Are Croatian Insurance Companies Meeting the Efficiency Frontier?

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PowerPoint

INSURANCE INDUSTRY

- The insurance industry plays a **vital role in the enhancement of national financial and economic development and growth**, by providing individuals and businesses with broad spectrum of financial security products and being a key player in the process of financial intermediation (Karim & Jhantansana, 2005).
- Insurance companies are one of the leading institutional investors that are beneficial to the economy through the various roles that they play
- The **importance** of insurance companies is **increasing** mainly due to the various services they offer and the complexity of their operations

INSURANCE INDUSTRY IN CROATIA

- the assets of the insurance companies have been slightly increasing in the past several years and amounted to 6,432 million euros in 2021, 6,303 million euros in 2020 and 6,127 million euros in 2019
- the insurance companies have employed around 7900 individuals (2019-2021)
- the share of their assets in 2018 was 6.94%, in 2019 was 7.12%, in 2020 was 6.95% and in 2021 was 6.47%. Hence, the relatively **low participation** is mainly because the Croatian financial system is **bank-centric**

a share of 6.47% in the total assets of all financial institutions

DATA ENVELOPMENT ANALYSIS

Data Envelopment Analysis (DEA) is a **nonparametric technique** for evaluating the relative efficiency of decision-making units (Samoilenko, 2014).

Developed in 1978, DEA has grown significantly in methodology and real-world applications (Kuah et al, 2010).

It is primarily used for **measuring technical efficiency** but has expanded to assess scale, cost, and profit efficiency

As a **versatile performance measurement tool**, DEA continues to attract interest from researchers and practitioners alike.

GOALS OF THIS STUDY

The main purpose of this paper is to analyze whether the Croatian insurance companies are meeting the efficiency frontier through the DEA methodology.

Therefore, it is expected that the results from this paper will offer valuable contributions not only to the academia but also to all of the parties within the insurance sector.

Another goal is to provide a **theoretical background** to the DEA methodology as well as the insurance sector in Croatia

THE METHODOLOGY AND RESEARCH PROCESS

- According to Cummins & Weiss (2013), most of the DEA applications in insurance are **input-oriented BCC DEA models**, and the reason for this is twofold.

1. First of all, the two basic DEA models are the CCR and the BCC models, and the main difference between them is the assumption regarding the return to scale. Namely, the CCR model assumes a constant return to scale, whereas the BCC model runs under the variable return to scale assumption. Therefore, in insurance, **"the economies of scale do not change as the size of insurers increases", which brings us to the conclusion that the BCC DEA model is a more appropriate approach in the evaluation of insurance companies and their efficiencies** (Pervan et al., 2021a).

2. the DEA model can be input-oriented, output-oriented or non-oriented. In insurance, the Decision-Making Units (i.e. the insurance companies) have a greater impact on the inputs than outputs, thus the **input-oriented** DEA model is most suited and most applied.

INPUT AND OUTPUT VARIABLES

- In the selection of input and output variables, we follow Pervan et al. (2021a).
- Input variables are **capital (Paid in capital) and Labour (Number of employees)**, whereas **Risk-pooling bearing services (Net earned premiums) and Intermediate function (Total investment i.e. investments, real estate and intangible assets)** were selected as output variables

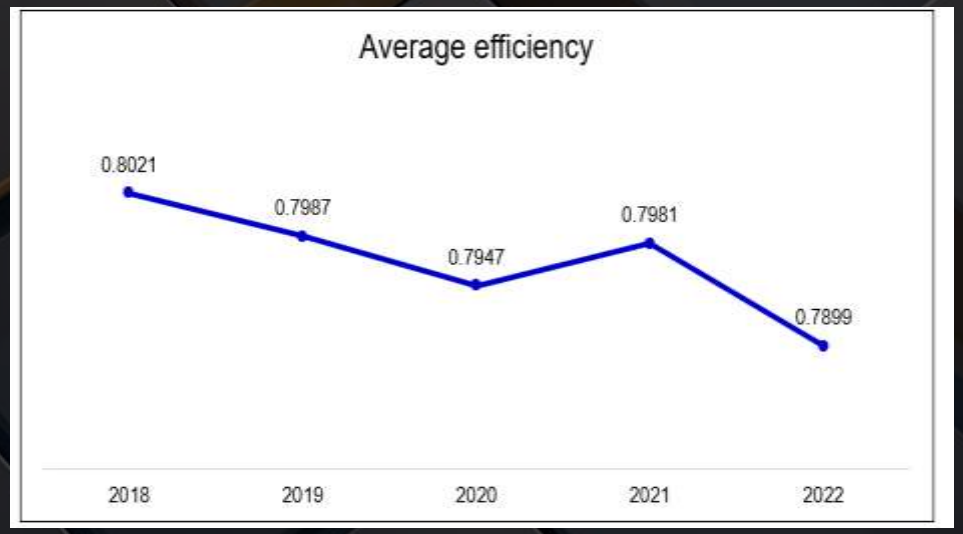
The Croatian insurance market is a vital component of the financial market, and at the end of 2022, **a total of 14 insurance companies actively operated in the market**, out of which 8 are composite insurance companies (that offer both life and non-life insurance, these companies are: Allianz Hrvatska d.d., Croatia osiguranje d.d., Generali osiguranje d.d., Grawe Hrvatska d.d., Merkur osiguranje d.d., Triglav osiguranje d. d., Uniqa osiguranje d.d., Wiener osiguranje Vienna Insurance Group d.d.), 4 are non-life insurance companies (Adriatic osiguranje d.d., Euroherc osiguranje d.d., HOK-osiguranje d.d., Hrvatsko kreditno osiguranje d.d.), 2 are life insurance companies (Groupama osiguranje d.d. and AGRAM LIFE osiguranje d.d.), and there are no reinsurance companies (Učkar & Petrović, 2022).

RESULTS 2018 - 2022

The efficiency results of the input-oriented BCC DEA model revealed that the average efficiency of the whole insurance sector for the whole observed period is **0.7967**

- This result implies a vast potential for further improvement and better resource allocation for Croatian insurance companies.
- The BCC model identified 7 relative efficient insurance companies in the whole observed period (2018 to 2022), and 7 relative inefficient insurance companies in the observed period.

The average efficiency of the whole Croatian insurance sector



Relative efficiency results for the Croatian insurance sector (2018 – 2022)

NO	DMU	Score (2018)	Score (2019)	Score (2020)	Score (2021)	Score (2022)	Sparkline (line)	Average efficiency by DMU
1	Adriatic osiguranje d.d.	1.0000	1.0000	1.0000	1.0000	1.0000		**1.0000**
2	Agram life osiguranje d.d.	1.0000	1.0000	1.0000	1.0000	1.0000		**1.0000**
3	Allianz Hrvatska d.d.	1.0000	1.0000	1.0000	1.0000	1.0000		**1.0000**
4	Croatia osiguranje d.d.	1.0000	1.0000	1.0000	1.0000	1.0000		**1.0000**
5	Euroherc osiguranje d.d.	1.0000	1.0000	1.0000	1.0000	1.0000		**1.0000**
6	Generali osiguranje d.d.	0.7066	0.6076	0.5701	0.6275	0.5702		0.6164
7	Grawe Hrvatska d.d.	0.5021	0.4981	0.4625	0.4773	0.4984		0.4877
8	Groupama osiguranje d.d.	1.0000	1.0000	0.9626	0.9633	1.0000		0.9852
9	Hok-osiguranje d.d.	1.0000	1.0000	1.0000	1.0000	1.0000		**1.0000**
10	Hrvatsko kreditno osiguranje d.d.	1.0000	1.0000	1.0000	1.0000	1.0000		**1.0000**
11	Merkur osiguranje d.d.	0.6705	0.6552	0.6531	0.6400	0.6775		0.6593
12	Triglav osiguranje d. d.	0.2732	0.2879	0.3248	0.3421	0.2666		0.2989
13	Uniqa osiguranje d.d.	0.6841	0.6693	0.6723	0.6541	0.6520		0.6664
14	Wiener osiguranje Vienna Insurance Group d.d.	0.3935	0.4630	0.4805	0.4687	0.3937		0.4399

Insurance companies	Average efficiency	Size	Type of Insurance
ADRIATIC OSIGURANJE d.d.	1	medium	non-life
AGRAM LIFE osiguranje d.d.	1	medium	life
Allianz Hrvatska d.d.	1	large	composite
CROATIA osiguranje d.d.	1	large	composite
EUROHERC osiguranje d.d.	1	medium	non-life
GENERALI OSIGURANJE d.d.	0.6164	medium	composite
GRAWE Hrvatska d.d.	0.4877	large	composite
Groupama osiguranje d.d.	0.9852	small	life
HOK-OSIGURANJE d.d.	1	small	non-life
Hrvatsko kreditno osiguranje d.d.	1	small	non-life
MERKUR OSIGURANJE d.d.	0.6593	medium	composite
TRIGLAV OSIGURANJE d. d.	0.2989	medium	composite
UNIQA osiguranje d.d.	0.6664	large	composite
Wiener osiguranje Vienna Insurance Group d.d.	0.4399	large	composite

Practical Implications for Stakeholders in Enhancing Insurance Sector Efficiency

- **Insurance Company Executives**. *Insight:* Recognize the observed decline in sector-wide efficiency and variations based on company size. *Action:* Implement targeted improvement objectives to optimize resource allocation and enhance operational efficiency. Tailor strategies to the company's size and structure for maximum impact.
- **Policymakers and Regulators**. *Insight:* Understand the overall sectoral average efficiency and its decline over time, along with the importance of specific improvement targets. *Action:* Formulate policies that address identified challenges, informed by improvement targets. Leverage findings to refine regulatory practices, ensuring compliance with industry standards and fostering a more efficient insurance sector.
- **Industry Regulators and Management Bodies**. *Insight:* Embrace the significance of specific improvement targets for inefficient companies, recognizing the need for enhanced resource allocation. *Action:* Utilize practical insights to enhance resource allocation strategies, contributing to the overall stability and performance of the sector. Incorporate improvement targets into regular assessments to refine regulatory practices and ensure sector-wide compliance.

- **Cross-National Analysts and Researchers.** *Insight:* Recognize the need for a broader regional context in assessing efficiency dynamics. *Action:* Contribute industry-specific knowledge to ongoing research collaborations. Foster a comparative understanding of efficiency across different countries, drawing insights into best practices and areas for improvement.
- **Investors:** *Insight:* Acknowledge the nuanced efficiency dynamics and variations among different-sized companies. *Action:* Utilize the study's findings as a tool for assessing the viability and performance of insurance companies in the Republic of Croatia. Consider efficiency trends, company-specific data, and regional comparisons for informed investment decisions.
- **Academic and Research Community:** *Insight:* Contribute to a more holistic understanding of efficiency dynamics in the insurance sector. *Action:* Build upon this research to delve deeper into specific aspects, refine strategies, and contribute to ongoing academic discourse. Explore the identified drivers of efficiency and validate improvement targets for a more comprehensive understanding.

THANK YOU VERY MUCH FOR YOUR TIME AND ATTENTION!

Q & A

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