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The limitations of competition in the insurance markets of Slovenia, Croatia and Serbia

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ABSTRACT

The article analyses the situation in the insurance markets of Slovenia, Croatia, and Serbia in order to provide the insight into the limitation of competition. The study of the limitation of competition was conducted using the theoretically founded indicators of concentration and inequality as follows: Concentration ratio, Herfindahl-Hirschman index, Lorenz curve, Gini coefficient, and Entropy index. The indicators were calculated for all the countries between 2004 and 2011. By comparatively analysing the obtained values of the indicators of concentration and inequality, we came to the conclusion that all three markets are characterised by a similar movement of the indicator, as well as that Croatian market, despite the relatively uneven market share distribution between individual companies, is more competitive than the other two.

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Relevant market; supply concentration; inequality of market share distribution

JEL CLASSIFICATION
L13; L84; D43

1. Introduction

Studying the insurance market as a part of the financial market is very complex but also important because this sector occupies a significant position in the financial area of each country. The article analyses the limitations of the insurance markets of Slovenia, Croatia, and Serbia. Comparative analysis of the three markets aims to provide a clear image of the limited competition in the insurance markets, that is to say the level of concentration and inequality of market share distribution between insurance companies in these countries. The importance of the insurance market comes from the fact that it was among the first to participate in the process of internationalisation. The process of globalisation, liberalisation, and deregulation significantly affected the performance of the sector, the conditions of competition in it, and especially the business risks (Njegomir & Stojić, 2012). In the practice of anti-monopoly authorities it is customary to use indices of concentration and inequality for measuring the conditions of competition and companies' monopoly power, therefore the above indicators shall be used in this research (Saving, 1970).

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Analysed markets were selected so as to represent the countries of a region characterised by different levels of development. Slovenia and Croatia have completed the transition and are already in the EU. Serbia is still in the process of slow and incomplete transition, away from full membership in the EU. For more than two decades these countries' markets have belonged to a single market, therefore it is interesting to analyse the development of competition in them from 2004, 15 years after their separation. The study is particularly interesting because today's economy is in the global economic crisis, which affects the business conditions in the sector, and requires a more comprehensive approach to the management of risk and insurance companies' capital (Marović, Njegomir, & Maksimović, 2010).

The article affirms the application of economic analysis in the field of competition. The application of economic analysis in this field is the world trend, which started in the US, continued in the EU, and with less intensity in the region as well. The article points out the advantages, but also the limitations in the application of the indicators of concentration and inequality. Further development of anti-monopoly legislation in the countries of the region will be towards greater use of economic analysis, especially the use of different indices of concentration and inequality.

2. Literature review

The measurement of the competition's limitation level in various markets is attracting the attention of many researchers. It has been studied on the example of the real sector and on the example of financial sector. Many authors have provided assessments on the conditions of competition using the usual indicators of concentration and inequality. One of the first and also the most important works in this field is the work of Adelman (1951), which deals with the theoretical analysis of different concentration indicators. The following is a very important work by Vanlommel, de Brabander, and Liebaers (1977), which examines the level of concentration on the example of 119 Belgian industry sectors, as well as the work by Curry and George (1983), which deals with the theoretical and practical analysis of aggregate concentration on the example of the UK and US economy in the period between 1909 and 1980. The works which deal with the sectorial assessment of the level of concentration and inequality of supply are also important. Belobaba and Van Acker (1994) studied the level of concentration in the US air transport market, and Einarsson (2008) investigated the level of concentration in the retail markets of the Nordic countries. The prominent works in the field of financial sector analysis are by Bikker and Haaf (2002, 2002a), who applied different indicators of concentrations to analyse the conditions of competition in the banking sector of European and other developed countries. The contribution of the authors in studying the level of concentration and inequality in the financial sector is the most important. Significant work to explore the limitation of banking market is by Al-Muharrami, Matthews, and Kahabari (2006), which deals with the determination of concentration level of the Arab GCC banking system.

The work by Mitton (2008) should be distinguished in the study of concentration indicators, which designates that concentration level is greater in smaller countries, as well as that the importance of concentration is largely dependent on the institutional factors that give them a certain power. Regardless of the various theorists who have discussed various ways to determine the level of concentration and inequality of the market, the claim articulated by Davies (1979, 1980) is still valid and states that a universal concentration indicator has

not yet been found. Instead, we use several indicators in order to give a comprehensive image of competitive conditions in the market.

The works that are prominent in the region, in which we are to study the level of insurance market limitation, are by Tipurić, Kolaković, and Dumičić (2002, 2003) dealing with the supply concentration on the example of the banking sector in Croatia. As for Serbia, the interesting work which is related to the determination of concentration in the market of cable distributors is by Maksimović, Radosavljević, and Borisavljević (2011), and the work dealing with the concentration of non-specialist retail trade of Niš by Stojanović and Radivojević (2010).

The work to be presented is a continuation of the research previously conducted regarding Serbian insurance market (Kostić, 2009) and limitations in the application of concentration indicators on the example of the insurance market of a number of countries (Maksimović & Kostić, 2012). This work is more comprehensive and advanced research, since it contains a long time series data and the broader framework of analysis, in order for the assessment of competition conditions to be more comprehensive.

3. Research hypotheses

Based on the fact that the analysed markets are a part of the broader, European market and that there is a tendency for their further involvement in European integration, the reduction of limitation level is expected to be intensified in the insurance markets of the analysed countries.

The financial sector is constantly open to entry of foreign competition, so once leading insurance companies lose their importance. This finding confirms the conclusion given in a previous work where it is clearly indicated that, in some markets (in this case the Croatian insurance market), there was a reduction concerning the share of major competitors and the values of all the concentration indicators used (Tipurić et al., 2002). We shall try to verify this statement by testing appropriate hypotheses, whose proof is important because the research is carried out in considerably changed circumstances, primarily related to the financial and economic crisis. The research hypothesis that will be analysed is:

Hypothesis 1: *The level of supply concentration in all the analysed markets reduces in the entire period of the research.*

The following hypothesis which is associated with the previous one and is related to the indicators of inequality is:

Hypothesis 2: *The level of inequality in the market share distribution in all the analysed markets reduces in the entire period of the research.*

Given that this is a market that once belonged to a single market it can be concluded that in the value movement of the indicators of concentration and inequality in the analysed markets, there is a high level of agreement. This suggests a new research hypothesis:

Hypothesis 3: *Between the movement of the indicators' values in different markets there is a high level of statistically significant correlation.*

4. Data collection and methodology

For the analysis of competition conditions in the insurance market of Slovenia, Croatia, and Serbia, we used the data on total premium at the disposal of the association of supervisors and individual agencies involved in the supervision of insurance companies. Data from the following institutions were used in the paper: International Association of Insurance Supervisors (IAIS) (http://www.iaisweb.org/IAIS-members-31), National Bank of Serbia (http://www.nbs.rs/internet/cirilica/60/60_2/index.html), Croatian Financial Services Supervisory Agency (2004, 2005, 2006, 2007, 2008, 2009, 2010 and 2011), and Slovenian Insurance Supervision Agency (2004, 2005, 2006, 2007, 2008, 2009, 2010, and 2011). The total premium was chosen to be a variable for measuring concentration for the following reasons: the premium is the most important component of the insurance company's revenue and is the result of its core activity. Data on total premium are in regular reports and publications of the regulatory authorities responsible for the supervision and control of insurance companies (Kostić, 2009).

The data include eight consecutive years (2004–2011). Using the collected data corresponding values of concentration indicators were obtained, and were used for a comparative analysis of the insurance markets' limitation level in these countries. Studying of the level of concentration and inequality in the insurance market was performed using a number of indicators of concentration and inequality, namely: Concentration ratio of the four largest companies and Herfindahl-Hirschman index, Gini coefficient, Lorenz curve, and Entropy index.

4.1. Concentration ratio

The Concentration ratio is a sum of market shares (s_i) of the largest n companies on the analysed market (Waldman & Jensen, 2001; Begović et al., 2002):

$$CR = \sum_{i=1}^{n} s_i \tag{1}$$

This ratio is most often calculated as the sum of market shares of the four largest companies in the market. Taking a great number of companies reduces its analytical significance. Researchers or government agencies involved in the level of supply concentration supervision decide on the number of companies to be included in the calculation of this indicator, provided that they use it as an official indicator (Martin, 2002). Given that the most common number of companies included in the determination of the ratio is four, the indicator was named Concentration ratio of the four largest companies (CR4).

In the EU the high level of market concentration exists when the CR4 index exceeds the value of 25, while in the US the limit is 50. The market where the index is above 50 is considered to be highly concentrated, the one where the value is between 25 and 50 is moderately concentrated, and the one with the value below 25 is non-concentrated market (Kostić, 2009). In the literature, there are interpretations that the value of the index above 40 indicates an oligopolistic market, while the value over 90 designates market similar to monopoly (American Bar Association, Section of Antitrust Law, 2005).

4.2. Herfindahl-Hirschman index

The Herfindahl-Hirschman index, as a convex function of the analysed companies' market shares, is an index sensitive to the number of corporations and inequality in the distribution of their market shares. The importance assigned to each company corresponds to the value of its market share (w_i=s_i), which implies that the index is determined as the sum of squared market shares of individual companies (Martin, 2002), i.e.:

$$HHI = \sum_{i=1}^{n} w_i s_i = \sum_{i=1}^{n} (s_i^2) \tag{2}$$

where s_i is the market share of *i* firm. This index provides a more accurate image of the market concentration level, since, because of the squaring of market shares, greater importance is assigned to the firms with larger market share than to those with smaller. The index value is in the interval between 0 and 10.000, or between 0 and 1, depending on the method of expressing market share. Reference values of the index are shown in Table 1.

Table 1. Reference Values of the HH index.

HH index value	Supply concentration level
HHI < 1.000	Non-concentrated (low concentrated) supply
1.000 ≤ HHI < 1.800	Moderately concentrated supply
1.800 ≤ HHI < 2.600	Highly concentrated supply
2.600 ≤ HHI < 10.000	Very high concentration of supply
HHI = 10.000	Monopoly

Source: Begović et al., 2002 p. 35.

4.3. Lorenz curve

The Lorenz curve is often used as the indicator of inequality in the distribution of market shares between individual companies. Inequality is assessed through the deviations of the Lorenz curve from absolute equality (45° curve), which shows a hypothetical situation in which all companies would have equal market share (Figure 1).

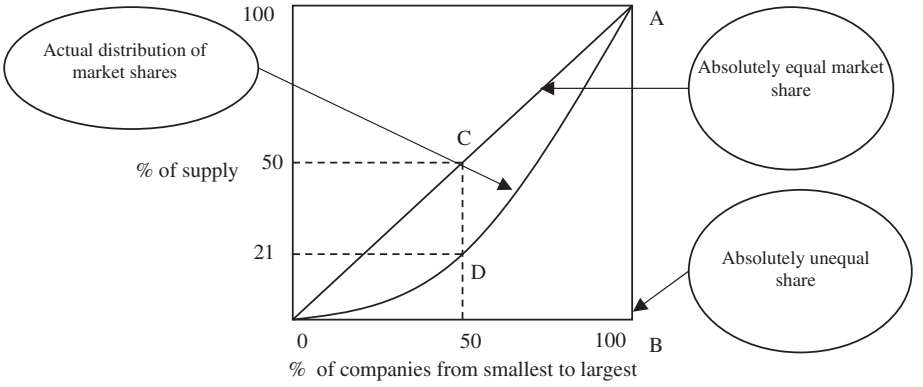


Figure 1. Lorenz curve. Source: Schmittlein, Cooper, & Morrison, 1993.

4.4. Gini coefficient

The Gini coefficient quantifies the deviation of the Lorenz curve from absolute equality curve, and measures inequality in the distribution of market shares between the companies. The Gini coefficient is determined by the following form (Lipczynski, Wilson, & Goddard, 2009):

$$G = \left\{ \frac{\sum_{n=1}^{N} \sum_{i=1}^{n} x_i}{0,5(N+1) \sum_{i=1}^{N} x_i} \right\} - 1 \tag{3}$$

where n is the rank of firms sorted in descending order from largest to smallest, N is the number of firms involved in the calculation, and x_i firm size measured through the value of sales (in the analysed case the total premium). The value of this indicator is in the interval between 0 and 1, where 0 means that the distribution of market shares between the companies is equal while 1 means that the overall market belongs to a corporation (White, 1982, 544).

4.5. Entropy index

The Entropy index is an indicator of inequality in the distribution of market shares (Bikker & Haaf, Measures of Competition and Concentration in the Banking Industry: a Review of the Literature, 2002):

$$E = \sum_{i=1}^{n} s_i \log_e \left(\frac{1}{s_i} \right) \tag{4}$$

where s_i is the market share of i firm, and $\log_e \left(\frac{1}{s_i} \right)$ the reciprocal value of the natural logarithms of market shares. The index value can range between 0, which indicates a monopoly, and $E=log_e(n)$ when there are n companies of the same size in the branch. The entropy coefficient is taken from the theory on information which shows the level of decision certainty. If there was only one company on the market, the uncertainty of customer retention for the monopolist would be minimal because customers would not have a choice. The opposite situation is when there are a lot of companies and then customers can choose and uncertainty of the choice increases.

Because of the unevenly defined upper threshold, the results can be incomparable between market structures that contain a different number of companies. For comparability of the index between branches and different moments of time, its relative value is used. The equation of the relative entropy index is as follows (Lipczynski et al., 2009):

$$RE = \frac{E}{\log_e(n)} = \left[\frac{1}{\log_e(n)} \right] \sum_{i=1}^{n} s_i \log_e \left(\frac{1}{s_i} \right) \tag{5}$$

The value of the relative entropy index is in the interval between 0 and 1, where 0 corresponds to the situation when there is a monopoly, while 1 corresponds to a perfectly competitive market.

5. The research

The research on the limitation of the insurance markets of Slovenia, Croatia, and Serbia contains a part concerning the determination of the relevant market's limitations, a part which is related to the evaluation of the level of concentration and inequality of supply on the market thus defined, as well as the analysis of the correlation in the movement of these indicators for the three countries.

5.1. Relevant market

The relevant market implies a market with identical or similar competition conditions. It has two dimensions: product and geographic (Motta, 2008). It follows that in defining the boundaries of the relevant market it is necessary to define relevant product market and relevant geographic market. The relevant product market is defined as a set of products and services which are regarded as interchangeable by the consumer by reason of the products' intended use, characteristics, and their prices. On the other hand, the relevant geographic market comprises the area in which the conditions of competition are sufficiently homogeneous and are appreciably different from neighbouring areas (European Commission, 1997).

Insurance market, which consists of all forms of insurance on the entire area of the analysed countries (Serbia, Croatia, and Slovenia), can be taken as a relevant market in this research for assessing the market power of corporations and limitations of supply. In defining the relevant product market, we started from the assumption that it is about a unique product which has no adequate substitute. Since we analysed the general assessment of the level of concentration and inequality, the division of insurance by types in this market was not conducted. As for the size of the relevant geographic market, the whole area of the countries was taken for assessing, as required by the very nature of business and the available data (Kostić, 2009). Furthermore, business conditions in one country are unique for all the participants, so they can make territorial completeness. The annual reports and regulatory bodies confirm that this market definition is good for the research being undertaken, where, among other, the approach we implemented is used as an item for the assessment of competitive conditions.

5.2. Analysis of the research results

Based on collected data, the research was conducted in the frame of the relevant market's defined borders. Analysis of the research results, using the appropriate indicators of concentration and inequality and based on them statistical estimates, requires the previous view of the number of insurance companies operating in the analysed markets in the research period. Some authors consider this component of the market to be significant in assessing the competitive conditions of market share distribution (White, 1982). The article assigns equal importance to both the elements, but we believe that the number of companies will largely determine competition conditions in the analysed markets. Table 2 shows changes in the number of insurance companies by countries for the entire research period.

As can be seen from Table 2 the largest number of active insurance companies is in Croatia, then in Serbia, and in the end in Slovenia. This arrangement of active insurance companies will affect the obtained indicator values, especially those related to the concentration.

Table 2. Number of active insurance companies in Slovenia, Croatia, and Serbia.

Year	Slovenia	Croatia	Serbia
2004	13	24	20
2005	14(2*)	23	17
2006	13	20	14
2007	14	22	18(2*)
2008	15(1*)	25	21(1*)
2009	15	27	22(1*)
2010	15	25	22
2011	16	26	23

*Number of active insurance companies which had no premium income in the analysed year.
Source: Annual Reports 2004–2011.

Analysis of the research results will be carried out separately for concentration indicators and inequality indicators. Tables 3 and 4 and Figure 2 provide information on the movement of the indicators for the period between 2004 and 2011.

Based on the data presented in Table 3 we may give a rough estimate that in the period from 2004 to 2011 there was a decline in the value of concentration indicators, suggesting the concentration level reduction in all the analysed markets.

Table 3. The supply concentration indicator's value movement in selected insurance markets in the period 2004–2011.

	Slovenia		Croatia		Serbia	
Year	CR_4	HHI	CR_4	HHI	CR_4	HHI
2004	83,60	2490,54	67,65	2052,52	89,91	2831,92
2005	85,81	2488,81	67,54	1882,98	79,02	2270,29
2006	82,18	2291,90	65,49	1721,32	81,15	2236,47
2007	78,99	2128,22	63,96	1601,23	81,15	2050,62
2008	78,30	2118,98	63,34	1551,44	77,98	1820,38
2009	78,09	2054,77	60,81	1447,31	74,20	1640,99
2010	76,10	1953,80	59,80	1397,19	71,61	1520,66
2011	75,29	1869,16	59,70	1356,93	72,10	1551,26

Source: Research results.

Table 4 and Figure 2 provide information on the inequality in the distribution of market shares between the companies in the analysed markets, in the entire period of the research.

The analysis of inequality indicators leads to the following conclusion: although it can be said that there is a tendency to reduce inequality, it is not as clearly expressed as a trend of concentration reduction.

Table 4. The movement of the inequality indicator's values in the distribution of supply in selected insurance markets in the period 2004–2011.

	Slovenia			Croatia			Serbia		
Year	G	E	RE	G	E	RE	G	E	RE
2004	0,6171	1,7403	0,6785	0,6746	2,1688	0,6824	0,7225	1,7240	0,5755
2005	0,5820	1,7402	0,7003	0,6593	2,2017	0,7022	0,6449	1,9067	0,6730
2006	0,5668	1,8537	0,7227	0,5925	2,2532	0,7522	0,5949	1,8712	0,7091
2007	0,5620	1,9476	0,7380	0,6086	2,3152	0,7490	0,6261	1,9281	0,6954
2008	0,5623	1,9536	0,7403	0,6358	2,3711	0,7366	0,6770	2,0282	0,6770
2009	0,5879	1,9669	0,7263	0,6374	2,4490	0,7430	0,6610	2,1413	0,7033
2010	0,5696	2,0194	0,7457	0,6065	2,4539	0,7623	0,6309	2,2181	0,7176
2011	0,5846	2,0549	0,7411	0,6134	2,4809	0,7615	0,6515	2,2054	0,7034

Source: Research results.

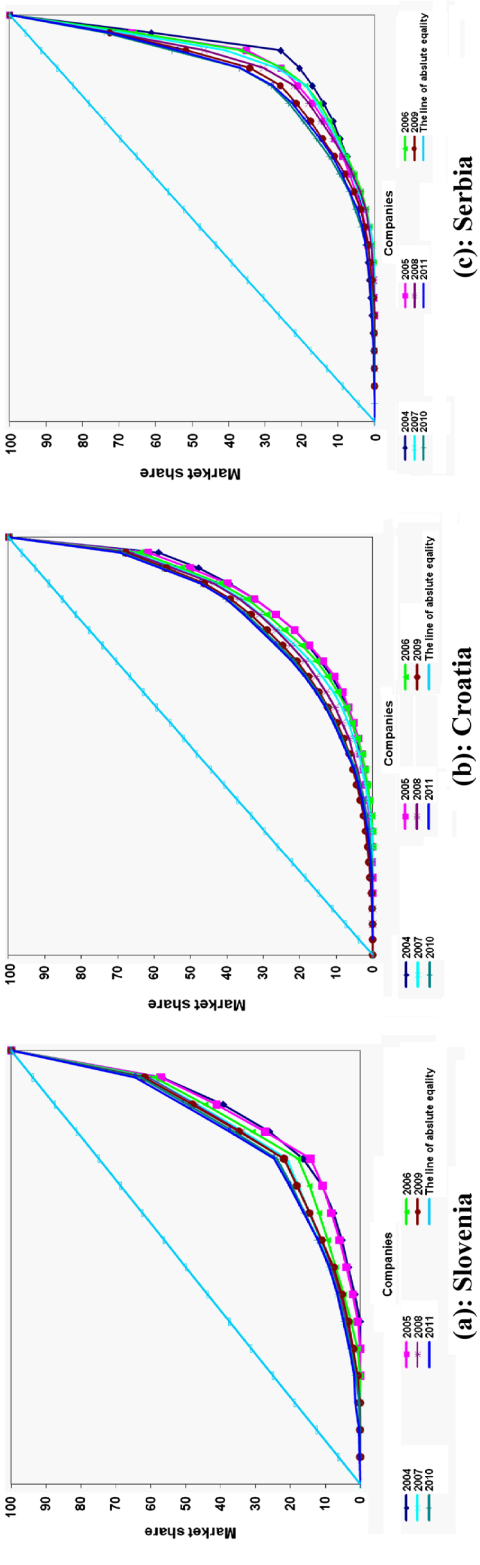
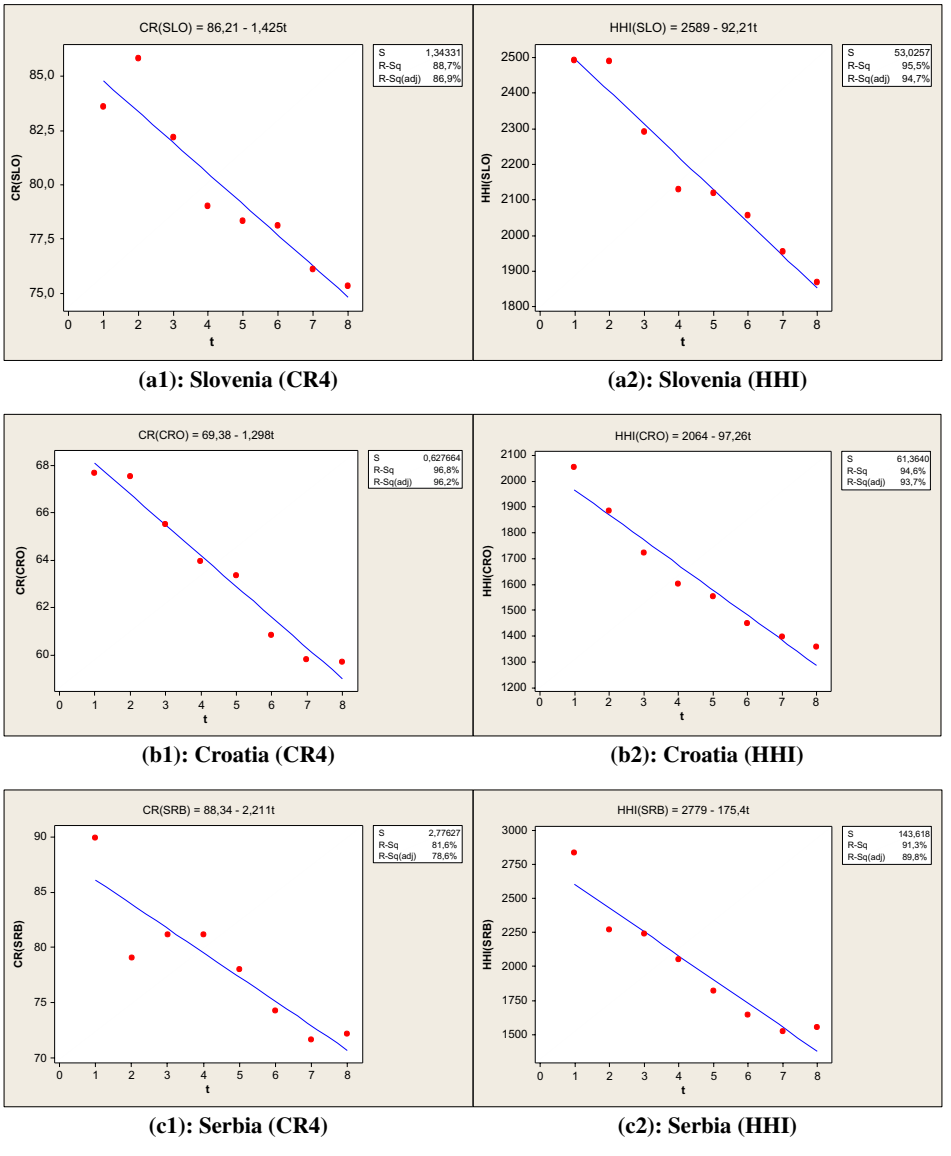


Figure 2. Lorenz curves for selected markets in the period 2004–2011. Source: Research results.

To confirm or challenge these findings it is necessary to perform further statistical analysis of the movement of the indicators of concentration and inequality, which will test the research hypotheses.

Figure 3 and Table 5 present the analysis of the movement of concentration indicator's value in individual markets in the analysed period.

Based on Table 5 and Figure 3 it can be concluded that there is a statistically significant decrease of the concentration indicator's value, which points to the fact that in every market comes to the reduction of supply concentration. This confirms Hypothesis 1.



(a1): Slovenia (CR4) **(a2): Slovenia (HHI)**

(b1): Croatia (CR4) **(b2): Croatia (HHI)**

(c1): Serbia (CR4) **(c2): Serbia (HHI)**

Figure 3. Diagram of concentration indicator's value movement. Source: Authors' calculations in programme MiniTab 15.

Table 5. Analysis of concentration indicator's value movement.

	Slovenia		Croatia		Serbia	
	CR_4	HHI	CR_4	HHI	CR_4	HHI
β_1	-1,425	-92,21	-1,298	-97,26	-2,211	-175,35
p	0,000	0,000	0,000	0,000	0,002	0,000

Source: Research results.

In the case of inequality indicator, we also performed statistical testing and tried to prove Hypothesis 2 (Figure 4 and Table 6).

As can be seen from Figure 4 and Table 6, we cannot unambiguously confirm Hypothesis 2, but we can make its confirmation to a limited extent. First, there was a decrease in the value of the Gini coefficient in all the markets, but the decrease was not statistically

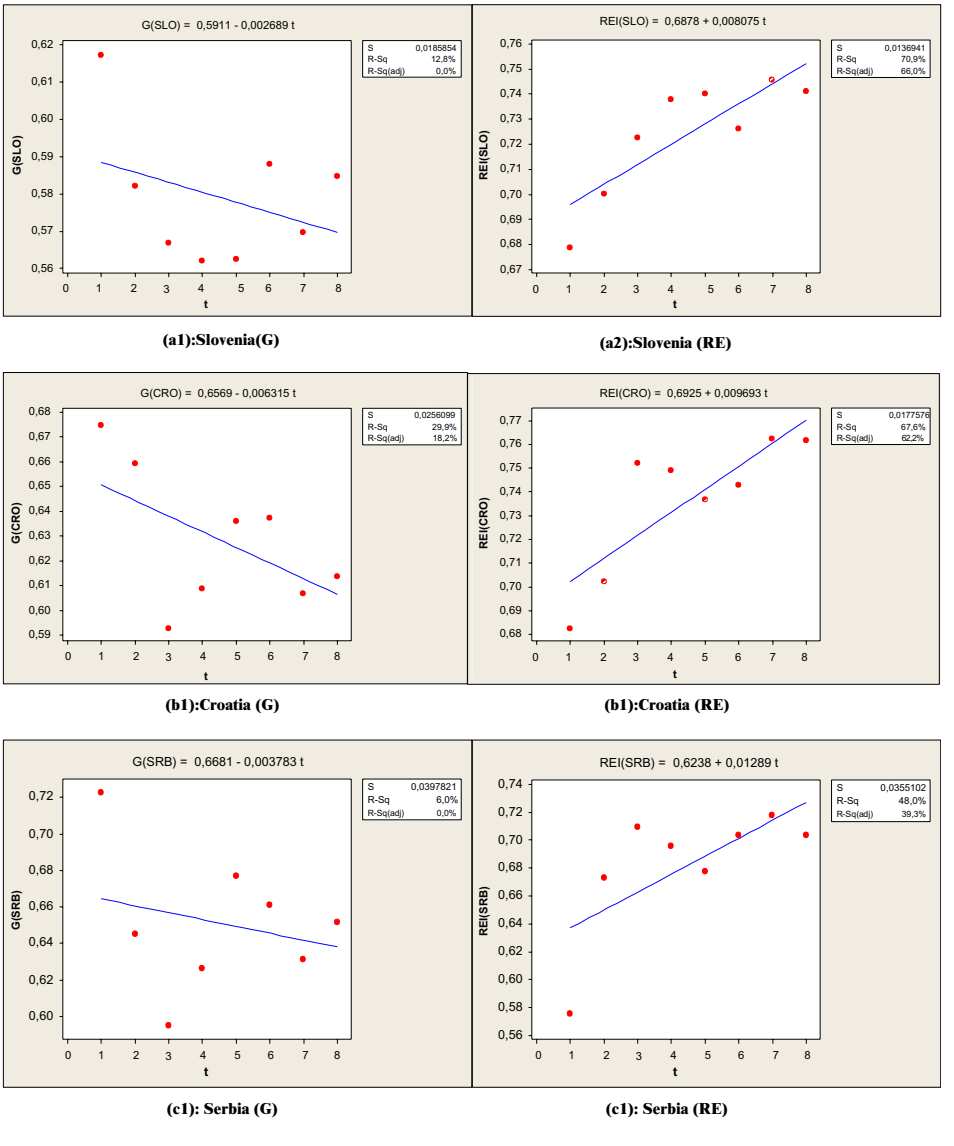


Figure 4. Diagram of inequality indicator's value movement. Source: Authors' calculations in programme MiniTab 15.

significant. This is illustrated by the Lorenz curve (Figure 2), which indicates a general tendency to reduce the inequality, which is not emphasised.

On the other hand, the relative entropy index value increases in all markets, reflecting the growing uncertainty, and thus the competition among companies. However, this competition increase in the Serbian market is statistically slightly significant, whereas in Croatia and

Table 6. Analysis of inequality indicator's value movement.

	Slovenia		Croatia		Serbia	
	G	RE	G	RE	G	RE
β_1	-0,0027	0,00808	-0,0063	0,00969	-0,0038	0,0129
P	0,385	0,009	0,161	0,012	0,560	0,057

Source: Research results.

Slovenia is very significant (of course, not at the level of concentration indicator). We can conclude that Hypothesis 2 can be unambiguously confirmed only for the relative entropy index in the markets of Croatia and Slovenia.

Considering the above, we conclude that competitive conditions are better at the end of the research period than at the start.

Further research analyses the correlation in the movement of various indicators of concentration and inequality between the analysed markets. Correlation in the indicators' value movement between the analysed markets and the value of its statistical significance are given in Table 7.

As can be seen in Table 7, the movement of the analysed indicators of concentration and inequality between the insurance markets of Serbia, Croatia and Slovenia, shows a high level of correlation that is statistically significant. This suggests that identical movements of the level of concentration and inequality are achieved in all analysed markets, indicating the similarity of the business context in all the countries. This has confirmed Hypothesis 3.

Table 7. Correlation value in the movement of selected indicators of concentration and inequality in the insurance market of Serbia, Croatia, and Slovenia in the period 2004–2011.

		CR_4			HH			G			RE		
		SRB	CRO	SLO	SRB	CRO	SLO	SRB	CRO	SLO	SRB	CRO	SLO
SRB	Pearson Correlation	1,000	,866**	,728*	1,000	,978**	,920**	1,000	,842**	,747*	1,000	,896**	,843**
	Sig. (2-tailed)		,005	,041		,000	,001		,009	,033		,003	,009
CRO	Pearson Correlation	,866**	1,000	,956**	,978**	1,000	,974**	,842**	1,000	,741*	,896**	1,000	,933**
	Sig. (2-tailed)	,005		,000	,000		,000	,009		,035	,003		,001
SLO	Pearson Correlation	,728*	,956**	1,000	,920**	,974**	1,000	,747*	,741*	1,000	,843**	,933**	1,000
	Sig. (2-tailed)	,041	,000		,001	,000		,033	,035		,009	,001	

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).
Source: Research results.

6. Conclusion and limitations of the research

Based on the above, we can derive some conclusions. First, generally in all the analysed markets, there is a trend to reduce the concentration and inequality in the distribution of market share. Concentration reduction in all the markets is statistically significant, while inequality reduction is not. On this basis, we can conclude that competition strengthens in the observed markets which should provide greater choice for consumers and lower prices for provided services.

The country with the lowest level of supply concentration in the insurance sector is Croatia, followed by Serbia, and then Slovenia. The probable reason for this is the fact that the largest number of active insurance companies is in the Croatian market. As for the inequality in the distribution of market share, Slovenia stands out with most properly distributed shares.

When we speak of consumers' certainty of choice, as yet another indicator of the market structure limitation, we can say that there is less certainty in Croatia and Slovenia than in Serbia. This indicates greater possibility of choices by consumers in the markets of Croatia and Slovenia than in Serbia.

The general conclusion to be drawn is that, despite the relatively uneven distribution of market share, the Croatian insurance market is more competitive than the other two.

As for the movement of the indicator of concentration and inequality, it can be said that the process is being achieved at a similar pace in all three countries, which indicates that these markets belong to the same business environment.

Presented research and conclusions contain certain limitations, primarily for the use of concentration indicators. Concentration indicators are a useful tool in assessing the level of market limitation: they give an exact evaluation of the level of concentration and equality of market share distribution and a relatively clear picture of companies' potentials to use market power. However, they are not immune to some of the problems and limitations.

The first problem is related to the definition of the relevant market's boundaries, i.e., market volume, in spatial and production sense. In the case of the insurance market the problem is related to the different types of insurance and their levels of substitutability. From this it follows that the entire insurance market can be seen as the relevant product market, but we can distinguish the life insurance and non-life insurance market. Also, as a separate market, it is possible to single out motor vehicle insurance or the health insurance market, and the like. In this article, we opted for a complete insurance market. The framework for the analysis was identical for all the countries so that the data is comparable.

The second problem is related to the inability of the indicators to acknowledge certain qualitative characteristics of the market, such as market structure stability, the level of product differentiation, the height of entry barriers, operating costs, etc. Also, these indices do not include industrial tradition, nor do they include features and objectives of managers who run the companies. The inclusion of these elements would make the assessment of market limitation more detailed and therefore more complete.

The third problem is related to the size of economy and market: the value of the indicator will not have the same meaning for 'small' and 'large' economy (Mitton, 2008). In a small economy it is normal that due to small space and low purchasing power there is a higher level of tolerance to a high value of concentration indicator. This problem has no great significance, given that in this case the countries have similar number of insurance beneficiaries.

Regardless of all the limitations, the research provides a clear image of competition conditions in the insurance market of the three countries, which is at the same time the image of competition conditions in the insurance market of the region they belong to.

The research should improve competition policy, through greater application of economic analysis. Oligopolisation in most markets, also in the insurance market, imposes the requirement to monitor the degree of limitation of competition and formulate measures to ensure competitive conditions through economic analysis. Competition policy, which contains high level of economic analysis, would be able to better encourage companies' competitive and prevent monopolistic practice through precise quantification of the results of uncompetitive behaviour, as well as measures taken by anti-monopoly authorities.

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Appendices

Table A1. Data on Slovenian insurance companies' total premium (in million EUR) and market share (MS) by year.

Company	Total premium	MS (%)
	2004	
Triglav	137.2	43.10
Mutual Health	55.9	17.56
Maribor	42.1	13.23
Adriatic	30.9	9.71
Slovenica	17.3	5.44
Tilia	10.3	3.24
Merkur	7.6	2.39
Generali	6	1.89
Grawe Insurance	5.9	1.85
NLB Vita	4.8	1.50
Arag Legal Insurance	0.1	0.03
Krekova	0.1	0.03
Triglav Health	0.1	0.03
Σ	**318.3**	**100.00**
	2005	
Triglav	148	42.85
Mutual Health	55.2	15.98
Adriatic	48	13.90
Maribor	45.2	13.09
Tilia	11.7	3.39
Merkur	8.7	2.52
Generali	8	2.32
Grawe	6.9	2.00
NLB Vita	6.3	1.81
Slovenica	5	1.44
Prva kreditna	2.2	0.64
Triglav Healt	0.2	0.06
Arag Legal Insurance	0	0.00
Krekova	0	0.00
Σ	**345.4**	**100.00**
	2006	
Triglav	158.4	41.03
Adriatic	56	14.50
Mutual Health	52.4	13.57
Maribor	50.5	13.08
Tilia	12.4	3.21
Generali	10.6	2.75
Triglav Health	9.5	2.46
Slovenica	9.2	2.38
Merkur	9	2.33
Grawe	7.8	2.02
NLB Vita	7.3	1.89
Prva kreditna	2.7	0.70
Arag Legal Insurance	0.3	0.08
Σ	**386.1**	**100.00**
	2007	
Triglav	708.3	39.36
Adriatic	251.5	13.98
Maribor	234.6	13.04
Mutual Health	226.9	12.61
Tilia	58.1	3.23
KD Življenje	57.6	3.20
Generali	54.9	3.05
Triglav Health	51.6	2.87
Merkur	41.3	2.30

(*Continued*)

Table A1. (*Continued*)

Company	Total premium	MS (%)
NLB Vita	36.4	2.02
Grawe	36.1	2.01
Prva Personal	26.8	1.49
SID Prva kreditna	14.1	0.78
Arag Legal Insurance	1.2	0.06
Σ	**1799.4**	**100.00**
	2008	
Triglav	753.9	39.42
Adriatic	256.9	13.43
Maribor	251.9	13.17
Mutual Health	234.9	12.28
KD Življenje	69.8	3.66
Tilia	68.2	3.57
Generali	62.2	3.25
Triglav Health	59.3	3.10
Merkur	43.7	2.28
Grawe	36.4	1.90
NLB Vita	31.6	1.65
Prva Personal	28.2	1.47
SID Prva kreditna	14.0	0.74
Arag Legal Insurance	1.6	0.08
ERGO	0.0	0.00
Σ	**1912.6**	**100.00**
	2009	
Triglav	744.5	38.21
Maribor	266.3	13.67
Adriatic	260.9	13.39
Mutual Health	249.8	12.82
Tilia	72.2	3.71
Generali	70.1	3.60
KD Življenje	69.3	3.56
Triglav Health	67.3	3.45
Merkur Insurance	45.2	2.32
Grawe Insurance	35.4	1.82
Prva Personal	28.8	1.48
NLB Vita	24.2	1.24
SID Prva kreditna	11.1	0.57
Arag Legal Insurance	1.8	0.09
ERGO	1.4	0.07
Σ	**1948.3**	**100.00**
	2010	
Triglav	721.3	37.02
Adriatic	261.4	13.42
Maribor	259.9	13.34
Mutual Health	240.3	12.33
Generali	80.7	4.14
Tilia	73.8	3.79
Triglav Health	72.7	3.73
KD Življenje	70.3	3.61
Merkur Insurance	47.4	2.43
Grawe Insurance	34.9	1.79
NLB Vita	32.2	1.65
Prva Personal	28.2	1.45
SID Prva kreditna	19.9	1.02
ERGO	3.5	0.18
Arag Legal Insurance	2.0	0.10
Σ	**1948.5**	**100.00**
	2011	
Triglav	696.7	35.56
Adriatic	265.7	13.56

(*Continued*)

Table A1. (*Continued*)

Company	Total premium	MS (%)
Maribor	263.6	13.46
Mutual Health	249.1	12.72
Generali Insuranc	86.2	4.40
Triglav Health	80.2	4.09
Tilia	79.2	4.04
KD Življenje	62.6	3.20
Merkur	47.5	2.42
Grawe	34.3	1.75
NLB Vita	31.8	1.62
Prva Personal	29.7	1.52
Modra	5.7	0.29
SID Prva kreditna	21.1	1.08
ERGO	3.5	0.18
Arag Legal Insurance	2.2	0.11
∑	**1959.1**	**100.00**

Source: Slovenian Insurance Supervision Agency (2004, 2005, 2006, 2007, 2008, 2009, 2010, and 2011) Annual Reports.

Table A2. Data on Croatian insurance companies' total premium (in HRK/000 HRK) and market share (MS) by year.

Company	Total premium	MS (%)
	2004	
Croatia	2,734,152,351	41.26
euroherc	728,078,561	10.99
Allianz	553,827,165	8.36
Jadransko	466,883,668	7.05
Zagreb	380,827,973	5.75
Grawe	345,150,941	5.21
Triglav	244,547,317	3.69
Merkur	218,694,926	3.30
Kvarner Wiener St.	211,088,057	3.19
Sunce	151,855,134	2.29
Helios	122,442,645	1.85
Aurum	96,383,572	1.45
Agram životno	84,406,427	1.27
Uniqa	70,499,928	1.06
Veritas	55,711,003	0.84
Libertas	41,663,341	0.63
Cosmopolitan	35,148,648	0.53
Addenda	27,003,553	0.41
Croatia zdr.	16,762,889	0.25
Basler	16,217,215	0.24
Generali životno	8,175,038	0.12
Basler životno	7,968,028	0.12
Generali než.	6,193,461	0.09
Hok	3,185,531	0.05
∑	**6,626,867,372**	**100.00**
	2005	
Croatia	2,825,083,041	38.44
Euroherc	841,349,146	11.45
Allianz	751,529,141	10.22
Jadransko	546,181,641	7.43
Zagreb	436,207,932	5.93
Grawe	376,470,849	5.12
Kvarner Wiener St.	292,974,559	3.99
Triglav	273,912,176	3.73
Merkur	233,685,220	3.18
Sunce	167,901,438	2.28
Agram životno	114,760,639	1.56
Helios	109,426,813	1.49
Uniqa	91,383,766	1.24

(*Continued*)

Table A2. (*Continued*)

Company	Total premium	MS (%)
Libertas	57,411,740	0.78
Generali životno	56,186,556	0.76
Cosmopolitan	41,471,423	0.56
Addenda	29,796,698	0.41
Croatia zdr.	27,662,821	0.38
Generali	24,779,952	0.34
Basler než.	22,198,663	0.30
Basler životno	14,738,494	0.20
Erste osiguranje	10,289,109	0.15
Hok	4,671,688	0.06
Σ	**7,350,073,505**	**100.00**
	2006	
Croatia	2,951,386,338	36.08
Euroherc	920,601,130	11.25
Allianz	873,534,058	10.68
Jadransko	612,059,413	7.48
Zagreb	442,632,822	5.41
Kvarner Wiener St.	400,840,206	4.90
Grawe	395,128,360	4.83
Triglav	318,382,222	3.89
Merkur	259,250,716	3.17
Generali	216,179,697	2.64
Agram životno	201,490,960	2.46
Helios	124,132,501	1.52
Sunce	122,293,199	1.49
Uniqa	109,656,947	1.34
Croatia zdr.	59,144,795	0.72
Cosmopolitan	53,822,480	0.67
Erste osiguranje	51,488,658	0.63
Basler životno	42,071,579	0.51
Basler než.	21,094,458	0.26
Hok	4,965,006	0.07
Σ	**8,180,155,545**	**100.00**
	2007	
Croatia	3,095,917,322	34.15
Allianz	1,063,499,445	11.73
Euroherc	1,001,295,727	11.05
Jadransko	637,539,068	7.03
Kvarner Wiener St.	478,390,861	5.28
Zagreb	435,488,714	4.80
Grawe	422,972,379	4.67
Triglav	376,579,236	4.15
Merkur	297,606,531	3.28
Generali	276,822,641	3.05
Agram životno	214,579,108	2.37
Sunce	155,232,541	1.71
Uniqa	138,625,170	1.53
Helios	135,649,061	1.50
Croatia zdr.	78,213,427	0.86
Cosmopolitan	72,111,942	0.81
Erste osiguranje	65,549,730	0.72
Basler životno	61,117,305	0.67
Hok	30,032,766	0.33
Basler než.	24,014,719	0.27
Velibit život. os.	2,850,950	0.03
Cardif osiguranje	843,588	0.01
Σ	**9,064,932,231**	**100.00**
	2008	
Croatia	3,243,961,360	33.51
Allianz	1,121,069,823	11.58
Euroherc	1,086,568,152	11.22

(*Continued*)

Table A2. (*Continued*)

Company	Total premium	MS (%)
Jadransko	680,209,240	7.03
Kvarner Wiener St.	540,479,304	5.58
Grawe	432,857,269	4.47
Zagreb	396,875,284	4.10
Triglav	377,860,251	3.90
Merkur	296,705,953	3.07
Generali	266,443,411	2.75
Agram životno	235,856,335	2.44
Sunce	186,307,489	1.92
Uniqa	183,566,696	1.90
Helios	114,823,328	1.19
Hok	105,057,571	1.09
Croatia zdr.	88,600,149	0.92
Cosmopolitan	82,190,086	0.85
Erste osiguranje	75,267,425	0.78
Basler životno	64,702,361	0.67
Velebit osiguranje	38,468,335	0.40
Basler než.	27,326,399	0.28
Cardif osiguranje	25,204,675	0.26
Velibit život. os.	7,948,046	0.07
Viktoria životno	979,319	0.01
KD život os.	812,433	0.01
Σ	**9,680,140,694**	**100.00**
	2009	
Croatia	3,029,486	32.21
Euroherc	1,043,612	11.10
Allianz	985,777	10.48
Jadransko	661,051	7.03
Kvarner Wiener St.	540,536	5.75
Grawe	416,428	4.43
Triglav	400,089	4.25
Zagreb–Basler	370,895	3.94
Merkur	295,938	3.15
Generali	272,054	2.89
Uniqa	234,370	2.49
Agram životno	227,755	2.42
Sunce	180,803	1.92
Hok	145,128	1.54
Helios	99,796	1.06
Croatia zdr.	97,007	1.03
Erste osiguranje	88,820	0.94
Cosmopolitan	87,443	0.93
Velebit osiguranje	51,818	0.55
Basler životno	49,818	0.53
Cardif osiguranje	35,502	0.38
Viktoria životno	31,158	0.33
Basler než.	28,190	0.30
Societe generale os.	17,701	0.19
Velibit život. os.	9,913	0.11
KD osiguranje	4,246	0.05
Viktoria osiguranje	131	0.00
Σ	**9,405,465**	**100.00**
	2010	
Croatia	2,895,417	31.35
Euroherc	1,002,519	10.86
Allianz	983,968	10.65
Jadransko	641,345	6.94
Kvarner Wiener St.	511,420	5.54
Zagreb-Basler	409,012	4.43
Triglav	405,504	4.39
Grawe	398,384	4.31
Generali	301,209	3.26

(*Continued*)

Table A2. (*Continued*)

Company	Total premium	MS (%)
Merkur	290,398	3.14
Uniqa	239,958	2.60
Agram životno	206,703	2.24
Sunce	176,695	1.91
Helios	174,822	1.89
Hok	165,469	1.79
Erste osiguranje	106,756	1.16
Croatia zdr.	97,208	1.05
Cardif osiguranje	65,239	0.71
Velebit osiguranje	62,327	0.67
Viktoria životno	51,559	0.56
Societe generale os.	29,414	0.32
Velibit život os.	9,468	0.11
KD osiguranje	8,248	0.09
Hrvatsko kreditno os.	1,551	0.02
Viktoria osiguranje	852	0.01
Σ	**9,235,445**	**100.00**
	2011	
Croatia	2,788,861	30.53
Allianz	1,025,552	11.23
Euroherc	1,000,198	10.96
Jadransko	640,079	7.01
Kvarner Wiener St.	448,096	4.90
Zagreb -basler	411,543	4.50
Triglav	395,952	4.33
Grawe	392,680	4.30
Generali	324,182	3.55
Merkur	284,799	3.12
Uniqa	233,660	2.56
Agram životno	200,740	2.20
Hok	176,673	1.93
Helios	176,072	1.93
Sunce	172,441	1.89
Erste osiguranje	104,333	1.14
Croatia zdr.	97,276	1.06
Cardif osiguranje	68,245	0.75
Velebit osiguranje	67,107	0.73
Viktoria životno	43,289	0.47
Societe generale os.	37,793	0.41
Izvor osiguranje	18,640	0.20
KD osiguranje	12,268	0.13
Velibit život os.	8,009	0.09
Hrvatsko kreditno os.	6,687	0.07
Viktoria osiguranje	1,346	0.01
Σ	**9,136,521**	**100.00**

Source: Croatian Financial Services Supervisory Agency (2004, 2005, 2006, 2007, 2008, 2009, 2010 and 2011) Annual Reports.

Table A3. Data on Serbian insurance companies' total premium (in 000 RSD) and market share (MS) by year.

Company	Total premium	MS (%)
	2004	
Dunav osiguranje	8,775,576	38.77
DDOR Novi Sad	8,031,131	35.48
Delta Osiguranje	1,166,862	5.15
Zepter	794,404	3.51
Wiener	698,638	3.09
AMS Osiguranje	602,690	2.66
Sim Osiguranje	438,862	1.94
Kopaonik	429,700	1.90
Takovo Osiguranje	400,505	1.77
Grawe	283,849	1.25
Sava	252,064	1.11
Dunav TBI	127,728	0.56
Prizma	120,015	0.53
Jugins	100,800	0.45
Globus	85,767	0.38
Plus	83,074	0.37
Energoprojekt	73,928	0.33
Dijamant	63,348	0.28
Milenijum	54,790	0.24
Morava	52,402	0.23
Σ	**22,636,133**	**100.00**
	2005	
Dunav osiguranje	11,627,474	33.52
DDOR Novi Sad	10,877,683	31.36
Delta Osiguranje	3,311,729	9.55
Wiener	1,594,331	4.60
Zepter	1,410,356	4.07
Takovo	1,141,662	3.29
Kopaonik	949,600	2.74
AMS Osiguranje	776,800	2.24
Sim Osiguranje	649,349	1.87
Polis	577,318	1.66
Grawe	562,329	1.62
Milenijum	364,739	1.05
Dunav TBI	242,614	0.70
Globus	231,108	0.67
Prizma	199,698	0.58
Energoprojekt	117,764	0.33
Morava	55,233	0.15
Σ	**34,689,787**	**100.00**
	2006	
Dunav	13,121,607	34.23
DDOR	11,163,392	29.13
Delta	4,380,804	11.43
Wiener	2,439,803	6.37
Takovo	1,445,753	3.77
Zepter	1,082,171	2.82
Kopaonik	908,460	2.37
Grawe	907,196	2.37
AMS	846,317	2.21
Sava	685,951	1.79
Milenijum	512,627	1.34
Dunav-TBI	401,131	1.05
Globus	233,558	0.61
Energoprojekt	199,844	0.51
Σ	**38,328,614**	**100.00**

(*Continued*)

Table A3. (*Continued*)

Company	Total premium	MS (%)
	2007	
Dunav	13,810,751	30.84
DDOR	12,627,149	28.20
Delta Generali	6,278,656	14.02
Wiener	3,623,989	8.09
Takovo	1,347,132	3.01
Grawe	1,296,544	2.90
Triglav	1,146,435	2.56
AMS	1,048,579	2.34
Uniqa a.d.o. život.	846,027	1.89
Sava	810,305	1.81
Uniqa neživot	772,284	1.72
Milenijum	685,787	1.53
Globus	286,415	0.64
Energoprojekt	181,176	0.40
Credit Agricole Life	13,155	0.04
Merkur osiguranja	5,634	0.01
Basler neživot.	0	0.00
Basler život.	0	0.00
Σ	**44,780,018**	**100.00**
	2008	
Dunav	14,694,704	28.16
DDOR	13,100,954	25.10
Delta Generali	8,508,722	16.30
Wiener	4,390,925	8.41
Uniqa nezivotno	2,072,733	3.97
Takovo	1,769,587	3.39
Triglav Kopaonik	1,705,348	3.27
Grawe	1,517,442	2.91
AMS Osiguranje	1,291,129	2.47
Sava	1,085,475	2.08
Milenijum	813,945	1.56
Uniqa a.d.o.	426,469	0.82
Globus	349,645	0.67
Energoprojekt	222,511	0.43
Merkur osiguranje	123,360	0.24
Credit Agricole Life	72,360	0.14
AS Osiguranje	29,834	0.06
Basler nezivotno	6,222	0.01
Basler zivotno	3,259	0.01
AIG	2007	0.00
Sava zivotno os.	0	0.00
Σ	**52,186,631**	**100.00**
	2009	
Dunav	14,678,007	27.42
DDOR	11,169,736	20.86
Delta Generali	9,380,260	17.52
Wiener	4,497,171	8.40
Uniqa nezivotno	2,319,315	4.33
Takovo	2,108,826	3.94
Triglav Kopaonik	1,773,982	3.31
Grawe	1,727,795	3.23
AMS Osiguranje	1,537,259	2.87
Sava	1,345,458	2.51
Milenijum	982,601	1.84
Uniqa a.d.o.	579,100	1.08
AS Osiguranje	485,726	0.91
Globus	310,228	0.58
Merkur osiguranje	255,118	0.48
Energoprojekt	181,726	0.34
Credit Agricole Life	128,980	0.24
Basler nezivotno	41,234	0.08

(*Continued*)

Table A3. (*Continued*)

Company	Total premium	MS (%)
Alico a.d.o.	17,189	0.03
Basler zivotno	11,601	0.02
Sava zivotno os.	3,334	0.01
Societe Generale	0	0.00
Σ	**53,534,646**	**100.00**
	2010	
Dunav	14,655,672	25.93
Delta Generali	10,464,141	18.51
DDOR	10,456,370	18.50
Wiener	4,898,073	8.67
Uniqa nezivotno	2,766,878	4.90
Takovo	2,262,352	4.00
Grawe	2,019,893	3.57
Triglav	1,989,291	3.52
Sava Nez	1,580,681	2.80
AMS	1,510,103	2.67
Milenijum	932,660	1.65
AS Osiguranje	921,848	1.63
Uniqa zivotno	701,190	1.24
Merkur osiguranje	392,196	0.69
Globus	321,805	0.57
Energoprojekt	290,094	0.51
Axa Zivot	162,421	0.29
Basler nezivotno	81,822	0.14
Alico a.d.o.	40,740	0.08
Sava zivotno os.	34,374	0.06
Basler zivotno	32,992	0.06
Societe Generale	5,336	0.01
Σ	**56,520,932**	**100.00**
	2011	
Dunav	15,435,121	26.93
Delta Generali	10,886,842	19.00
DDOR	9,864,495	17.21
Wiener	5,134,142	8.96
Uniqa nezivot.	3,018,850	5.27
Takovo	2,305,158	4.02
Triglav	2,119,446	3.70
Grawe	1,994,710	3.48
AMS	1,436,343	2.51
Sava Nez	1,229,163	2.14
Milenijum	1,210,672	2.11
Uniqa zivotno	802,992	1.40
Merkur	477,515	0.83
Globus	365,843	0.64
AS osiguranje	332,942	0.58
Energoprojekt	164,941	0.29
Basler nezivot.	146,930	0.26
Axa Zivot	128,835	0.22
Societe Generale	104,021	0.18
Sava zivotno	57,624	0.10
Met life	53,194	0.09
Basler Zivot	42,703	0.08
Axa nezivot	1,516	0.00
Σ	**57,313,998**	**100.00**

Source: National Bank of Serbia - http://www.nbs.rs/internet/cirilica/60/60_2/index.html