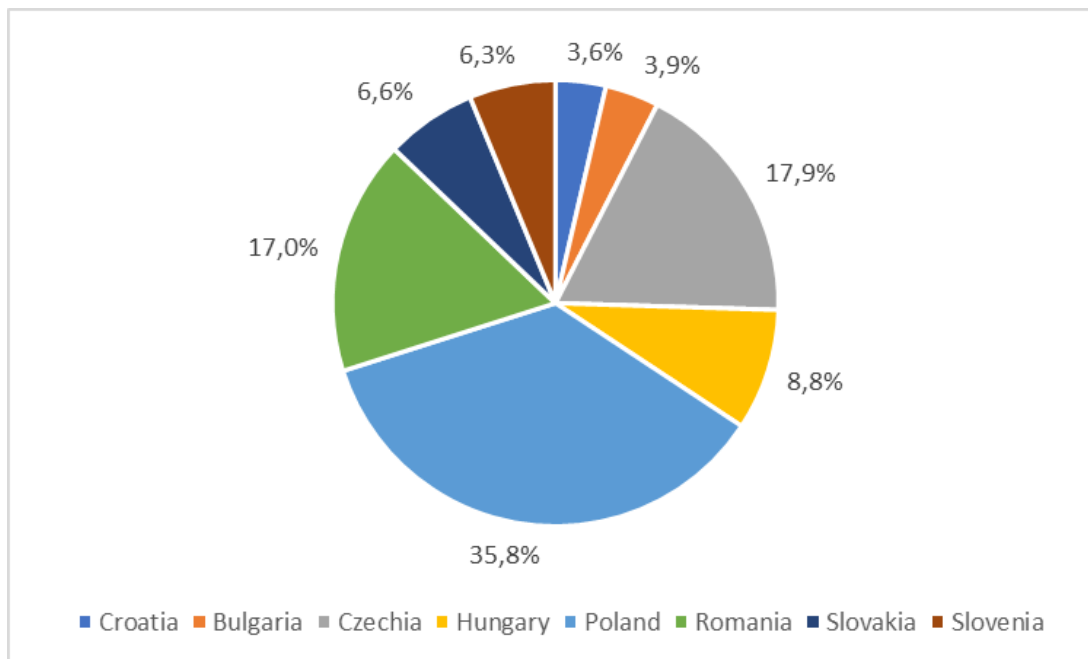
Izvor: Ekonometrijski model, po autoru (2022)

Chart 118: Gustoća osiguranje = zaračunata bruto premija po stanovniku (desna skala) i penetracija osiguranja = zaračunata bruto premija/BDP (lijeva skala), po zemlji, 2020.
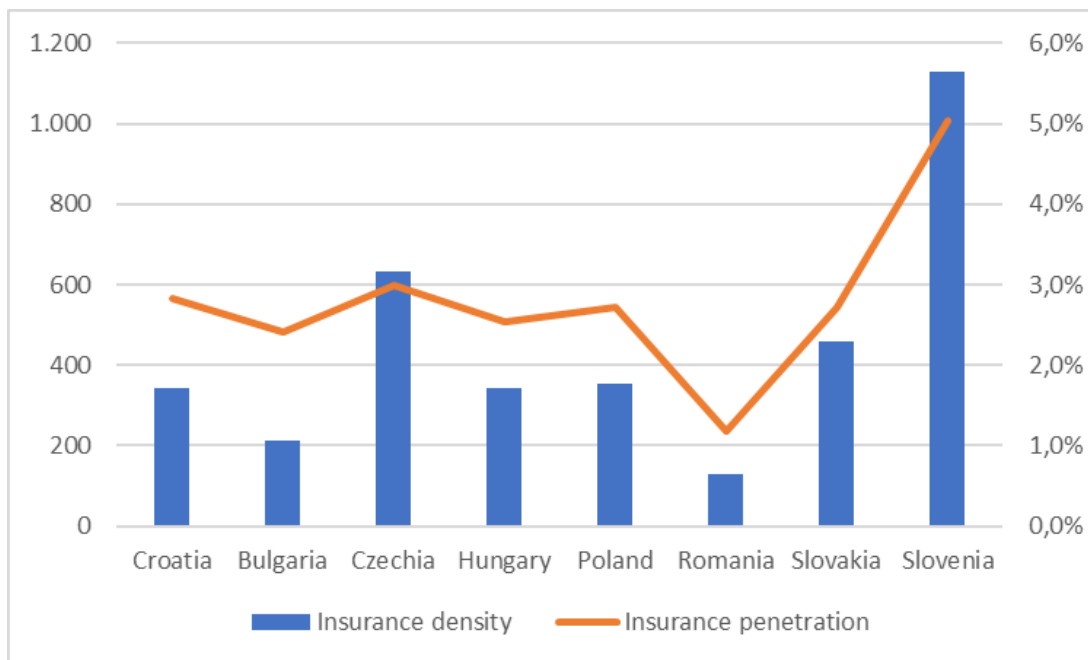
Izvor: Ekonometrijski model, po autoru (2022)

Međunarodni osiguravatelji u CEE regiji

Ovaj rad predstavlja glavne međunarodne osiguravajuće grupe koje trenutno dominiraju u regiji, a to su Vienna Insurance Group, Assicurazioni Generali Group, Allianz Group, Uniqa Group, Talanx Grupa i Munich Re Group (Ergo), te spominje neke od ostalih (NN, Metlife, AXA, Aegon, AIG, Zurich) koji jesu ili su bili aktivni. Na grafikonu 119 prikazan je tržišni udio najvećih osigurateljnih grupa na tržištu CEE regije.

Chart 119: Tržišni udio 2018. CEE-regija, po tvrtkama, neživot i život
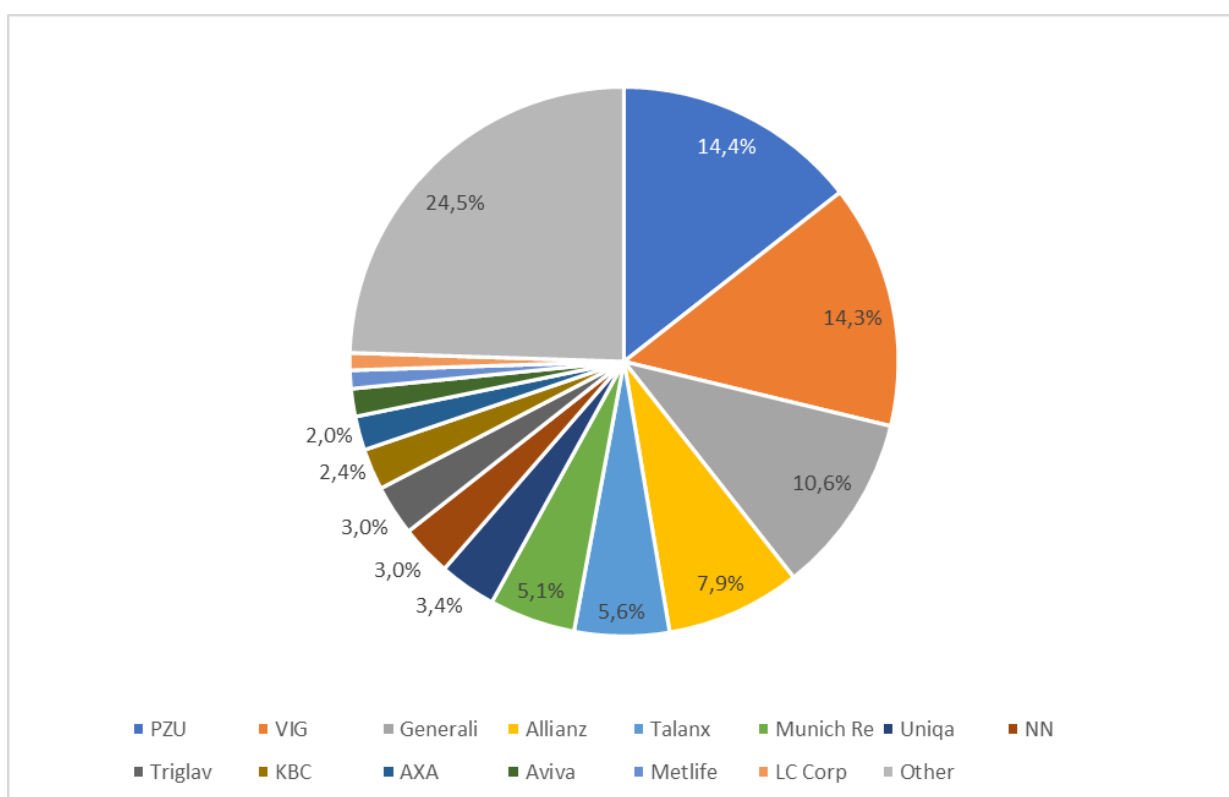
Izvor: po autoru, podaci Deloitte/Efma, CEE Insurance M&A Outlook, 2019 (2022)

Utjecaj međunarodnih osiguravatelja može se vidjeti u njihovoj strateškoj uključenosti i participaciji u M&A transakcijama, posebice u njihovoj ulozi u privatizacijama bivših državnih osiguravatelja, kao i u liberalizaciji prethodno reguliranog tržišta osiguranja AO motornih vozila.

<u>Model istraživanja</u>

Ova doktorska disertacija ispituje razvoj hrvatskog tržišta osiguranja u odnosu na angažman međunarodnih osiguravajućih grupa te uspoređuje ovu tranziciju s odabranim zemljama CEE regije. Pronalazi zajednički odnos karakteristika tržišta i razine angažmana međunarodnih ulagača analizirajući strategije glavnih međunarodnih sudionika na tržište u cijeloj regiji, kao i statističke odnose odabranih pokazatelja razvoja tržišta, kao što su gustoća i penetracija osiguranja u cijelom razdoblju od 2003. do 2020. u osam zemalja.

Za statističku analizu uglavnom se koriste dva alata korelacija i regresija. Ekonometrijski model organizira ekonomske, financijske podatke i podatke specifične za osiguranje odabranih zemalja srednje i istočne Europe, uključujući Hrvatsku, te ih ispituje u pogledu pomoćnih hipoteza i glavne hipoteze. Rezultati pomoćnih hipoteza omogućit će potvrdu ili odbacivanje glavne hipoteze.

Kritični parametri, koji se uzimaju u obzir u ovoj analizi, uključuju sljedeće pokazatelje razvoja tržišta po zemlji:

- razvoj tržišnog udjela međunarodnih osiguravatelja;

- udio osiguranja (također udio međunarodnih osiguravatelja);

- premija osiguranja po stanovniku (također premija međunarodnih osiguravatelja);

- udio AO u GWP-u (također dostupan udio AO/Kaska/Života u zaračunatoj bruto premiji).

Za svaku pomoćnu hipotezu odabiru se najrelevantniji pokazatelji i njihovi odnosi se statistički analiziraju pomoću alata korelacije i regresije, procjenjuju se njihove korelacije i njihova povezanost s nezavisnom varijablom testirana je jednostavnom linearnom regresijom i multivarijantnom linearnom regresijom.

Ekonometrijski model izgrađen je u MS Excelu jer su u njemu prikupljeni podaci. Statistička analiza je provedena uz pomoć statističkog dodatka Analysis ToolPak i rada s alatima korelacije i regresije. Osim toga, razne operacije i provjere provedene su pomoću alata dostupnih na https://www.wessa.net.

Sveukupno, ekonometrijski model se sastoji od:

- 30 parametara

- u vremenskom nizu od 2003 do 2020 (18 godina);

- u osam zemalja;

- dovođenje ukupnog broja podataka na 4.310 jedinica.

Rezultati istraživanja

Za pomoćnu hipoteze 1, procijenjene su pozitivne korelacije razvoja hrvatskog tržišta osiguranja (premija po stanovniku i penetracija) s udjelom međunarodnih osiguravatelja u ukupnom broju osiguravatelja, kao i s tržišnim udjelom koji su akumulirali međunarodni osiguravatelji u razdoblju od 2003. do 2020. godine.

Rezultati korelacijske analize, kao i jednostavne i multivarijantne regresijske analize provedene u ovom istraživanju, potvrđuju da su pokazatelji razvoja hrvatskog tržišta osiguranja u korelaciji sa stranim angažmanima i ulaganjima na tržište osiguranja, te se stoga potvrđuju hipoteza 1 kao valjana. To se i očekivalo nakon kvalitativnog pregleda tržišta i strategije međunarodnih osiguravatelja.

Chart 120: Multivarijantna regresija, udio broja i tržišni udio međunarodnih osiguravatelja na gustoću, Hrvatska
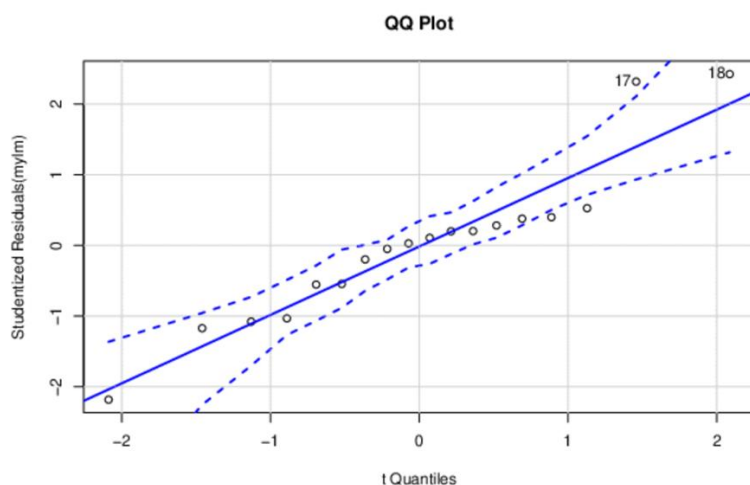
Izvor: wessa.net, Ekonometrijski model (2022)

Pomoćna hipotezu 2, ispituje sve odabrane zemlje CEE regije u smjeru atraktivnost za međunarodne grupe osiguranja i financijsko produbljivanje. Udio međunarodnih ulagača i akumulirani tržišni udio međunarodnih osiguravatelja s jedne strane, te udio AO odnosno AO/Kasko/Život s druge strane, analiziraju se prema različitim ekonomskim pokazateljima (BDP/stanovnika, penetracija osiguranja, premija osiguranja po stanovniku), financijski pokazatelji (udio imovine osiguranja u ukupnoj imovini financijskog sektora, tržišna vrijednost kao udio u BDP-u) i socijalni pokazatelji (prosječne plaće, stopa nezaposlenosti). Kako se ova pomoćna hipoteza sastoji od dvije tvrdnje, njena analiza je podijeljena na dva modula. Korelacijski faktori i R^2 višestrukih regresija uspoređuju se između svih odabranih zemalja.

Chart 121: PH2 dio 1, Koeficijenti korelacije za tržišni udio međunarodnih osiguravatelja, 2003-2020
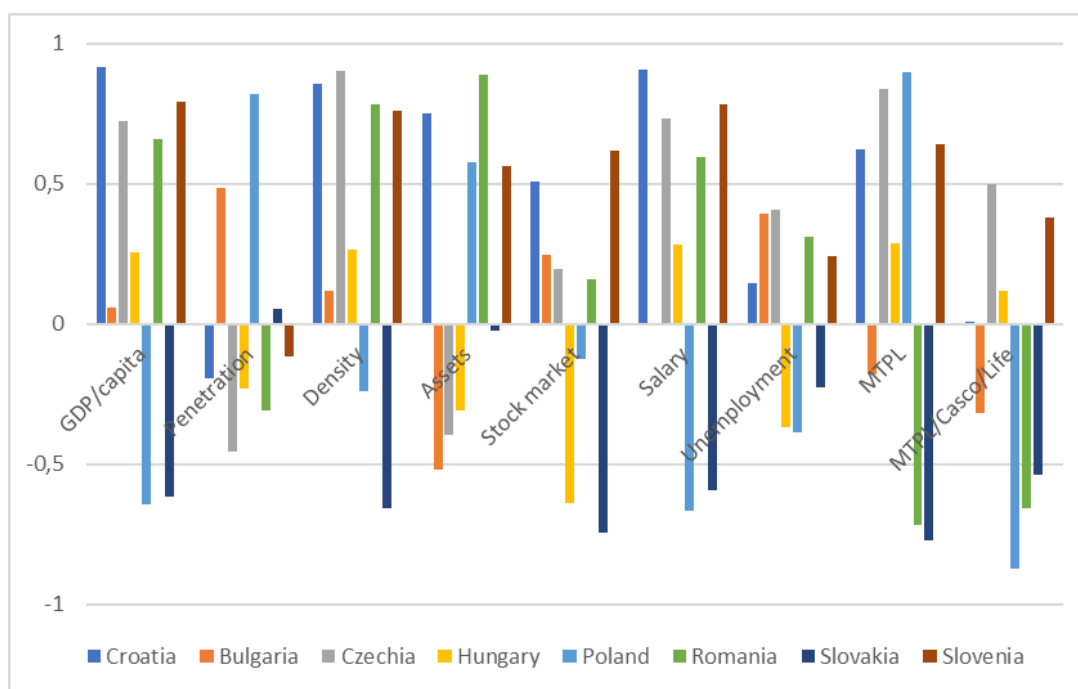
Izvor: Ekonometrijski model (2022)

Chart 122: Rezultati PH2 dio 2, Koeficijenti korelacije za 1-udio AO, kasko, život
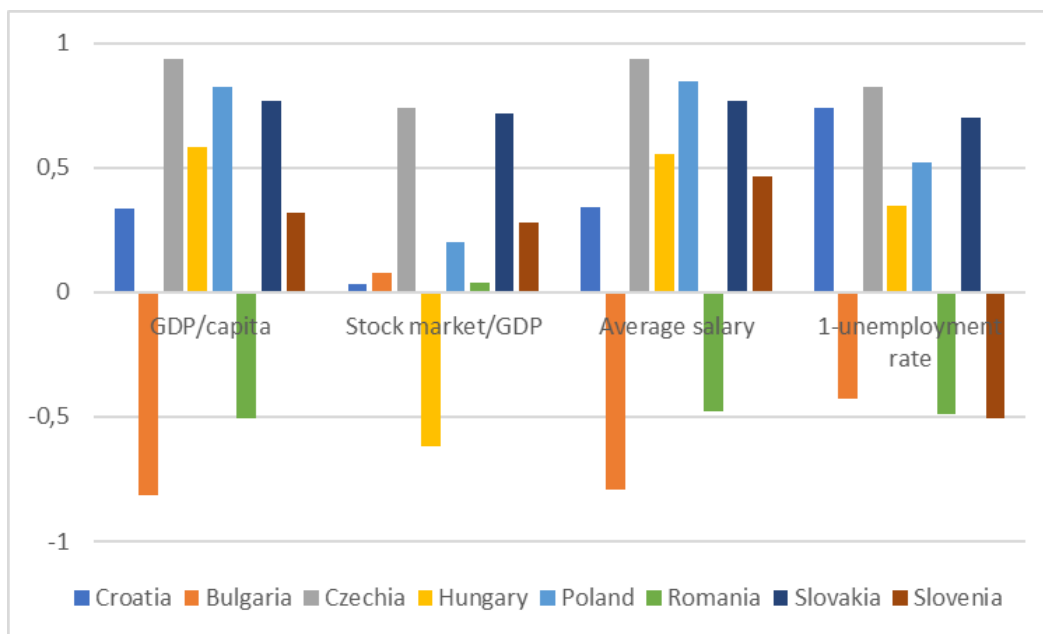
Izvor: Ekonometrijski model (2022)

Iz multivarijantne regresijske analize, čini se da izabrane varijable dobro objašnjavaju razvoj zavisne varijable, za oba dijela pomoćne hipoteze 2. Ovo vrijedi za svih osam zemalja s R^2 znatno iznad pozitivnih 0,5.

S obzirom na detaljno analizirane rezultate, 1. dio SH2 prihvaćen je za Hrvatsku, Češku, Mađarsku, Rumunjsku, Slovačku i Sloveniju, ali je odbijen za Bugarsku i Poljsku. Dopuštajući heterogenost, posebno u učincima AO-a i njegovog procesa liberalizacije, trendovi pozitivnih korelacija, s najmanje tri ili više faktora u jednoj ili obje verzije modela (1-dionica AO i za 1-dionica AO, Kasko, Život) podržava prihvaćanje 2. dijela SH2 za zemlje Hrvatsku, Češku, Mađarsku, Poljsku, Slovačku i Sloveniju. SH2 dio 2 je odbijen za Bugarsku i Rumunjsku.

Za pomoćnu hipotezu 3 provode se slične analize kao za pomoćnu hipoteze 1, ali se sada proširuju na ostalih sedam zemalja. Na temelju ove regresijske analize vidljiv je značajan utjecaj angažmana međunarodnih osiguravatelja:

-   na gustoću osiguranja po stanovniku kao i na penetraciju osiguranja u Hrvatskoj, Češkoj, Bugarskoj, Mađarskoj, Rumunjskoj, Slovačkoj i Sloveniji;

- na penetraciju osiguranja (udio premije osiguranja u BDP-u) u Poljskoj.

Chart 123: Koeficijenti korelacije na tržišni udjel međunarodnih osiguravatelja, 2003-2020
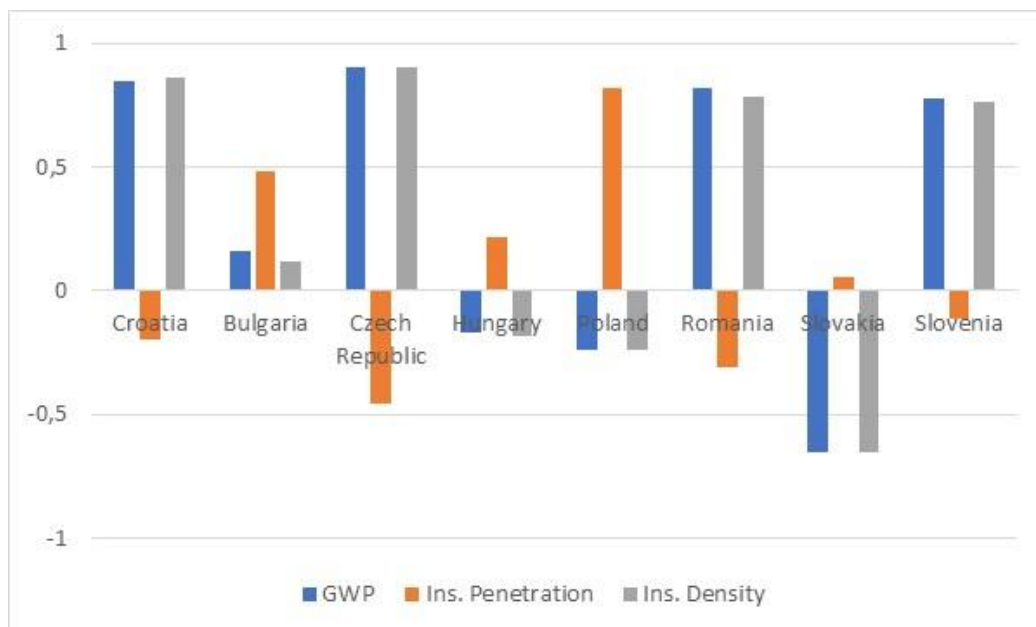
Izvor: Ekonometrijski model (2022)

Međutim, detaljnije proučavajući ove rezultate korelacijske analize, može se zaključiti sljedeće: s obzirom da je na početku perioda analize vrlo visok tržišni udio međunarodnih grupa u Slovačkoj i zbog toga visoka osjetljivost manjih oscilacija ovdje, čini se udio međunarodnih osiguravatelja (tablica 33). prikladniji za Slovačku. Ovo daje umjereno jaku pozitivnu korelaciju. Slično tome, Mađarska pokazuje snažnu pozitivnu korelaciju s udjelom međunarodnih osiguravatelja. Razvoj međunarodnih tržišnih udjela u Hrvatskoj, Češkoj, Rumunjskoj i Sloveniji potvrđuje snažan pozitivan odnos s gustoćom osiguranja. Podaci za Poljsku potvrđuju, kao što je već spomenuto, jaku korelaciju s penetracijom osiguranja. Jedino Bugarska daje ili jake negativne ili bolje rečeno nekorelirane rezultate. Stoga je SH3 prihvaćena za Hrvatsku, Češku, Mađarsku, Poljsku, Rumunjsku, Slovačku i Sloveniju, ali je odbijena za Bugarsku.

Istraživanje otkriva raznoliku sliku odabranih zemalja regije, s različitim razinama angažmana međunarodnih ulagača. Zanimljivo je da se razine stranih ulaganja u cijeloj regiji značajno razlikuju. Dok, primjerice, u Slovačkoj gotovo cijelo tržište drže međunarodni igrači, gotovo od početka otvaranja tih tržišta, slično kao u Mađarskoj ili Češkoj, situacija je drugačija za Sloveniju ili čak Hrvatsku , gdje su međunarodni osiguravatelji daleko od dominacije na tržištu.

Gledanje svih tri pomoćnih hipoteza omogućuje procjenu glavne hipoteze koja otkriva sljedeću sliku svih promatranih zemalja:

Table 66: Validacija hipoteze

Država	PH1	PH2 (1)	PH2 (2)	PH3	Hipoteza
Hrvatska	✔	✔	✔	✔	✔
Bugarska	n/a	✘	✘	✘	✘
Češka	n/a	✔	✔	✔	✔
Mađarska	n/a	✔	✔	✔	✔
Poljska	n/a	✘	✔	✔	✔
Rumunjska	n/a	✔	✘	✔	✔
Slovačka	n/a	✔	✔	✔	✔
Slovenija	n/a	✔	✔	✔	✔

Izvor: po autoru (2022)

Stoga, uzevši u obzir cijelu analizu svih hipoteza, glavna se hipoteza odbacuje za Bugarsku.

Ekonometrijski model s podacima iz osam zemalja Hrvatske, Bugarske, Češke, Mađarske, Poljske, Rumunjske, Slovačke i Slovenije pokazao je da postoje, obično pozitivni, značajni odnosi između razvoja tržišta osiguranja i angažmana međunarodnog osiguranja. Osobito se

čini da se razvoj premija osiguranja po stanovniku (gustoća) snažno razvija uz prisutnost međunarodnih ulagača. Nadalje, specifičnosti gospodarstava, financijskog razvoja i kulturnih odnosa također utječu s druge strane na razinu međunarodnog ulaganja na tržište osiguranja, ali i na razvoj samog tržišta osiguranja.

Zajedno s individualnošću i heterogenosti tržišta CEE regije, ali i zbog ogromnog skupa podataka i proizašlih mogućnosti za analizu odnosa, ovo istraživanje služi kao početak za daljnje istraživanje pojedinih tema. Bilo bi vrijedno ispitati razloge koji stoje iza različitih razina međunarodnog angažmana u cijeloj regiji, na primjer, zašto je slovačko tržište gotovo u 100% vlasništvu međunarodnih grupa preko svih analiziranih godina, dok je u drugim zemljama to nešto niže. Svaki dio hipoteza, bilo da se radi o financijskom ili gospodarskom razvoju, kulturnim odnosima, raznolikosti proizvoda ili bogatstvu, zaslužuje da se raščlani, kako bi se dodatno produbila analiza odnosa između ispitivanih parametara i angažmana međunarodnih investitora, razina profitabilnost na tržištima i razlozi zbog kojih pojedini međunarodni investitori ponovno napuštaju tržišta.

Važno je napomenuti da, usprkos neospornom utjecaju međunarodnih osiguravajućih grupa na razvoj tržišta osiguranja u ovoj regiji, bio bih vrlo nerado okarakterizirao domaće tvrtke kao inferiorne u smislu znanja, vještina ili kapaciteta. Činjenica je da često međunarodni osiguratelji ulazi na novo tržište iz jake pozicije na svojem domaćem i većem tržištu, što njima daje određenu prednost. Međutim, u domaćim osiguravateljima rade talentirani poduzetnici i ljudi, koji isto razvijaju i optimiziraju svoje poslovanje, što je svjedočanstvo realnosti da i pojedinci mogu utjecati na tržišta. Dodatno, inovacija je često rezultat tržišnih pritisaka, a ako ona izostane, povećava se tendencija stagnacije.

Gledajući unaprijed u budućnost, zasigurno se očekuje nastavak dominacije međunarodnih osiguravatelja u regiji srednje i istočne Europe, te da će se, unatoč privremenim pomacima, nastaviti povećavati. Još uvijek ima nekih (bivših) domaćih državnih osiguravatelja koji bi u budućnosti mogli biti stavljeni na prodaju, ako za iscijeđene državne proračune nakon

posljedica pandemije budu potrebna dodatna sredstva. Naravno, i uvijek postoji mogućnost napuštanja tržišta pojedinih međunarodnih grupa.

Kao perspektiva hrvatskog tržišta osiguranja, ovaj rad može ponuditi vlastite stavove na temelju ove analize i provedenog istraživanja. Prvo, budući da je tržište prilično malo, rast, organski ili anorganski, i dalje će biti kritičan za budućnost. Profitabilnost u još uvijek vrlo važnom poslovnom segmentu, osiguranje od odgovornosti za upotrebu motornih vozila (AO), vratila se nakon što su cijene počele rasti u 2020. godini, a uz to je COVID-19 pozitivno utjecao na razvoj šteta u motornom poslovanju. To je još relevantnije, budući da posljednjih godina velik dio volumen premije generira kanal bankoosiguranja i osiguranje zaštite potrošača (CPI), koje ima prilično ograničene marže. Stoga je za sektor osiguranja od vitalnog značaja razvoj nemotornih neživotnih poslovnih linija koje bi trebale donijeti dodatne volumene premije i profitabilnost. Drugo, globalna industrija osiguranja bit će pod značajnim tržišnim pritiskom inovatora i tehnološki naprednih igrača, potencijalno boljih u ispunjavanju očekivanja kupaca. To neće biti neposredna prijetnja hrvatskim nositeljima osiguranja; međutim, nije razumno očekivati da će trend zaobići hrvatsko tržište. Stoga je ključno da i hrvatska osiguravajuća društva nastave s inovacijama, diverzificirajući se u druge linije proizvoda osiguranja i jačaju svoje korisničko iskustvo. Treće, dva domaća i najveća igrača predstavljaju zanimljive mete za međunarodne investitore. Svaka takva transakcija, bilo vezana uz Croatia osiguranje ili Agram grupu, drastično bi promijenila tržište i njegovu dinamiku.

Cilj ovog rada bio je utvrditi učinak međunarodnih ulaganja na razvoj tržišta osiguranja u CEE regiji. Znanstveni doprinos ove disertacije leži u dizajniranju modela temeljenih na empirijskim podacima, kvantificiranju smjerova i parametara istraživačkih varijabli u razvoju tržišta osiguranja odabranih zemalja srednje i istočne Europe u odnosu na angažman i ulaganja međunarodnih osiguravajućih grupa.

Ograničenja ovog istraživanja s jedne su strane inherentna heterogenost zemalja koje bi mogle zanemariti druge čimbenike utjecaja, možda također nemjerljive, koji utječu na razvoj tržišta osiguranja u tim odabranim zemljama. Konkretno, vremenski okvir, iako je odabran da uključuje produženi vremenski okvir od 2003. do 2020. godine, ne obuhvaća različite početne

razine ovih tržišta osiguranja. Unatoč tome što je tranzicija u napredna tržišna gospodarstva započela otprilike u sličnom vremenskom okviru krajem osamdesetih s padom željezne zavjese, već manje od petnaest godina kasnije, na tim je tržištima osiguranja postojalo nekoliko razlika. Tržišta su tada već pokazivala znakove heterogenosti. Posebno je ovdje relevantna razina angažiranosti međunarodnih osiguravajućih grupa kao polazišna točka u 2003. godini. Kao što je prikazano, Slovačka je kroz cijeli vremenski niz obilježila visoke razine međunarodnog tržišnog udjela, dok su Hrvatska i Slovenija bile znatno ispod jedne trećine. Stoga, inkrementalni utjecaj, u smislu razlike u međunarodnim tržišnim udjelima, i njegov utjecaj na ta tržišta, sa sobom nosi svoja ograničenja u usporedbi ovih zemalja. Ovdje se dio utjecaja međunarodnog angažmana već ranije dogodio u Slovačkoj, dok bi se u Hrvatskoj to dogodilo unutar analiziranog vremenskog perioda. Stoga će daljnja istraživanja ove teme razmotriti različite početne pozicije, posebice u angažmanu međunarodnih ulagača.

Primarna primjenjivost ovog istraživanja može imati odjek kod vlade i kreatora politike koji žele razumjeti utjecaj i nuspojave svojih političkih odluka. Ova disertacija ukazuje na učinak međunarodnih ulagača na domaća tržišta osiguranja te također razrađuje važnost sektora osiguranja za gospodarski razvoj. Donositelji političkih odluka nalaze usporedbu u ključnim pokazateljima tržišnog utjecaja između ovih odabranih zemalja, na temelju empirijskih podataka.

Ovdje prikazano istraživanje također može dobro poslužiti upravo ovim sudionicima koji su analizirani u ovom radu. Međunarodne osiguravajuće grupe mogle bi bolje razumjeti vlastiti utjecaj na ta tržišta, ali povezivanje tih rezultata s vlastitim internim ključnim pokazateljima uspješno bi moglo omogućiti da dođu do novih zaključaka u pogledu tržišne privlačnosti. To bi im moglo dodatno pomoći da razviju individualizirani ekonomski model koji bi obuhvatio tržišne potencijale. Takav model bi sigurno imao svoje zasluge, s obzirom na veliki broj međunarodnih ulagača koji su ponovno izašli s tržišta na kojem su već bili, te su stoga korigirali ranije donesenu upravljačku odluku.

Istraživanje u ovom radu potvrđuje učinak međunarodnih ulagača na tržišta osiguranja u regiji, a podaci ekonometrijskog modela to posebno potvrđuju za Hrvatsku, Češku, Mađarsku, Rumunjsku, Slovačku i Sloveniju.

Imajući u vidu naslov doktorske disertacije "Utjecaj međunarodnih ulaganja na hrvatsko tržište osiguranja u usporedbi s odabranim zemljama srednje i istočne Europe" sada postoji dovoljno podataka za procjenu tog utjecaja. Empirijski podaci omogućuju usporedbu promjena tržišnog udjela međunarodnih osiguravajućih grupa s promjenom gustoće osiguranja kao i promjenom financijskog produbljivanja. Primjerice, za Hrvatsku podaci govore da je prosječna godišnja promjena međunarodnog tržišnog udjela iznosila +1,3%, a bila je popraćena godišnjim prosječnim povećanjem gustoće osiguranja od 3,8% kao i financijskim produbljivanjem i dakle smanjenje ovisnosti o AO za 0,4% godišnje. Ovo je primjereno prikazano na Table 67.

Table 67: Usporedba (1) promjene međunarodnog tržišnog udjela s (2) promjenom gustoće osiguranja i (3) udjelom u AO, Hrvatska

Year	Delta Int. MS	Delta density	Delta 1-Share MTPL
2004	1,5%	9,1%	0,4%
2005	2,4%	10,9%	1,3%
2006	3,7%	11,2%	0,6%
2007	9,0%	10,9%	-0,1%
2008	-1,1%	6,9%	-0,2%
2009	0,7%	-2,7%	-0,9%
2010	1,0%	-1,5%	-0,2%
2011	0,3%	-0,9%	-0,8%
2012	0,4%	-0,8%	-0,4%
2013	1,2%	0,7%	-0,3%
2014	2,8%	-5,3%	4,4%
2015	1,0%	2,7%	4,3%
2016	-0,9%	1,2%	0,8%
2017	0,6%	4,5%	0,7%
2018	-0,7%	9,8%	0,5%
2019	1,3%	6,9%	0,5%
2020	-1,4%	0,4%	-3,2%
average	**1,3%**	**3,8%**	**0,4%**

Izvor: Ekonometrijski model (2022)

Provođenje iste analize za ostalih sedam zemalja regije, daje slične rezultate za većinu zemalja, prikazane na Table 68. U sedam zemalja (osim Hrvatske) međunarodne grupe povećavale su svoj tržišni udio za 0,8% godišnje, dok se istovremeno penetracija osiguranja povećala za 6,0% godišnje. To implicira faktor od 7,4 u odnosu na udio međunarodnih grupa i penetracije osiguranja, što znači da povećanje tržišnog udjela međunarodnih osiguravajućih grupa od 1%

dolazi zajedno s povećanjem penetracije osiguranja od 7,4% godišnje. Za Hrvatsku to iznosi samo 2,9%.

Nadalje, povećanje od 1% boda na međunarodnom tržišnom udjelu u Hrvatskoj bilježi smanjenje udjela AO za 0,3%. Rezultat za ostalih sedam zemalja je manje uvjerljiv jer daje negativan broj (ovdje: povećanje AO), što je najvećim dijelom rezultat zemalja Bugarske i Rumunjske, što je također zaključno s istraživanjem predstavljenim u prethodnom poglavlju. Eliminiranjem obje zemlje vraća se isti faktor kao i za Hrvatsku, 0,3.

Table 68: Usporedba (1) promjene međunarodnog tržišnog udjela s (2) promjenom gustoće osiguranja i (3) udjela u autoodgovornosti, prosjeci 2003.-2020., svih osam zemalja

	Delta Int. MS	Delta density %	Delta 1-Share MTPL
Croatia	1,3%	3,8%	0,4%
Faktor		*2,9*	*0,3*
Bulgaria	0,5%	10,2%	-1,4%
Czechia	2,3%	2,5%	0,2%
Hungary	0,3%	5,3%	-0,2%
Poland	-0,5%	6,0%	-0,3%
Romania	2,2%	10,7%	-1,1%
Slovakia	0,0%	3,8%	0,4%
Slovenia	1,0%	3,8%	0,6%
Average 7	**0,8%**	**6,0%**	**-0,2%**
Faktor		*7,4*	*-0,3*
Average 5	**0,6%**	**4,3%**	**0,2%**
without BG, RO			
Faktor		*7,0*	*0,3*

Izvor: Ekonometrijski model (2022)

Konačni zaključak ovog istraživanja može se izvesti usporedbom čimbenika razlike (=delta) međunarodnog tržišnog udjela u odnosu na razliku gustoće osiguranja između Hrvatske i ostalih sedam zemalja. Zanimljivo , to otkriva da je utjecaj međunarodnih osiguravatelja na razvoj tržišta osiguranja, mjeren gustoćom osiguranja, u sedam zemalja (Bugarska, Češka, Mađarska, Poljska, Rumunjska, Slovačka, Slovenija) više nego dvostruko veći nego što je u Hrvatskoj.

KEY WORDS

Central and Eastern European region

Insurance

Insurance density

Insurance penetration

International insurance groups

Risk management

Solvency

Transition

KLJUČNE RIJEČI

Regija Srednje i Istočne Europe

Osiguranje

Penetracija osiguranje

Gustoća osiguranje

Međunarodne grupe osiguranja

Upravljanje rizicima

Solventnost

Tranzicija

ABBREVIATIONS

CEE	Central and Eastern Europe
EBA	European Banking Authority
ECB	European Central Bank
EIOPA	European Insurance and Occupational Pensions Authority
ESMA	European Securities and Markets Authority
ESFA	European System of Financial Supervision
EU	European Union
OECD	Organisation for Economic Co-operation and Development
GDP	Gross Domestic Product
GWP	Gross Written Premium
HANFA	Hrvatska agencija za nadzor financijskih usluga
HNB	Hrvatska Narodna Banka
IFRS	International Financial Reporting Standards
MTPL	Motor Third Party Liability

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BIOGRAPHY

Georg Engl was born on 30.09.1976 in Mistelbach, Austria and attended elementary school in Bad Goisern am Hallstättersee and grammar school in Bad Ischl, Austria.

He continued to study Business Administration at the Johannes Kepler University in Linz, Austria, focusing on Controlling, Finance and Marketing where he graduated with a master's degree (Magister) in 1998 after completing his master's thesis on the topic of "Project management at large events – shown at the example of the Formula One Grand Prix in Austria 1997."

From 2006-2008 he earned a Master of Science in Finance, with distinction, at London Business School (University of London) with specialisations in corporate finance, mergers & acquisitions and risk management. His thesis was dedicated to the insurance industry, analysing a fictional multinational merger of a large insurance group with a global reinsurer and its impact on capital requirement and profitability.

In 2018 he enrolled into the joint doctoral study in International Relations of the University of Zadar and the Libertas International University.

Most of his professional career he spent in the insurance industry, working for Assicurazioni Generali Group for twenty years in various countries like Austria, United Kingdom, Poland, Croatia and Slovakia and with more than ten years of experience in top management roles, including as Chief Executive Officer and President of the Management Board of Generali in Croatia and later on in Slovakia. During these activities he gained a deep understanding of the insurance business and its markets, especially in the Central and Eastern European region.

Since 2020 he has shifted his career path to his entrepreneurial activities, currently active in various businesses of such diverse sectors as construction, property development, home installations, food and finance.

Georg Engl

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Accomplished Chief Executive Officer in the insurance industry who led the 3rd largest insurer in Slovakia with previous experiences in Croatia, UK, Poland and Austria. Turned around the Croatian insurance company and moved from 9th to 5th place while strengthening profitability.

Currently actively exploring the entrepreneurial world.

I am passionate about growing people and companies through entrepreneurial leadership. I enjoy challenges and attacking them together with my team while playing to win.

Austria: Engl Invest GmbH, Quattro Bautechnik/Trio Haustechnik Croatia: InTolerant d.o.o.	**Since 2020**	**Entrepreneur, owner, managing director** ➢ Real estate development / construction ➢ Healthy food groceries store
Generali Poistovna, Bratislava	*2019 – 2020*	**Chief Executive Officer** ➢ Accelerating growth and profitability ➢ Unlocking the potential of the company (revenue mEUR 300)
Generali osiguranje, Zagreb	*2012 – 2019*	**Chief Executive Officer** ➢ Switch to growth strategy through market changing initiatives ➢ Deliver profitability while moving from 9th to 5th position on market
	2009 – 2011	**Chief Financial Officer** ➢ Turnaround of the company
Generali UK Branch, London	*2005 – 2008*	Head of Risk Management & Strategy
Generali Holding, Vienna	*2001 – 2005*	Executive Assistant to the CFO CEE-Region
	2000 – 2001	Management Trainee, Austria and Poland
Actual Maschinen, Linz	*1999 – 2000*	Special advisor to managing director
Austrian army, Salzburg	*1998 – 1999*	Obligatory military service
University Zadar/Int. University Libertas	*Since 2018*	Joint doctoral study in International Relations
London Business School, London	*2006 – 2008*	MSc in Finance, with distinction 🎓
Johannes Kepler University, Linz	*1994 – 1998*	Masters in Business Administration (Mag.) 🎓
Generali Group programs	*2011 – 2019*	Programs at IMD, LBS, Duke
Languages and Skills		German, English, Croatian, Slovak Leadership, Sales Management, Finance, Entrepreneurship