

## MARKET STRUCTURE AND INSURERS PERFORMANCE IN THE CROATIAN AND B&H INSURANCE MARKET

PERVAN, M[aja]

**Abstract:** Croatian and B&H (Bosnia and Herzegovina) insurance market used to be highly concentrated. However, with the beginning of the nineties, with the disappearance of the model of state owned property, market structure and level of competition significantly changed. So, the purpose of this article is: (1) to analyze the market structure and to determine whether the presence of dominant company is still one of the insurance market characteristic; (2) to test the validity of the structure-conduct-performance (SCP) paradigm for the Croatian and B&H non-life insurance market.

**Key words:** market structure, performance, insurance market

### 1. INTRODUCTION

Until the nineties of the last century, the Croatian insurance market was characterized by the lack of competition and consequently no motivation for innovation and further development of insurance sector. However, the switch to market economy caused significant changes in the number of companies and their (pre)targeting on different segments of insurance. Similar processes were registered in B&H. But, because of low economic development, slow process of privatization and economic reforms, insufficiently developed financial market, etc., processes of insurance market development and its transformation from one structure - monopoly, to another more competitive structure - oligopoly, in B&H and other transition countries is taking place with a certain time lag, when compared with insurance market in EU countries. As these changes are of great interest to both policy analysts and to government, the purpose of this paper is to analyze what happened in insurance markets in Croatia and B&H, especially regarding the changes in market shares of the leading insurer and the degree of market concentration. It is worth mentioning that this study is among few that analyze concentration in Croatian insurance industry (see for example Pervan & Pavić 2005; Tipurić et al. 2008). However, to the best of authors' knowledge this is the first time that the life and non-life insurance segments are investigated separately. Furthermore, no comparison between Croatia and B&H insurance industry (regarding the concentration levels or concentration-profit relationship) has been carried out to date.

The investigation is conducted for the 2005-2008 period for two reasons. The first reason is closely connected with the first aim of this paper. Namely, a similar analysis of insurance market in *total* (without any separation between life and non-life insurance segments) for the Croatian insurance sector has been already done for the period from 1998 till 2004 by Pervan & Pavić (2005), so this analysis will be a certain upgrade to the previous one as well as confirmation of the previous predictions. Nevertheless, in the former paper no connection between profit and concentration was examined. Secondly, for the B&H insurance data were available only for the stated period.

### 2. MAIN CHARACTERISTICS OF CROATIAN AND B&H INSURANCE MARKET

There were 25 (26) insurance and 2 (1) reinsurance companies, operating on the Croatian (B&H) insurance market in 2008. Total gross written premium in 2008th in Croatian (B&H) insurance amounted to 1341 (232) million euros. Since its growth rate in 2008 was lower than the growth achieved in 2007 it is clear that the current economic situation slows the growth and development of insurance industry. Insurance penetration rate in Croatia (B&H) was gradually increasing (decreasing) during all the observed years, and amounted to around 3.2 (1.9) respectively. For comparison, in the EU 27 this indicator achieved value of 8.6. Insurance density rate in Croatia (B&H) in 2008 achieved the value of 302 (60) euros and despite its growing tendency it is also below the average of European countries. In EU 27 this indicator was 2540 euros (Insurance Agency of B&H, 2009). According to the previously presented essential indicators of the insurance market development, it can be stated that both countries (Croatia and B&H) are well behind the EU countries, although Croatia is in a somewhat better position than B&H. The low level of development of insurance industry in B&H is closely connected with relatively poor macroeconomic indicators realized in this country.

### 3. INDUSTRIAL CONCENTRATION AS A MEASURE OF MARKET STRUCTURE

Since industrial concentration is the most used measure to determine the structure of a particular industry, in this study the author employs two measures of concentration: concentration ratios (CR4) and Herfindahl-Hirschman index (HHI). As the basis for calculation of these measures, gross written premium (GWP) has been used as the most direct and relevant indicator of the level of activity in the insurance industry. A higher value of these measures indicates a lower degree of competitiveness, respectively a higher degree of industrial concentration (Liebenberg & Sommer, 2008).

		Croatia			B&H		
		MS	HHI	CR4	MS	HHI	CR4
Non-life	2005	46,8	2647,3	80,5	15,5	667,8	39,0
	2006	44,1	2424,4	78,3	14,8	649,3	37,7
	2007	41,8	2237,1	76,4	14,4	734,1	41,4
	2008	40,4	2120,5	74,9	13,2	702,1	40,9
Life		Croatia			B&H		
	2005	15,8	1015,4	54,4	32,2	1776,9	73,8
	2006	16,4	1010,1	51,6	29,6	1693,6	75,2
	2007	17,2	1005,6	52,4	27,8	1676,4	75,2
	2008	16,7	991,7	51,9	25,6	1737,1	76,8

Tab.1. Industrial concentration and market share (MS) of the leading insurance company

As it can be seen from the Table 1, concentration in Croatian insurance market continuously declines during the analyzed period. The only exception for the life insurance segment (when measured by CR4) is the year 2006. On the other hand, fluctuation of concentration is detected in B&H insurance industry. Situation in both markets can be shortly described as follows. *Croatian non-life* insurance market is highly concentrated and characterized by the presence of “tight oligopoly“ (four firms hold over 60%) and dominant firm existence (market share of the leading company over the respective period of time does not fall below 40%). However, moderate concentration and the presence of “loose oligopoly“ is detected on the *life* insurance segment. On the other hand, competitive situation with low concentration is found in *B&H non-life* insurance market, but moderate to high level of concentration is detected in the *life* insurance segment. The market share (MS) of the leading company continuously declines in both, non-life and life insurance market in B&H. The same is true for Croatian non-life segment.

#### 4. MARKET STRUCTURE AND INSURERS PERFORMANCE

The Structure Conduct Performance (SCP) paradigm indicates that market performance is determined by market conduct which in turn depends on market structure. Taking into account this paradigm, the second aim of this paper was to find whether the market structure (besides some other factors) has influence on non-life insurers' performance. In order to achieve this aim, the following model was adopted:

$$\pi_{it} = x_{it}'\beta + (\alpha_i + \varepsilon_{it}) \quad \varepsilon_{it} = v_i + u_{it} \quad (1)$$

where  $\pi_{it}$  is the profitability of insurers  $i$  at time  $t$ , with  $i=1, \dots, N$ ,  $t=1, \dots, T$ ,  $\alpha_i$  is a constant term,  $x_{it}$ 's are the explanatory variables and  $\varepsilon_{it}$  the disturbance, with  $v_i$  the unobserved insurance-specific effect and  $u_{it}$  the idiosyncratic error.

The set of explanatory variables used in the model (1) were primarily dictated by the data available for both countries. The data were gathered from the yearly publication of Croatian Insurance Bureau and Insurance Agency of B&H. All variables used in this analysis were computed in the manner described in the Table 2. Random-effects were examined by Breusch and Pagan Lagrangian multiplier (LM) test, that showed significant p value ( $p > 0,01$ ). Though no autocorrelation (Wooldridge test) was detected in the model, because of the possibility of heteroskedasticity cluster robust VCE estimator was applied. The results of the analysis are presented in the Table 3.

Regardless of the chosen measure of *concentration*, this variable was always positive and significant meaning that the SCP paradigm can be accepted for the Croatian insurance industry: A greater degree of concentration leads to a greater degree of companies' cooperation (collusion) and hence to achievement of higher profits. The opposite is truth for the B&H insurance industry. Variable *ownership* ( $O$ ) is not significant for B&H industry, and it is on the margin of acceptance for Croatian industry.

Variable	Description
ROE	Ratio of after tax profit and equity
Ownership (O)	% of domestically owned companies
Market share (MS)	GWP of insurer divided by total GWP of non-life insurance industry
CR4	Market shares of 4 leading non-life companies
HHI	Sum of the squared market shares of all non-life companies in the industry
Size (S)	Natural logarithm of total assets

Tab. 2. Variables used in analysis

Dep.	Croatia				B&H			
	Model 1		Model 2		Model 1		Model 2	
ROE	$\beta$	$p$	$\beta$	$p$	$\beta$	$p$	$\beta$	$p$
O	0,16	0,10	0,16	0,10	0,05	0,32	0,05	0,32
MS	-0,54	0,21	-0,57	0,19	1,13	0,07	1,09	0,07
CR4	-	-	2,13	0,00	-	-	-1,37	0,04
HHI	0,02	0,01	-	-	-0,05	0,03	-	-
S	9,04	0,05	9,31	0,05	-1,75	0,24	-1,6	0,26
Const.	-174	0,02	-294	0,00	41,89	0,01	59,6	0,02
Obs.	69		69		92		92	
R <sup>2</sup>	0,15		0,15		0,08		0,09	

Tab. 3. Parameter estimates of one-way random-effect model

Positive sign of *ownership* ( $O$ ) variable suggest positive influence of domestic ownership on company's profitability. This may be due to the fact that domestic companies have better knowledge of local markets and business environment. Economic literature suggests that higher profitability is inherent to large companies, meaning that parallel with the growth of company's size grows the company's profit. Positive sign and significant value of *size* ( $S$ ) variable confirm the former hypothesis for the Croatian insurance. However this variable is not significant for B&H. *Market share* ( $MS$ ) of the company is not as important in Croatian insurance as it is on the B&H market, for which its positive value can be explained either via higher efficiency or via market power of the larger company.

#### 5. CONCLUSION

Regarding the *first hypothesis* it can be state that Croatian non-life insurance market is highly concentrated and characterized by the presence of “tight oligopoly“ and dominant firm existence. However, “loose oligopoly“ is detected in the life insurance segment. On the other hand, competitive situation with low concentration is found in B&H non-life insurance market, but moderate to high level of concentration is detected in the life insurance segment. No dominant firm existence is found for the B&H market. A propos *second hypothesis*, the results showed that the SCP paradigm can be accepted for the Croatian insurance industry but not for the B&H insurance industry. Data (for the B&H) were available only for a short period and as such represent main limitation of the study. So, future research should cover a longer period and could be directed to the comparison of Croatia with the EU countries, which member Croatia will soon become. Also, in order to better understand the profit-concentration relationship, additional variables can be included in the model.

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