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ANALYSIS OF INSURANCE INDUSTRY CARMEL INDICATORS IN REPUBLIC OF SERBIA

REVIEW ARTICLE

Summary

Although the insurance industry in the Republic of Serbia has recorded a growth trend in the last few years (when it comes to standard parameters like total premium, technical and guarantee provisions, balance amount, capital), considerable theoretical and practical attention has been devoted to the problems of insurance companies' financial stability analysis based on quantitative data. In the light of its strategic commitment to become an integral part of the European Union, Serbia already now has to improve the performance of the insurance sector so as to be competitive in this branch in the coming years. With this in mind, in this paper, we analyse the 2017 financial stability of insurance companies operations in the Republic of Serbia using CARMEL financial indicators developed based on the methodology of the International Monetary Fund and following the recommendation of the National Bank of Serbia. CARMEL indicators are here recognized as an effective tool for insurance risks management, revealing the set of financial indicators with a negative trend in order to amend them with corrective measures in the coming period.

Key words: *CARMEL indicators, insurance sector, capital adequacy, earnings, profitability, liquidity.*

Introduction

Judging by the amount of earned premium and the placement of funds on the financial market, insurance companies in Serbia are gaining on importance. The insurance sector is becoming an important segment of the overall financial system

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of the country. In order to make its role even more significant in the years ahead, one has to emphasize the quantitative monitoring and analysis of the insurance industry business financial stability in the Republic of Serbia. CARMEL analysis represents one of the best tools for accurate estimation of the overall financial indicators of the sector. Relying on the original empirical data collected by the National Bank of Serbia and the Business Registers Agency, as well as the internal data of each insurance company, CARMEL model picturesquely presents comparative analysis of capital adequacy, asset quality, reinsurance and actuarial issues, management soundness, earnings and profitability and/or liquidity of the Insurer in the observed period. Collected data are fully comparable, which affects the quality and validity of the results obtained using ratio analysis, comparative analysis and descriptive statistics. The main research subject of this paper is the analysis of all the important factors that affect the financial stability of an insurance company operation. The aim and purpose of the mentioned research is to treat the relevant problems in as much detail as possible and to give recommendations for corrective measures in the future. The standard hypothesis of the research is defined by the fact that knowledge of the primary factors affecting the business stability of any one Insurer such as capital adequacy, asset quality, reinsurance and actuarial issues, management soundness, earnings and profitability and/or liquidity, is a key precondition to improve the most important performance of an Insurer by corrective measures.

1. CARMEL Indicators Functioning to Assist Financial Stability of Insurers' Business

Insurance companies in the Republic of Serbia perform their core business and manage all the risks they come across in their operations in accordance with the Insurance Law. One of the basic characteristics of the business is compliance with the principles of liquidity and solvency in order to timely settle all obligations of the Insurer to the insured persons, government, suppliers, creditors, employees. For companies to be able to settle all their daily obligations (required liquidity principle) and/or long-term liabilities (required solvency principle), they must first provide financial liquidity and business stability. CARMEL analysis is one of the best instruments for continuous monitoring of the most important parameters of every company's activities and ensuring its long-term financial stability. CARMEL analysis of financial indicators allows for quantitative monitoring and analysis of the financial stability of insurance companies. The framework for the first practical steps towards risk management in insurance companies is provide under the Decision of the National Bank of Serbia on the System of Internal Control and Risk Management. The CARMEL indicator set comprises six groups:

Capital adequacy
Asset quality
Reinsurance and actuarial issues
Management soundness
Earnings and profitability
Liquidity[2]

In order to examine the overall financial stability and operations of the insurance sector in the Republic of Serbia, 2017 dominant insurers and other companies CARMEL indicators, as well as the average of the sector are presented in the tables below. The descriptive analysis will cover the most important financial indicator subgroups.

2. CARMEL Analysis at Example of 2017 Republic of Serbia Insurance Sector

Up to and inclusive of December 31, 2017, 21 insurance companies overall held an operating licence in the Republic of Serbia. Seventeen companies practised exclusively insurance business and four practised the reinsurance business. Although the number of employees was reduced to 10,814 in the observed period, on the other hand, there was an increase in the balance sheet, capital, premiums and allocations to the technical and guarantee provisions of the insurance sector. The total premium amounted to 93 billion dinars (EUR 786 million). Observed by the ownership structure, fifteen companies were under majority foreign ownership (71.4%), while six companies were under majority ownership of domestic entities (28.6%). In the structure of the premium, the share of non-life insurance amounted to 75.6%, while the share of life insurance was 24.4%, which indicates the insufficient development of insurance activity in Serbia.[3] The overall premium share of "Dunav Insurance", "Generali Insurance", DDOR, "Uniqa" and "Wiener Insurance" as dominant insurers in the domestic insurance sector in at the end of 2017 amounted to 77.4%.

2.1. Capital Adequacy

Adequacy or capital adequacy is one of the key indicators of the financial stability of the insurance company. The primary function of capital is to absorb all the risks that may arise in the business of the insurer. The insurance risk, market risk, investment in related legal entities risk, liquidity risk, solvency risk, operational, legal and other significant risks are monitored. As part of this indicator, we have four

2 *www.nbs.rs*

3 Sokić, M, *Solvency risk management in the insurance company,* doctoral dissertation, 2014, str. 188.

subgroups of indicators that align the capital adequacy of each insurer in 2017 in the next tabular view.

Table no. 1 – Capital adequacy of the 2017 Insurance Sector

CAPITAL ADEQUACY		DUNAV	GENERALI	DDOR	UNIQA (Life/ Non-life)	WIENER	SECTOR AVERAGE	OTHER COMPANIES
C1:	Premium in self-retention / Capital Total	210.78%	144.00%	196.47%	174.70%	150.38%	162.56%	118.74%
C2:	Total capital minus loss/ Assets total	27.26%	22.56%	29.14%	15.79%	15.14%	22.95%	25.22%
C3:	Total capital minus loss / Technical provisions	44.13%	31.07%	44.90%	22.31%	18.86%	32.62%	35.69%
C4:	Guarantee reserves/Sol-vency margin	200.75%	151.10%	239.09%	261.39%	185.44%	218.94%	335.33%

Source: Author's calculation
Source: National Bank of Serbia and Agency for Business Registers of the Republic of Serbia, Belgrade

Indicator C1 (ratio between premium in self-retention and total capital) indicates that the Insurance Sector earns 162.56 dinars of retained premium per each 100 dinars of capital employed. The C3 indicator (ratio between capital and technical provisions) indicates that the sector disposes of 32.62 dinars of equity per each 100 dinars of calculated technical provisions. The companies where C1 and C3 indicators exceed the average of the industry have satisfactory adequacy. The C4 indicator (the ratio between the guarantee reserve and the required solvency margin) shows that the guarantee reserve of the sector is 2.18 times higher than the solvency margin. This indicator is very important due to the fact that the Article 123 of the Insurance Law stipulates that the guarantee reserve must exceed the calculated solvency margin.

2.2. Asset Quality

Asset quality measures the exposure of the insurance company to market, investment and credit risk. The greater the diversification of investments (placements in different forms of assets) and the investment dispersion (placements in assets owned by various individuals), the lower exposure of insurance companies to such risks and the greater their financial stability.[4]

Table 2 – 2017 insurance section asset quality

ASSET QUALITY		DUNAV	GENERALI	DDOR	UNIQA (Life/ Non-life)	WIENER	SECTOR AVERAGE	OTHER COMPANIES
A2:	Outstanding premium / Gross premium	8.90%	5.98%	12.87%	13.70%	12.98%	8.86%	4.21%
A3:	Investments into capital / Asset total	4.87%	1.93%	0.33%	0.12%	0.00%	1.39%	0.00%
A5:	Average invested funds=(Investment property+long-term investments+ short-term investments) / Asset total	59.78%	85.34%	69.86%	81.41%	78.60%	77.14%	85.19%
A6:	Invested funds total = (Investment property+long-term investments+ short-term investments +cash and cash equivalents + fixed assets) / Asset total	65.69%	91.06%	69.72%	78.55%	85.28%	81.80%	89.93%

Source: Autor's calculation
Source: *National Bank of Serbia and Agency for Business Registers of the Republic of Serbia, Belgrade*

Asset quality ratio trend can be considered satisfactory at the level of the entire sector. The high value of A2 indicator can show the insurance company's inclination to achieve short-term goals at all costs (sales and profit increase). In comparison with the industry average, we see that the Dunav insurance company has a lower level of invested funds. The reason is the low level of life insurance premium share and, consequentially, the mathematical reserve, which further implies lower investment activity (A5 and A6 indicators). The reverse situation is in the companies that have a high share of life insurance premiums such as "Generali Insurance" and "Wiener".

[4] National Bank of Serbia (2017), Sector for Supervision of Insurance Activities, *Business of Insurance Companies.*

2.3. Reinsurance and Actuarial Issues

Reinsurance plays a key role in the process of vertical risks dispersion as absorber of large claims that can compromise the business of insurance companies. Retention of excessive risks in the insurer's portfolio may result in the inability to settle liabilities under signed insurance contracts. On the other hand, excessive reliance on a reinsurer significantly increases costs and can compromise the Insurer. It is therefore important to keep a balanced co-insurance and reinsurance policy.

Table 3 – 2017 insurance sector reinsurance and actuarial issues

REINSURANCE AND ACTUARIAL ISSUES		DUNAV	GENERALI	DDOR	UNIQA (Life/ Non-life)	WIENER	SECTOR AVERAGE	OTHER COMPANIES
R1:	Earned premium in self-retention/Earned premium total	90.14%	90.35%	92.76%	79.97%	67.37%	87.70%	93.85%
R2:	Technical provisions in self-retention/ Average settled claims in self-retention (3 years)	260.06%	622.76%	208.96%	549.73%	865.42%	471.04%	721.73%
R3:	Technical provisions in self-retention /Average premium in self-retention (3 years)	111.14%	223.17%	115.93%	223.63%	385.38%	194.82%	254.33%

Source: Author's calculation
Source: National Bank of Serbia and Agency for Business Registers of the Republic of Serbia, Belgrade

The R1 indicator tells which part of the premium is carried forward to the reinsurance and co-insurance and which is kept in self-retention. The lower values speak of a greater reliance on reinsurance and co-insurance. The industry average amounts to 87.7%, which speaks of the traditionally cautious and conservative policy of the entire insurance market and a moderate reliance on reinsurance and co-insurance policies. The R2 indicator tells that 471 dinars is allocated for technical provisions in self-retention per each 100 dinars of average settled claims in self-retention on the insurance industry level. The R2 and R3 indicators are higher with the companies that dominantly transact life insurance.

2.4. Management Soundness

The management soundness and the quality and number of employees are essential for the stability, efficiency and successful performance of each insurance company. Employment exceeding the optimum number can indicate poor organization and inadequate use of resources, but also a strategic determination of the management to provide the best service to clients. Employment below the optimum number can point to the rational use of resources, but also to inadequate operational risk management. When interpreting these indicators, it should be noted that insurers may use different sales distribution channels.

Table 4 – 2017 insurance sector management soundness

	MANAGEMENT SOUNDNESS	DUNAV	GENERALI	DDOR	UNIQA (Life/ Non-life)	WIENER	SECTOR AVERAGE	OTHER COMPANIES
M1:	Gross premium / Employment number	8,554	8,506	8,092	9,230	8,776	8,605	9,000
M2:	Asset total / Employment number	13,431	23,742	13,072	26,485	27,758	20,243	28,192

Source: Author's calculation
Source: National Bank of Serbia and Agency for Business Registers of the Republic of Serbia, Belgrade

The M1 indicator, which is determined by a ratio between the gross premium and the number of employees, indicates that at the level of the premium sector per employee is 8,674 dinars. The M2 indicator, which measures the ratio of total assets and the number of employees, is significantly higher in insurance companies that dominantly deal in life insurance.

2.5. Earnings and Profitability

A profitable business is essential for insurance companies because a good net result is the guarantor of retaining trust of the Insured. In addition, profit can be a long-term source of capital.[5] On the other hand, the low profitability of Insurer may indicate a potential problem with the liquidity and solvency of insurance companies.

[5] Knežević, S, Marković, M. and Beown, A. (2015), "Measuring the Efficiency of Serbian Insurance Companies", *Acta Oeconomica*, 65(1), 91–1015.

Table 5 – 2017 insurance sector earnings and profitability

EARNINGS AND PROFITABILITY		DUNAV	GENERALI	DDOR	UNIQA (Life/ Non-life)	WIENER	SECTOR AVERAGE	OTHER COMPANIES
E1:	CLAIMS RATIO: Claims ratio in self-retention / Earned premium in self-retention	50.52%	45.14%	59.75%	41.37%	63.37%	49.03%	41.54%
E2:	COST RATIO: Operating costs / Earned premium in self-retention	36.81%	31.48%	36.75%	40.59%	34.02%	36.17%	36.94%
E3:	INVESTMENT RATIO: Investment profit / Earned premium in self-retention	4.59%	10.16%	3.33%	8.64%	3.24%	6.54%	8.46%
E4 = [E 1 + E2]	Combined ratio – indicator 1 (basic)	87.32%	76.62%	96.50%	81.96%	97.39%	85.20%	78.48%
E5 = [E 4 - E3]	Combined ratio – indicator 2.	82.73%	66.46%	93.16%	73.32%	94.15%	78.66%	70.02%

Source: Author's calculation
Source: *National Bank of Serbia and Agency for Business Registers of the Republic of Serbia, Belgrade*

E1 indicator or claims ratio shows that, at the industry level, at each 100 dinars of earned premium in self-retention, there come 49.03 dinars of actual claims in self-retention. The E2 indicator or cost ratio shows that, at the industry level, at each 100 dinars of earned premium in self-retention, operating costs account for 36.17%. The companies with relevant indicators above the average of the industry can be deemed more successful.

2.6. Liquidity

Liquidity of insurance companies is viewed as a company's ability to pay its liabilities within the deadline. Liabilities include payments to insured persons, government, employees, other debtors. Maintenance of daily payment capacity requires synchronization between inflow and outflow of cash funds upon maturity. The high values of the liquidity indicators point to the ability of the Insurer to respond to sudden cash requirements without turning into cash long-term placements (untimely sale of placements generally results in a lower value than real), while the excessively high values of this indicator may reveal an inadequate placement policy of the insurance company and reduced ability of generating profit.

Table 6 – 2017 insurance sector liquidity

LIQUIDITY		DUNAV	GENERALI	DDOR	UNIQA (Life/ Non-life)	WIENER	SECTOR AVERAGE	OTHER COMPANIES
L1:	Cash and cash equivalents / short-term liabilities	0.60	0.60	0.32	0.20	0.30	0.53	0.93
L1.a:	Cash and cash equivalents / Short-term liabilities+accruals total	0.06	0.08	0.02	0.05	0.05	0.06	0.11
L2:	Working assets+prepaids total – stocks / Short-term liabilities + accruals total	1.20	3.58	0.65	1.31	3.92	2.18	3.25

Source: Author's calculation
Source: National Bank of Serbia and Agency for Business Registers of the Republic of Serbia, Belgrade

The L1 indicator shows that the industry, like the dominant insurers, has a satisfactory degree liquidity. The L2 indicator shows that the industry sector can cover its short-term liabilities with maturity up to one year from Company's working capital.

Conclusion

CARMEL analysis is one of the most reliable types of insurance risk management tools. It indicates the financial stability of insurance companies and is based on the methodology of the IMF. CARMEL comprises six sets of indicators:

Capital adequacy
Asset quality
Reinsurance and actuarial issues
Management soundness
Earnings and profitability
Liquidity

By considering the overall quantitative financial CARMEL indicators of the insurance industry in the Republic of Serbia in the observed period, the conclusion is that they show satisfactory values. There is certainly room for improving the reference values of the indicators in the coming period, especially when it comes to indicators of asset quality, management soundness, earnings and profitability. It is very important that the quarterly and annual CARMEL analysis be continuously carried out for the purpose of corrective measures and improvement of financial stability of the insurer's business.

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