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Effects of Market Share and Diversification on Nonlife Insurers' Performance

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***Abstract*—**The aim of this paper is to investigate the influence of market share and diversification on the nonlife insurers' performance. The underlying relationships have been investigated in different industries and different disciplines (economics, management...), still, no consistency exists either in the magnitude or statistical significance of the relationship between market share (and diversification as well) on one side and companies' performance on the other side. Moreover, the direction of the relationship is also somewhat questionable. While some authors find this relationship to be positive, the others reveal its negative association. In order to test the influence of market share and diversification on companies' performance in Croatian nonlife insurance industry for the period from 1999 to 2009, we designed an empirical model in which we included the following independent variables: firms' profitability from previous years, market share, diversification and control variables (i.e. ownership, industrial concentration, GDP per capita, inflation). Using the two-step generalized method of moments (GMM) estimator we found evidence of a positive and statistically significant influence of both, market share and diversification, on insurers' profitability.

***Keywords*—**Diversification, market share, nonlife insurance

I. Introduction

UNTIL the nineties of the last century, there was a small number of insurance companies operating on the Croatian insurance market conducting mostly nonlife activities. However, changes in legislation (i.e. deregulation), the entrance of private investors and foreign capital, as well as sluggishness in the adjustment to the process of liberalization by the leading companies caused significant changes in the number of insurers, their market share, the significance of some insurance segments, and functioning of nonlife insurance industry in general. To be more precise, the switch to market economy influenced the number of insurance companies, especially foreign insurance companies, whose number has increased. For example, in 1994 there were 12 insurance companies operating on the market and this number more than doubled in the next fifteen years mostly because they were attracted by high profits and low barriers to entry. As a consequence, market shares of insurers changed; the way that the insurance industry is organized changed; the significance of some insurance segments that had not been developed or had been underdeveloped increased. In short, the insurance market in the last fifteen years has been very dynamic.

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In response to market liberalization and deregulation many competitors wanted to take advantage of new opportunities by diversification across multiple insurance business lines. However, the performance effects of this choice are still unclear. There are several reasons for that. Firstly, there is no consensus regarding diversification effects on insurance performance. While the *conglomeration hypothesis* emphasizes the benefits associated with diversification and predicts a positive diversification-performance relation, the *strategic focus hypothesis* emphasizes the benefits of specialization (and the costs of diversification) and predicts a negative diversification-performance relation. Secondly, almost all previous studies examined firms whose business activities span more than one industry, while studies that analyzed the effect of corporate diversification in solely one industry in general, and in the nonlife insurance industry in particular, are very scarce.

Therefore, the purpose of this paper is to investigate the influence of the market share and line-of-business diversification on the nonlife insurers' performance. In testing this relationship we designed an empirical model in which as independent variables we included insurers' profitability from previous years (ROA_{t-1}), diversification (HHD), market share, and control variables (i.e. ownership, industrial concentration, GDP per capita and inflation). The analysis was performed using the two-step generalized method of moments (GMM) estimator for the 1999-2009 period, and we found evidence of a positive and statistically significant influence of both, market share and diversification, on insurers' profitability.

The paper is organized in the following manner. The next section presents the latest trends in growth rates in the Croatian insurance industry as well as the basic indicators of the level of development of the Croatian insurance market. It is followed by the theoretical base and previous research on the linkage between market share and profitability. The fourth section describes reasons for diversification together with scientific grounds for diversification. Data and variable descriptions are then discussed, followed by the empirical methodology and the main findings of the analysis. The references follow after the concluding remarks.

II. Croatian Insurance Industry

A. Latest Trends in Growth Rates in Croatian Insurance Industry

In the 1999-2007 period, the Croatian insurance market was constantly growing (although some periods were marked by higher and some periods by lower growth rates). However, in 2008 substantially lower growth rates were reported, while in 2009 and 2010 negative growth rates characterize the Croatian insurance market. Similar trends are also observed in other

Eastern European countries which are, like Croatia, facing a decrease in GDP, GDP per capita, industrial production, interest rates on deposits, while foreign debt and number of the unemployed are increasing. Growth rates in the insurance segment keep declining also in 2011 although in a somewhat milder form. This is particularly true for life insurance segment which was registering double digit growth rates until 2008. The reason for that can be found in the reduced loan activity of banks since a large part of the life insurance policies in Croatia are linked to housing loans as collateral.

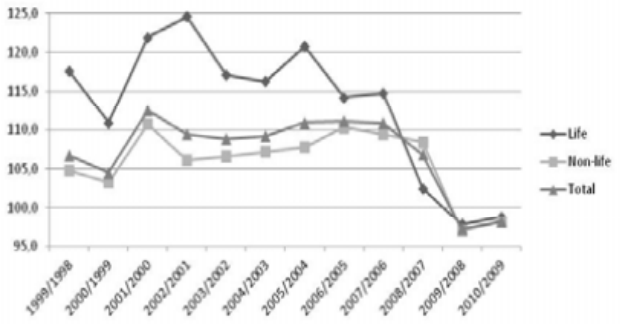

Fig. 1 Growth rates in the Croatian insurance market in the 1999-2010 period

Source: authors, according to the data of the Insurance Supervisory Authority/Croatian Financial Services Supervisory Agency

Despite these negative trends, the total assets of the insurance companies as well as the technical provisions, which guarantee the ability of the companies to meet their liabilities towards the insured, were constantly growing in the observed period. This indicates the stability of the insurance system in Croatia in spite of the crisis. However, without a significant overall economic growth the development of the Croatian insurance industry cannot be expected.

B. Changes in Insurance Density and Insurance Penetration Rate

The degree of economic development of a certain country is characterized, among other things, by the development of the insurance market since insurance not only facilitates economic transactions by providing risk transfer and indemnification, but it can also promote financial stability, mobilize savings, enable risks to be managed more efficiently, encourage loss mitigation and foster efficient capital allocation. Generally, the highest level of development of insurance markets is observed in the most developed countries such as USA, UK, Japan etc.

Insurance density rate and *insurance penetration rate* are commonly recognized indicators of insurance activity. Insurance density rate is expressed as total gross written premium per capita while insurance penetration rate is showing total gross written premiums as a percentage of gross domestic product (GDP). The values of these indicators for the Croatian insurance market (both life and nonlife segment) during the period between 1999 and 2009 are presented in Table I.

Gross written premium per capita in Croatia was increasing steadily over the period from 1999 to 2008. However, a slight decrease was recorded in 2009, when it totalled EUR 289. In the whole observed period gross written premium per capita more than doubled, but in spite of its growing tendency its values were still below the EU average. For example, total gross written premium per capita in EU27 in 2009 amounted to EUR 1,996[1].

TABLE I
INDICATORS OF INSURANCE MARKET DEVELOPMENT

Year	No. of (re)insurance companies[2]	Insurance density rate (in EUR)[3]	Insurance penetration rate in %[4]
1999	26	125.6	3.00
2000	27	135.4	2.97
2001	25	153.8	3.08
2002	24	169.6	3.11
2003	25	180.6	3.14
2004	26	199.0	3.20
2005	25	223.6	3.21
2006	22	251.5	3.26
2007	25	278.4	2.88
2008	29	301.9	2.83
2009	39	289.0	2.83

In 2009 the share of gross written premium in GDP in Croatia amounted to 2.83% while in EU27 it totalled 8.5%. This, together with the information on the level of gross written premium per capita, indicates that the Croatian insurance market is still significantly less developed than that of the EU member countries, suggesting the existence of a considerable potential for further growth and development of the insurance industry in Croatia.

III. MARKET SHARE AND PROFITABILITY

A. Theoretical Base

Market share is often used to describe the position and success of a company in the insurance (or any other) industry. From the generally accepted definition of the market share according to which it shows the relation between company performance (stated through revenue, employment, added value, etc.) and the total performance of the observed industry, the formula for its calculation (when taking into account the specificity of the insurance industry) in this paper is

$$MS_{i,t} = \frac{GWP_{i,t}}{GWP_t} \quad (1)$$

[1] CEA Total European insurance business - 2009 http://www.cea.eu/index.php/facts-figures/statistical-series/total-business

[2] Insurance Companies Supervisory Authority, Insurance Market in the Republic of Croatia, p. 6 and Croatian Financial Services Supervisory Agency, Annual report – 2009, Zagreb, p. 60, http://www.ripe.hanfa.hr/en/publiciranje/reports/

[3] Insurance Companies Supervisory Authority, Insurance Market in the Republic of Croatia, p. 13 and Croatian Financial Services Supervisory Agency, Annual report – 2009, Zagreb, p. 57, http://www.ripe.hanfa.hr/en/publiciranje/reports/

[4] Insurance Companies Supervisory Authority, Insurance Market in the Republic of Croatia, p. 13 and Croatian Financial Services Supervisory Agency, Annual report – 2009, Zagreb, p. 57, http://www.ripe.hanfa.hr/en/publiciranje/reports/

where $GWP_{i,t}$ is the gross written premium accounted for by insurer *i* at time *t*, while GWP_t is the total gross written premium in the nonlife insurance industry at time t.

The theoretical background of the relationship between profitability and market share can be explained on the case of homogeneous product oligopoly model outlined in [1]. According to this model, the following profit function of company *i* can be derived:

$$\frac{p(x)-c'(x_i)}{p(x)} = m_i \frac{1}{\mu} r_i, \quad \text{for all } i \qquad (2)$$

where *(p-c')/p* is the profit rate, $m_i = x_i/x$ is the market share, $\mu = (p/x)(dx/dp)$ is the price elasticity of demand, and $r_i = dx/dx_i$ is the reaction function of company *i*.

As it can be seen from (1) company's profit depends on the market share, the inverse of the price elasticity, and the response of company *i* to rivals' actions. If we assume identical behavior by all companies, it emerges that the relationship between market share and profitability depends on the company-specific marginal cost. A linear positive relationship can be expected in case of a constant decrease in marginal costs across companies. Alternatively, if the marginal cost function is the concave, then the Porter's U-shaped relationship will exist between profitability and market share. In the latter case, this relationship might reflect the situation in which some companies are „stuck in the middle", while smaller companies (focusing on a particular buyer group or segment of the product line) and the largest companies (exercising cost leadership) are the most profitable.

B. Previous Research

Although a large number of studies tried to identify the impact of various variables on insurers' profitability, only a few studies use market share as a possible determinant of firm profitability. Having that in mind, studies (together with their main empirical results) conducted in the insurance industry, as well as studies conducted in some other industries totalled EUR will be presented subsequently.

One of the *pioneer studies* was carried out by [2] on the sample of 231 US industrial firms for the period from 1960 to 1969. Results from [2] showed that the value of the market share coefficient is higher and statistically more significant than the concentration ratio coefficient, which suggests that the positive relationship between profit and concentration on the industry level is a reflection of the *positive relationship of market shares and profits on the company level.* Reference [3] analyzes the interdependence of concentration and profitability in the market for private passenger automobile insurance for the period from 1984 to 1992. Although positive and significant relationships between concentration (measured by the HHI) and profits are found for liability, physical damage, and the combined lines (i.e. SCP hypothesis were accepted), their results show *no significant relationship between profitability and the share of direct writers* in automobile insurance. Reference [4] examined the relationships among market structure and performance in property-liability insurers over the 1992–1998 period using data at the company and group levels. The authors tested three specific hypotheses: traditional SCP, RMP and ES. The results of their research suggest that *market share is negatively related to price and profit* rather than positively. The research conducted by [5] on a sample of 57 companies showed a *strong, positive relationship between market share and profitability,* meaning that as market share increases, a business is likely to have a higher profit margin. Reference [6] reports and discusses the implications of a market share-profitability analysis based on the research conducted on the sample of 137 four-digit SICs industries encompassing 4 733 companies of all sizes. His findings are in concord with what the proponents of „market-share" model predict – a *positive relationship between market share and profitability*. Applying methodology from [6] on *The Value Line Investment Survey* as a data source (instead of *Ward's Business Directory* used by [6]), [7] reported results distinctly different from [6]. They showed that *market share and profitability are negatively related*. Using panel data from 14 nonferrous-metal mining and referring markets during the period between 1994 and 1998, [8] found out *no systematic relationship between a firm's market share and its profitability,* i.e. within a market, smaller firms are just as profitable as larger ones. In order to investigate the determinants of profitability for manufacturing and service sector firms in Belgium, France, Italy and the UK, for the period 1993–2001, [9] used the two-step generalized method of moments (GMM) estimator, and presented evidence of a negative size-profitability relationship, but *positive relationship between market share and profitability.* For each one of 91 three-digit ANZSIC industries [10] investigates the determinants of profitability of Australian tax entities during the period from 1993/94 to 1996/97. After [10] constructed a balanced panel of 28 951 tax entities, the results of the analysis showed that the entity *market share has a U shaped relationship with profitability*. Reference [10] interpreted the findings in terms of a U-shaped average cost curve for individual firms and particular industries. These results confirm their prior research, but were contrary to the results of [11] which found *no significant relationship between profitability and market share* in Australian manufacturing.

Summing up the results of the above presented research on the relationship between company market share and profitability, it is possible to perceive their inconsistency. While some studies find that the effect of market share on company profitability is *positive and statistically significant,* others achieve contrary results – *negative and/or statistically insignificant* relationship. Moreover, some studies show that on the same set of data and with somewhat modified model formulation it is possible to reach different conclusions in terms of *statistical significance of the relationship* between market share and profitability. Nevertheless, the general conclusion[5] of studies in this field is *mostly positive and mainly significant influence of company market share on its profitability.*

[5] This is also confirmed in the study carried out by [16]. Reference [16] performed a meta-analysis on 276 market share-profitability findings from forty-eight studies. Reference [16] found that, on average, market share has a positive effect on business profitability.

IV. Diversification And Profitability

A. Reasons for Diversification

Benefits of corporate diversification are reflected in a positive relationship between diversification and performance. Such benefits are commonly associated with economies of scope, larger internal capital markets, risk reduction and greater market power ([12], [13]). Scope economies can come from spreading a firm's underutilized organizational resources to new areas. In other words, a firm may possess specific resources that it cannot fully utilize in its current product market (e.g. optimal output level is high relative to market size) so it may choose to apply such resources in other product markets as in [14]. Furthermore, diversification can create cost scope economies - fixed production costs are shared across several businesses within the firm as stated in [15].

Assets such as a distribution system, reputation and customer loyalty may also provide rationale to diversify since their transfer to another business can generate revenue economies of scope. Firms may also diversify in order to create and utilize a larger internal capital market (i.e. generate funds from one business and invest it into another, or balance cash flows to avoid short term borrowings). This argument assumes that (due to information asymmetries) internal capital markets are more efficient than external capital markets. Furthermore, diversifying into different lines of business can lead to a reduction in risk and income volatility as long as the profit streams from different line businesses are not perfectly correlated. This risk reduction should increase prices that (risk-sensitive) customers are willing to pay as stated in [22].

Finally, some authors argue that mutual involvement in more than one market may increase firm's incentives to cooperate rather than 'cheat' since close correspondence in market structures may raise the possibility of collusion between firms because it enables them to avoid the full rigors of competition by practicing 'mutual forbearance' as in [17]. As a result of collusion, companies reduce the intensity of competition and alter the market price in order to receive higher profits.

B. Previous Research

Because of the various results obtained from different studies exploring the relationship between profitability and diversification, some of the recent inter-industry ([18] - [20]) and intra-industry ([21] - [23]) studies will be subsequently presented together with their key results.

Reference [18] analyzed the relationships relating corporate diversification, concentration and performance for a group of 25 of the largest business groups (Korean chaebols) during the period of 1985–1995. Reference [18] used various model specifications, but regardless of model specification chaebol concentration (HHFS) coefficient was always negative and generally significant at the 10 percent level, while chaebols diversification (HHDV) was *insignificant* signaling that operating in a few versus many industries, did not appear to affect group profits. Reference [19] observed the impact of diversification on performance of firms operating in different institutional environments for the period from 1988 to 2003. For the sample of six East Asian countries [19] found that *diversification negatively impacted performance in more developed institutional environments while improving performance only in the least developed environments*. Reference [20] conducted a meta-analysis in order to test the relationship between diversification and firm performance. The results of the analysis revealed that the average correlation between diversification and firm performance was *positive and significant* with value of 0.11, and the correlation corrected for measurement reliability was 0.18. Reference [21] examined the effects of diversification on Canadian insurers' performance for the period from 1993 to 1998. After constructing 3 models in [21], Entropy coefficient (as a measure of diversification) is found to be *insignificant* in the two models. Reference [21] also finds some evidence that market structuration as well as mutual forbearance provides advantage (the latter under specified conditions). Reference [22] developed a model that analyzes performance as a function of line of business diversification and other variables. The model was tested on a sample of the U.S. property-liability insurers over the 1995-2004 period. The results suggest that undiversified insurers consistently outperform diversified insurers. Specifically, they found a *diversification penalty* of at least 1 percent of return on assets or 2 percent of return on equity. Reference [23] investigated the relationship shared by product diversification and firm financial performance using data drawn from U.S. property–liability insurance market over the 1994 through 2002 time period. Reference [23] revealed *nonlinear relationship* between product diversification and firm performance. Furthermore, when interaction variable of product and geographic diversification was used, a complex relationship between diversification and insurer performance results was found.

As it can be seen from the above presented research, some studies find that the effect of diversification on company profitability is *positive and statistically significant,* while others achieve contrary results – *negative and/or statistically insignificant* relationship. Therefore, the common conclusion of studies in this field continues to be unclear.

V. Data And Variable Description

The data for our analysis were obtained from various sources. The data for individual insurers were collected from different issues of *Insurance and Reinsurance Companies in Croatia* and *Croatian Insurance Market* published by Croatian Insurance Bureau; as well as from the *Annual Reports* published by the Croatian Financial Services Supervisory Agency. The macroeconomic data were obtained from the Statistical Yearbook of the Republic of Croatia 2009 and General Information on Croatia – Economic Indicators published on the web pages of the Croatian National Bank.[6] The variables used in this analysis are described in Table II.

In order to ensure the comparability of our results with previous research, we use *ROA (return on assets)* as a measure of profitability. It is worth noting that the Croatian Financial Services Supervisory Agency (HANFA) in its annual

[6] For 2009 macroeconomic data were collected from the web pages of the Croatian National Bank because the Statistical Yearbook was not published at the time of data collection.

publications also uses this indicator as a basic profitability measure.

TABLE II
LIST OF VARIABLES USED IN THE MODEL

Variable	Symbol	Description	Sign
return on assets	ROA	ratio of after tax income and total assets	
market share	MS	gross written premium of insurer divided by total gross written premium of industry	+
concentration ratio of 4 largest insurer	CR4	sum of market shares of four largest insurers in the industry	+
herfindahl index (diversification)	HHD	$HHD = \sum_{i=1}^{N} P_i^2$ where *Pi* is the percentage of an insurer's premiums written on product line *i*.	+/-
ownership	OWN	percentage of domestic ownership	+/-
gdp per capita	GDPpc	gross domestic product per capita	+

Market share (MS) can be expressed in absolute and/or relative terms as stated in [16]. Absolute market share represents the ratio of a business' sales to total sales in the served market while relative market share stands for the ratio of a business' market share to the combined market share of its three largest or *n* largest competitors. Absolute market share is preferred when specific industries are studied whereas relative market share is preferred when cross-sectional data is pooled across industries. Therefore, in this study absolute market share measure is used and it is calculated on the basis of gross written premium (GWP). Regardless of the chosen measure of market share, a positive influence on profitability is expected due to previously presented theoretical reasons.

TABLE III
AVERAGE VALUES OF MARKET SHARES

Year	Average of MS
1999	4.55
2000	4.17
2001	5.00
2002	5.26
2003	5.63
2004	5.00
2005	5.56
2006	6.25
2007	5.88
2008	5.56
2009	5.27

Table III provides an insight into the changes in average values of market shares during the period under analysis. From the year 2000 to 2003, market shares, on average, showed a growth tendency. This trend was interrupted in 2004 (when the value of 5.00 was reached) and it continued again until 2006, when a decreasing value of market shares was registered. The main reason for such fluctuation of average market share values can be found in mergers, acquisitions and takeovers.

Beside market share, *diversification (HHD)* is another independent variable that is of interest to our analysis. According to the Insurance Act (Official Gazzette 151/05, 87/08 and 82/09) insurance companies can perform business from 18 lines of insurance. However, due to the extremely small value of gross written premium realized in some lines (i.e. a small share in the portfolio), the Croatian Insurance Bureau aggregates these lines and publishes them in a form of six main lines that are presented by Fig 2.

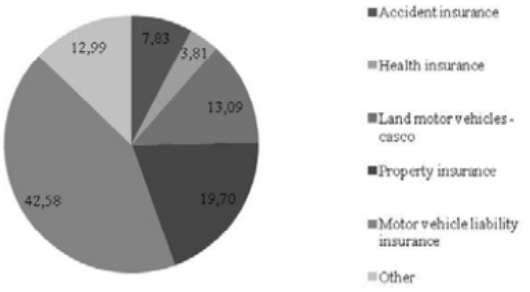

Fig. 2 Premium structure by nonlife insurance classes in 2010 (in %)
Source: Authors' calculation, according to the data from the Croatian Insurance Bureau, Insurance Market in the Republic of Croatia 2010, p. 28-29

As shown in Fig. 2, shares of individual insurance classes in nonlife insurance portfolio were unevenly distributed in 2010. This was due to the fact that two insurance classes accounted for about 63% of total nonlife insurance portfolio. The largest share (42.58%) in nonlife gross written premium was still accounted for by motor vehicle liability insurance. Although this insurance line declined by 1.1% in 2010, with gross written premium of 390.55 million EUR, the line increased its share by 0.3 percentage points. In property insurance, the premium declined by 1.6% i.e. from 183.64 million EUR to 180.73 million EUR. The share of this type of insurance also slightly increased from 19.6% to 19.7%. Gross written premium of land motor vehicle insurance (Casco) reached 13.09% of nonlife premium and it was followed by personal accident insurance (7.83%) and health insurance (3.81%).

We measured *diversification* with the Herfindahl Index, which is calculated in the following way:

$$HHD = \sum_{i=1}^{N} P_i^2 \quad (3)$$

where *Pi* is the percentage of an insurer's premiums written on product line *i*. The value of the index may range from 0 to 1. A higher index value indicates a greater degree of focus of the analyzed company. This means that if an insurance company operates in only one insurance line (i.e. exclusively focused company), coefficient of HHD will take the value equal to one. Likewise, a more diversified company (i.e. company that operates in several insurance lines) will have a lower value for the HHD measure.

In order to control for other potentially important factors that may explain profitability variation across insurers additional *control variables* are included in the model. Variable such as *industry concentration (CR4)* might be important since the SCP paradigm suggests that insurers operating in concentrated industry are likely to benefit from collusion, higher prices and therefore profits. Therefore, in order to test this assumption, we computed industry concentration as a sum of market shares of the four leading companies operating in the nonlife insurance industry. If the SCP paradigm holds for the Croatian insurance market, then positive association between industrial concentration and insures' profitability is expected. The next variable that may play an important role is the type of the company's *ownership*. The influence of this variable on insurers' performance can be either positive or negative. Given the entrance of foreign capital in this sector, diversity and quality of insurance products and services is improved. Since foreign companies usually have superior access to technical and financial resources a superior performance of these companies is expected over the domestically owned ones i.e. a positive sign is expected. Still, in view of the fact that the insurance companies with largest market shares in the Croatian nonlife insurance sector are domestically owned (specifically, three largest domestic companies control 63% of the nonlife insurance market), it is possible that domestic companies outperform foreign ones. In the former case, a negative sign of the variable is anticipated. This is especially true if foreign owned insurance companies are faced with difficulties that arise due to limited knowledge of local markets and different economic environment as stated in [24]. The next variable that is included in the model is *GDP per capita*. A large number of studies reported a positive influence of economic activity on insurance development. Even Swiss Re noted in a recent study that the demand for insurance increases in tandem with rising per-capita income. Since income level significantly affects the demand for insurance (and given that the personal disposable income has generally been measured as GDP per capita) a positive influence of this variable on insurers' profitability is anticipated. The last variable that is introduced into the model is the *annual rate of inflation (INF).* The influence of inflation on company's profitability is unclear. There are two possible scenarios. According to the first one, inflationary periods reduce the profitability of firms. In terms of insurance companies the most important reason for this lies in the fact that an insurance company has to pay higher amount of indemnity in periods of higher inflation than in periods of lower inflation. The difference between these two situations undermines the profitability of an insurance company. Contrary to this, and according to the second scenario, high inflation rate may lead to irrational pricing and consequently high levels of earned premium. In line with this scenario, a positive relationship is anticipated.

VI. Empirical Methodology and Results of the Analysis

Due to data availability, our analysis was performed for the 1999-2009 period. Since our data consist of a group of cross-sectional units (insurers) which are observed over time (11 years), *panel analysis* was applied to the data set. Given that the total number of analyzed insurers was changing over the years (as a result of the mergers, acquisitions and liquidations), we were dealing with unbalanced panel (number of times-series observation was different across insurers).

Furthermore, in order to insert dynamics into the profitability function of insurance companies in Croatia, we introduced a lagged dependent variable as an explanatory factor. However, with this dynamic specification, the estimators usually used in static panel data models (OLS, GLS…) produce biased estimates. One way to solve this problem is to estimate a dynamic panel data model based on the Generalized Method of Moment estimation (GMM) proposed by [25]. For consistent estimation, GMM estimators require that the error be serially uncorrelated as stated in [26]. First-order and second-order serial correlation in the first-differenced residuals is tested using m_1 and m_2 Arellano and Bond test statistics. The GMM system estimator is consistent if there is no second-order serial correlation in residuals (m_2 statistic). This means that the presence of a first-order autocorrelation in the differenced residuals does not imply that the estimates are inconsistent as stated in [27]. A second specification test is a Sargan test for overidentifying restrictions. This test checks for overall validity of instruments. If a null hypothesis is accepted, meaning that overidentifying restrictions (all chosen instruments) are valid, the dynamic panel model is adequately specified.

Descriptive statistics (mean, standard deviation, minimum and maximum values) for each variable included in our analysis are presented in Table IV, while the results of the empirical analysis are reported in Table V.

Table V shows the results of the dynamic panel analysis. As it can be seen from Table V, Sargan test shows no evidence of overidentifying restrictions. Even though the model indicates that first-order autocorrelation is present (significant p-value of m_1 test), this does not imply that the estimates are inconsistent. Inconsistency would be implied if second-order autocorrelation was present, however, this is not the case in our model since null hypothesis of no second-order autocorrelation is accepted (insignificant p-value of m_2 test).

TABLE IV
Descriptive Statistics

Variable	Obs.	Mean	St. Dev.	Min.	Max.
ROA	210	-1,75	9,73	-78,4	9,65
MS	210	5,22	11,11	0,00	61,42
CR4	210	78,64	2,60	72,67	81,30
HHD	210	0,44	0,25	0,19	1
OWN	208	49,80	45,12	0,00	100,00
GDP pc	210	7450,2	1984,1	4751,0	10678,0
INF	210	3,31	1,26	1,70	6,10

Market share (MS) variable has a positive and statistically significant influence on profitability. This relationship may be due to any or all of the following reasons: companies with a large market share may be more efficient on account of scale economies; may have more capital and be more innovative; may use their reputation as an advantage; or may have an

advantage in negotiations with suppliers and channel members.

TABLE V
PARAMETER ESTIMATES OF DYNAMIC PANEL MODEL-ROA

Variables	Coef.	P
ROA_{t-1}	0,777	0,000
MS	0,498	0,090
CR4	-0,110	0,293
HHD	-5,521	0,030
OWN	0,015	0,248
GDP pc	0,001	0,001
INF	-1,053	0,000
CONSTANT	-1,334	0,000
No. of observations	146	
Sargan test (p-value)	0,9998	
Arellano -Bond *(m_1)* (p-value)	0,0549	
Arellano -Bond *(m_2)* (p-value)	0,1976	

Source: Authors` calculations

The influence of *diversification* (HHD) variable on profitability is also positive and statistically significant. This positive relationship supports the *strategic focus hypothesis:* undiversified insurers are able to achieve greater profitability than diversified insurers. Our estimates of the "diversification penalty" are similar to the results obtained by [22] and [19].

The significant value of the lagged profitability variable (ROA_{t-1}) confirms the dynamic character of the model specification. *Industrial concentration* (CR4) coefficient is negative and statistically insignificant, thus, for the Croatian insurance industry the basic SCP hypothesis cannot be accepted. Although a positive sign of the OWN variable would indicate that the domestically owned insurers are more profitable than their foreign rivals, this variable is not significant. Positive influence of GDP per capita is in accordance with our expectations. Higher values of GDP per capita will positively influence the demand for insurance. Insurers will benefit from this growth in a form of higher profitability level. Finally, inflation has a negative and significant influence on insurers' performance. Such a finding suggests that the "scenario" of irrational pricing and consequently high levels of earned premium in a period of inflation cannot be applied to the Croatian insurance market.

VII. CONCLUSION

To the best of our knowledge (when speaking in general and for the Croatian insurance industry in particular), this study is among the few that explore the relationship between the line-of-business diversification and market share on one side, and performance of nonlife insurers on the other side.

In order to test the influence of diversification and market share on insurers' profitability, we employed ROA as a measure of profitability, Herfindahl index (HHD) as a diversification measure and market share in its absolute term. In order to control for some other variables that may potentially influence insurers' profitability, we included *ownership, industrial concentration, GDP per capita and inflation* into the model. The results of the conducted dynamic panel analysis suggested that both measures that were in the focus of our analysis, i.e. market share and diversification, had a positive and statistically significant influence on insurers' profitability. This means that insures with higher market shares are likely to have better performance, and in order to ensure competitive advantage insurers should consider market share as a mode to raise profitability. Positive influence of diversification on insurer's performance supports the *strategic focus hypothesis:* undiversified insurers are able to achieve greater profitability than diversified insurers. The underwriting business and superior knowledge of one specific customer segment form part of the insurers' success.

We also obtained some interesting results regarding the control variables used in our analysis. Positive and statistically significant coefficient *of GDP per capita* suggests that growth of GDP per capita, via increased demand, will positively influence profitability. Negative influence of *inflation* suggests that the "scenario" of irrational pricing and consequently high levels of earned premium in a period of inflation cannot be applied to the Croatian insurance market. Finally, industrial concentration and ownership variable have no significant influence on insurers' profitability.

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