

Market concentration in Romanian insurance industry

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Abstract. This paper analyses the market concentration of life insurance and non-life insurance industry in Romania from 2015 to 2019. For measuring the degree of market concentration, the Concentration Ratio and the Herfindahl-Hirschman index were used. The results show that the life insurance market is more concentrated than the non-life insurance market. The concentration ratio values for the non-life market indicate that the degree of market concentration increased from moderate market in 2015 to tight oligopoly share in 2019, while for the life insurance sector is tight oligopoly for entire period. An ascending trend in market concentration can be observed both in segments of the non-life insurance and overall insurance sector. In sector of life insurance, it can be noticed that the concentration ratios and the Herfindahl-Hirschman index are almost constant with small fluctuations excepting the increase recorded in 2016.

1. Introduction

Competition is a very important phenomenon both for economic and social life motivating business and human existence. The issue of competition is of interest both for producers and consumers. Every company wants to make profit as much as possible, but this also depends on the actions of its competitors. Therefore, companies are forced to continuously improve their production, eliminating waste and lowering costs in order to sell at a lower price than other competing companies. Competition in the market leads to increased quality of goods, diversity, low prices and so on, allowing a better choice for customers.

Competition and market concentration are subjects of interest for many researchers and economists.

In [1] the authors analyzed the degree of market concentration for the major top ten containers ports in Southeast Asia. For this purpose, they used Hirschman-Herfindahl Index (HHI) and Gini coefficient, to evaluate the market concentration from 2007 to 2017. The HHI index shows that the container port system in Southeast Asia is ‘moderately concentrated’ in 2017 and ‘highly concentrated’ in 2007 suggesting a de-concentration tendency.

The HHI index was used in [2] to calculate labor market concentration in US. The obtained results for HHI indicate a high concentration in 60% of US labor market.

In [3] is analysed the market concentration in German airline industry, causes and consequences. The HHI index was calculated for origin and destination.

Odeck and Høyem [4] has studied, the impact of competitive tendering (CT) on the operational costs of car ferry services in Norway. HHI Index was used to measure the degree of market concentration before and after the implementation of CT. The conclusion of the authors is that in the long run CT might lead to monopolistic/ duopolistic tendencies instead of free competition.

Sukpaiboonwat et al [5] has studied the market structure of life insurance and non-life insurance industry in Thailand using the Concentration Ratio and the HHI Index to measure the degree of market concentration. The authors concluded that the life insurance industry in Thailand is tight oligopoly and moderately concentrated while the non-life insurance industry is monopolistic competition and unconcentrated meaning that the life insurance industry is more concentrated than non-life insurance industry.

Mărăciue and Gangone [6] have evaluated the Romanian insurance market from 2009 to 2012 period. For this purpose, the authors have identified a strategic group made up of the top 10 insurance companies holding an aggregate market share of approximately 80%. They used the concentration ratio and of the HHI index to assess the overall competitiveness.

Arych M, Darcy [7], investigated the competitiveness of Australian life insurance market during 1997-2017 period. They have calculated the main indicators of competitiveness such as growth rates of the life insurers number, concentration ratios; HHI index, or density of insurance. The results of the HHI index calculations show a high competition in the Australian life insurance industry respectively a low concentration in this market.

Insurances have an important role in the economic development of the countries representing an essential element of the market economy mechanism. Insurances are a need both for companies and individuals if we think that goods or values accumulated with much effort during a whole life can disappear in an instant as a result of natural disasters such as fire, an earthquake, hurricanes, explosions, accidents, floods or some other reasons. At the same time, health, physical integrity, work capacity can also be affected, leading to the impossibility of carrying out an activity, so the lack of income. The resulting financial loss cannot be offset other than by insurance.

This paper analyzes the market concentration of life insurance and non-life insurance industry in Romania from 2015 to 2019.

2. Methodology

The market can be defined as the place where buyers(demand)and sellers(supply) meet to facilitate the transaction or exchange of goods, services, or information. The definitory elements of the market are: supply, demand, competition and price. In the modern economy the existence of perfect competition markets is a dream or an ideal that is not found in reality. Thus, in the main part of economic activity we face to various forms of imperfect competition market such as: monopoly, oligopoly and monopolistic competition. Table 1 highlights the characteristics of each of the four types of market.

Table 1. Characteristics of market structure [8].

Market structure	Perfect competition	Monopolistic competition	Oligopoly	Monopoly
Number of firms	Multitudinous of small firms	Many of small companies	Several big firms	One company
Kind of Competition	Price competition	Non-price competition	Primarily non-price	None
Product characteristic	Homogeneous	Differentiated	Standard or Differentiated	Single without substitution
Barriers of entrance	None	None	Companies have issues to market entrance	Significant boundaries
Price control	None	Small	Small	Considerable
Examples	Food market	Cosmetics market, Restaurants, Clothes market	Car manufacturers, cigarettes	Energy companies, Water

The European Union policy in the competition field has the purpose to ensure a loyal competition and in equal terms between companies, on internal European market. The European Commission together with the national competition authorities in the member states guarantees that the competition rules are complied.

The Market share (W_i) is computed dividing the total sales volume of the company (S_i , $i=1, 2, \dots, n$) by the total sales of the industry (S_T) over a reporting period and indicates the degree of monopoly[5].

$$W_i = \frac{S_i}{S_T} \quad (1)$$

where n - is the number of firms in a given market.

According to [9] market influence is considered to begin to be felt at 15%, be significant at 25-30%, and strong at 40-50%.

Concentration shows the degree to which market share is concentrated in few or many hands or the oligopoly degree in an industry. The measurement of the concentration is important in practice but its measuring as a single index has limitations because the firm sizes distribution is rarely uniform. Often in industry there are many small firms, and their market share combined with a dominant firm is significant. Nevertheless, a unitary index is useful for comparison and analysis.

In this paper the Concentration Ratio and the HHI index are used to measure the market concentration in the Romanian life insurance and non-life insurance.

The Concentration Ratio (CR_i) is determined by summing the market share of the leading firms (habitually four). For example, CR_1 represent the concentration ratio for the largest firm, while CR_4 and CR_8 count the market share percentage owned by the four, respectively eight largest firms in an industry. In this way this ratio gives a lot of information about the top firms but say nothing about the others.

Having the output for each industry firms (S_i , $i=1, 2, \dots, n$), CR_i are computed as follows[5]:

$$CR_i = \frac{\sum_{i=1}^n S_i}{S_T} = \sum_{i=1}^n W_i \quad (2)$$

The HHI index is widely used to measure the market concentration. The HHI index is computed by summing the squared market shares (expressed as a percentage) of all firms operating in a particular market[5].

$$HHI = \sum_{i=1}^n W_i^2 \quad (3)$$

An interpretation of HHI index is as follows: the high values of the HHI index means a monopolised industry (monopolistic/oligopolistic market), while low values indicate a highly competitive market (perfect competition). An increase of HHI index show a decrease in competition.

The classification of the industries using the CR_1 , CR_4 and HHI index can be shown in table 2.

Table 2. The industries classification using the CR_1 , CR_4 , and HHI [10]

CR_4	HHI	Interpretation of the Market Structure
$CR_4 = 0$	$HHI = 0$	Perfect Competition
$CR_4 \in (0, 40)$	$HHI < 1000$	Monopolistic Competition, Unconcentrated
$CR_4 \in [40, 60)$	$HHI \in [1000, 1800)$	Monopolistic Competition, Moderately concentrated
$CR_4 \in [60, 90)$	$HHI \in [1800, 2500)$	Tight Oligopoly, Concentrated
$CR_4 \geq 90$	$HHI \in [2500, 9999)$	Effective Monopoly (near monopoly), Highly concentrated
$CR_1 = 100$	$HHI = 10000$	Monopoly

The changes in the HHI index are used by European Commission when assessing mergers and acquisition. Therefore, in case of major competitors the proposed economic concentrations may be prohibited if the merger would create or consolidate a dominant player witch significantly reduce or limit competition in the European Union.

3. Results and Discussion

This paper investigates the market concentration of life insurance and non-life insurance industry in Romania from 2015 to 2019. The Concentration Ratio and the HHI index were used to measures the market concentration. For this purpose, the volume of the gross premiums written for each insurance companies from 2015 to 2019 were collected from financial situations, annual reports of insurance companies and Financial Supervision Authority [11]. Based on gross premiums written the share market for each company were calculated. Knowing the market share values, the Concentration Ratio and the HHI index were computed in order to measures the market concentration. Table 3 presents the market concentration for the overall (non-life and life) insurance sector.

Table 3. Market concentration regarding overall insurance sector

Year	2015	2016	2017	2018	2019
CR1	12.05	13.09	12.94	14.58	17.42
	low market share	low market share	low market share	low market share	low market share
CR4	40.87	46	47.1	48.63	52.75
	moderate market share	moderate market share	moderate market share	moderate market share	moderate market share
HHI	719	852	884	922	976
	unconcentrated industry	unconcentrated industry	unconcentrated industry	unconcentrated industry	unconcentrated industry

Source: Computed by authors using data from Financial Supervision Authority and Annual reports of insurance companies

The concentration ratios CR1, CR4, CR8 based on market share of each insurance company, for the overall insurance segment, from 2015 to 2019 can be shown in figure 1 while the HHI index is highlighted in figure 2.

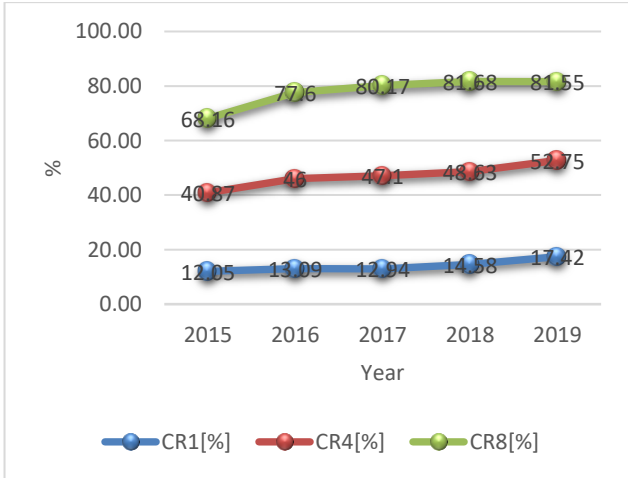


Figure 1. Concentration ratio of insurance companies regarding overall insurance sector

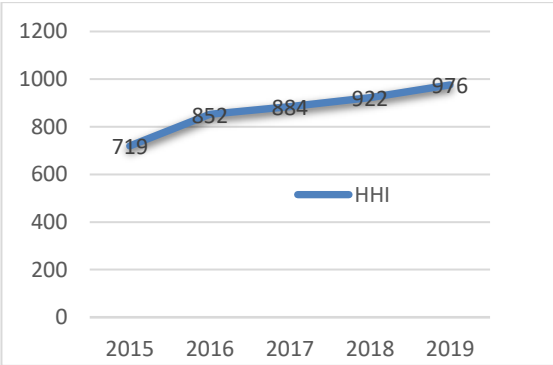


Figure 2. Evolution of the HHI Index in the overall insurance sector

Source: Made by the authors

It can be notice that the concentration ratios and the HHI follow an ascending trend meaning a decrease in competition. This descending trend in competition can be due to the decrease of insurance companies number present on the market from 35 in 2015 to 28 in 2019.

Table 4 presents the market concentration for the non-life insurance sector.

Table 4. Market concentration regarding non-life insurance

Year	2015	2016	2017	2018	2019
CR1	15.42	16.69	17.01	19.04	22.87
	low market share	low market share	low market share	low market share	low market share
CR4	52.31	58.67	61.91	63.5	69.27
	moderate market share	moderate market share	Tight oligopoly	Tight oligopoly	Tight oligopoly
HHI	1022	1211	1324	1374	1477
	Moderate concentrated	Moderate concentrated	Moderate concentrated	Moderate concentrated	Moderate concentrated

Source: Computed by authors using data from Financial Supervision Authority and Annual reports of insurance companies

Dynamics of change for concentration ratios CR1, CR4, CR8 in the non-life insurance segment, from 2015 to 2019 can be shown in figure 3 while the HHI index is highlighted in figure 4. The ascending trend for the concentration ratios and the HHI index observed in the overall insurance segment are maintained in the non-life insurance but the values of this indicators are higher compared to the overall insurance segment. This fact indicates a lower competition in non-life insurance compared to overall insurance segment.

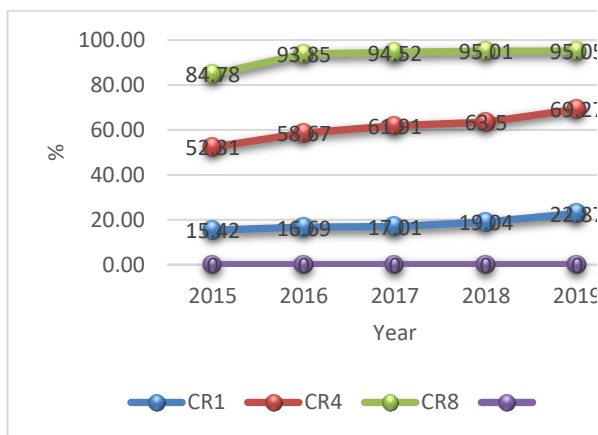


Figure 3. Concentration ratio of insurance companies regarding non-life insurance

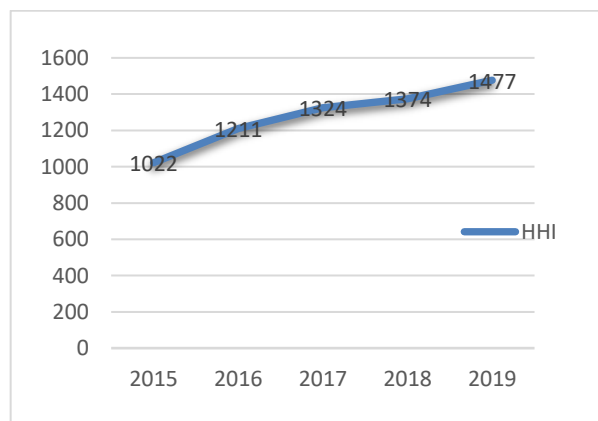


Figure 4. Evolution of the HHI Index in the non-life insurance

Source: Made by the authors

Table 5 presents the market concentration for the life insurance sector.

The concentration ratios CR1, CR4, CR8 for the life insurance segment, from 2015 to 2019 can be shown in figure 5 while the HHI index is highlighted in figure 6. It can be notice that the concentration ratios and the HHI are almost constant with small fluctuations excepting the increase recorded in 2016. The values of this indicators are higher compared to the overall insurance segment and non-life insurance meaning that the competition is lower in life insurance compared to overall insurance segment and non-life insurance. This can be explained by the fact that Romania is not a country with a tradition in the field of life insurance as they are designed and practiced in developed countries. However, the

Romanian life insurance market is a competitive market judging against the values obtained and highlighted in tables 3,4 and 5, although it is not in the maturity phase from this point of view.

Table 5. Market concentration regarding life insurance

Year	2015	2016	2017	2018	2019
CR1	32.85	32.67	31.76	32.34	31.52
	Moderate market share	Moderate market share	Moderate market share	Moderate market share	Moderate market share
CR4	77.30	82.49	79.83	81.95	83.37
	Tight oligopoly	Tight oligopoly	Tight oligopoly	Tight oligopoly	Tight oligopoly
HHI	1999	2310	2054	2117	2094
	Moderate market concentration	Moderate market concentration	Moderate market concentration	Moderate market concentration	Moderate market concentration

Source: Computed by authors using data from Financial Supervision Authority and Annual reports of insurance companies

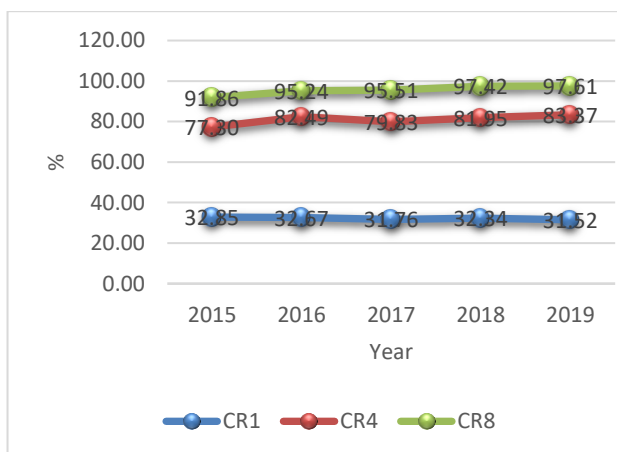


Figure 5. Concentration ratio of insurance companies regarding life insurance

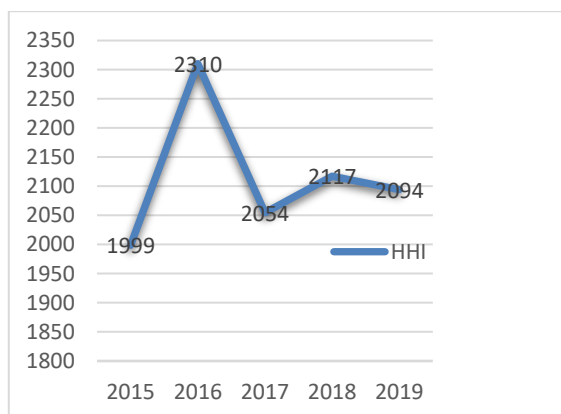


Figure 6. Evolution of the HHI Index in the life insurance

Source: Made by the authors

4. Conclusions

The degree of market concentration in Romanian insurance market has been analysed in this paper. Firstly, the assessing of the overall competitiveness of the Romanian insurance market has been conducted followed by non-life insurance and life insurance based on the HHI index and market concentration ratio values.

The concentration ratio values for the overall competitiveness of the Romanian insurance market from 2015 to 2019 show that the degree of market concentration was moderate. HHI index has increased from 719 to 976 in 2019, indicating an unconcentrated insurance market.

The concentration ratio values for the non-life Romanian insurance market indicate that the degree of market concentration increased from moderate market in 2015 to tight oligopoly share in 2019. The HHI index based on market share of non-life insurance company has increased from 1022 to 1477. The HHI value of 1477 in 2019 indicate a moderate concentrated non-life insurance market.

The concentration ratio values for the life Romanian insurance market indicate that the degree of market concentration is tight oligopoly for entire period. The HHI index based on market share of life insurance companies has increased from 1999 in 2015 to 2310 in 2016 followed by a decrease in 2017

up to 2054 and increasing to 2117 in 2018 respectively 2094 in 2019, indicating a moderate market concentration.

The obtained results show that the life insurance is more concentrated than the non-life insurance industry. The research can be improved by including in the analysis all sub-categorized products of the insurances market, more methodology such as comprehensive concentration index, Gini coefficient, H-statistic and Fuzzy Logic.

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