

## Comparative Analysis of the Efficiency of the Top Ten Conventional Joint Venture Life Insurance Companies in Indonesia in the Period Before and During the Covid-19 Pandemic Using the Data Envelopment Analysis Method

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### ABSTRACT

This study aims to capture the efficiency level of industry players in conventional joint venture life insurance companies in Indonesia before and during the Covid-19 pandemic. Efficiency can be measured using the Data Envelopment Analysis (DEA) method, which is a non-parametric frontier approach that uses mathematical programming with 2 (two) assumptions, namely Constant Return to Scale (CRS) and Variable Return to Scale (VRS). The data collection technique used is library research. The objects used as samples were top 10 (ten) conventional joint venture life insurance companies in terms of revenues with the data obtained from the financial reports and annual reports of each company for the period between 2015 and 2021. The analysis show that investment portfolio performances derived from the company strategy acts as the main efficiency determinant in the industry.

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## INTRODUCTION

Insurance is a major element in the running of national economies worldwide. Insurance encourages business activities by managing risks related to human and business activities borne by third parties. As we know, a risk can occur at any time. These risks are always bad for people. But insurance protects people from this risk (Alizade, 2017).

The insurance sector contributes to economic growth and poverty alleviation through risk management at the macroeconomic/industry level and household level and through financial intermediation (CENFRI, 2017). In 2022 - 2023, Asia is developing as a major engine of global growth. The 2020s saw a shift in economic power based on geography from West to east. Growth in Asia (excluding China) averaged 6.2% in 2022-2023. It helped country markets increase aggregate growth to 3.9% over more developed markets which are 2.0% (Swiss Re, 2022).

Global life risk and savings premiums, by volume (USD billion, left) and share of total (% , right)

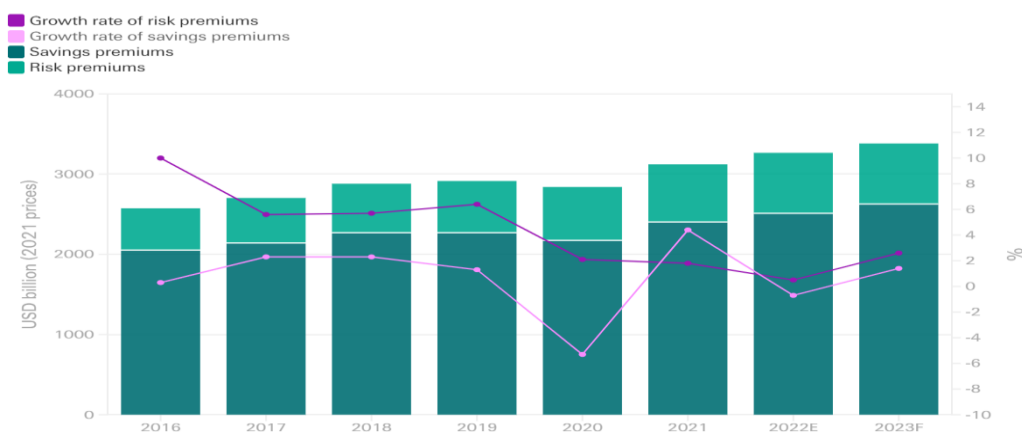


Figure 1. Classification of Premium Growth and Risk to Global Insurance Premiums

(Source: Swiss Re, 2022)

Based on the figure above, the Swiss Re Institute cites that high inflation will last a while. Lines of business vulnerable to higher claims due to the war in Ukraine include specialty segments such as aviation, trade credit, political risk, and marine insurance. The severity of claims due to COVID-19, starting in 2019, decreased by around 4%, and the risk to premiums has also increased and is expected to subside into 2023 as the world is adjusting to living with the virus. It can also support the profitability of the life sector (Swiss Re, 2022). According to the Swiss Re Institute (2022), the advanced insurance market in the Asia Pacific is expected to grow by 3.9% in real terms in 2021, 3.5% in 2022, and 2.8% in 2023 (Swiss Re, 2022).

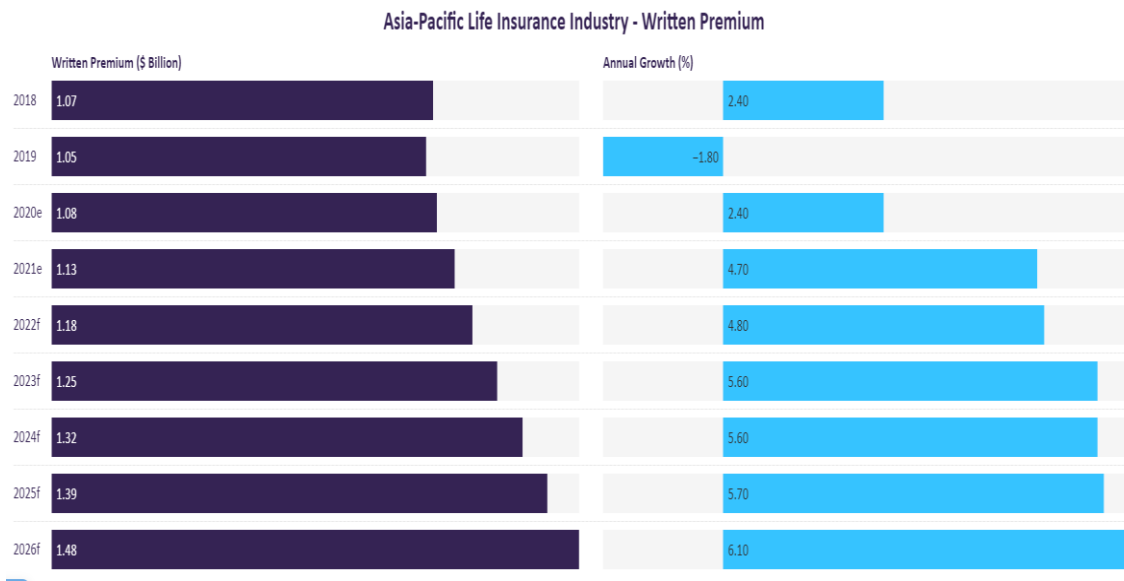


Figure 2. Growth of insurance premium income in APAC  
 (Source: GlobalData Insurance Intelligence Center)

Based on the picture above, from 2022 to 2026, the APAC insurance industry is expected to recover from the downturn that has hit the whole world due to the Covid-19 pandemic and will experience stagnation due to global inflation and the war between Russia and Ukraine. In 2021, thanks to the COVID-19 pandemic, people are starting to realize and prioritize insurance for financial security. Indonesia's joint life insurance industry still needs to overcome several challenges. The world faces enormous challenges: the Covid-19 pandemic, initially discovered in 2019, global inflation, and the Russia-Ukraine war. The life insurance industry has experienced stagnant revenue results due to these challenges (Indonesia Financial Group, 2021). The downturn in the Indonesian economy was caused by the many businesses that were hindered or even had to partially close due to the implementation of social distancing and overall social restrictions (PSBB) to reduce interaction between or between social groups. The spread of Covid-19 has caused losses to several industries. Life insurance is one of the industries affected by the Covid-19 pandemic because demand for insurance has decreased due to the weakening economy. Circumstances that arise in the business world where the impact decreases or even must be terminated, the commercial risk of insurance companies also decreases. The Covid-19 pandemic situation has had two impacts on the insurance industry. First, the mindset of the Indonesian people has started to change so that the number of insurance applications for various health products has increased. Public steps were taken for critical and vital reasons because the level of public awareness and desire to protect themselves from the impact of the Covid-19 pandemic began to increase. Second, insurance is a primary need in laws and regulations. However, on average, Indonesian

people see this insurance as a tertiary need, so people whose condition could be better or getting better delay the need (Cenora & Hermawan, 2022).

As a result of the Covid-19 pandemic, business and other life activities were forced to lead to new habits or "new normal," including limiting social activities using work being carried out from home or "work from home," then students or students had to study at home or study remotely. Some factories or private businesses chose to close their businesses because they experienced losses and could not pay the workers, so many workers were laid off (Indonesia, 2020). In 2019, the Covid-19 pandemic occurred in all countries and left a huge impact on the national and international economy in all sectors, which caused a slowdown in the Indonesian economic sector, which is currently the government's concern. The pandemic crisis began with a weakening of economic activity due to the outbreak of the Covid-19 pandemic (CNBC Indonesia, 2022). Society has reduced external contact to reduce pandemic epidemics (Ari Siswati, 2021). One of the financial sectors directly affected by the Covid-19 pandemic is the insurance company. This pandemic has caused difficult times for the entire world in 2020. This is the worst setback worldwide since the 1930s. Various strategic steps have been taken to prevent the spread of the Covid-19 pandemic, including PSBB (Big Social Restrictions) and blockades which directly impact various zones because they reduce taxation and administrative efficiency. Monetary policy stimulus measures (Indonesia Financial Group, 2021). Based on the description described above, due to the Covid - 19 Pandemic, the company had to relax and evaluate to survive the situation. Sabiti et al. (2017) described the evaluation stage as reflecting strategy formulation by looking at performance efficiency and whether insurance companies have efficiently implemented it. In the insurance industry, performance measurement is one of the most important elements that determine the profitability of an insurance company. According to Antonio, measuring efficiency is important for assessing the performance of the life insurance sector and determining field competitiveness (Antonio et al., 2013).

Based on what has been described above, previous research describes efficiency in insurance companies. Zahara and Saputra (2020) conducted a study entitled Analysis of the Efficiency of Conventional Life Insurance Companies and Sharia Life Insurance Companies in Indonesia using the Data Envelopment Analysis Method. The study's results used the DEA (Data Envelopment Analysis) method to compare the average efficiency of traditional and Islamic life insurance companies. The results show that compared to Islamic insurance, the efficiency of conventional life insurance companies is higher. Research by Ade et al. (2018) uses the same Constant Return to Scale (CRS) assumption and Variable Return Scale (VRS) assumption, the input variables are assets, expenses, and payment of claims, while the output variables are investment income and premiums, but this study compares General Sharia and Conventional Insurance Service Companies. The independent t-test results on the assumptions of Constant Return to Scale (CRS) and Variable Return to Scale (VRS) show no significant difference between the efficiency levels of Sharia general insurance companies and conventional

general insurance. However, based on the VRS assumption, Sharia general insurance service companies are more efficient than conventional ones (Putri Ade et al., 2018).

## **LITERATURE REVIEWS**

### **Efficiency Theory**

According to Rambe et al., efficiency is the ratio between output and input. This efficiency can be interpreted by how efficiently the input produces output. Efficiency is also associated with the effectiveness of achieving the goals of something measured by comparing output and input. Efficiency is also a measure of saving resources in an organization, institution, or company. Efficiency is also mentioned by using fewer resources to produce maximum results (Rambe et al., 2017).

### **Efficiency Measurement Theory**

According to Rusydiana (2018), efficiency is important for companies, organizations, institutions, or entities and is often defined as doing things right and right. According to Pratama et al., (2020), efficiency is a concept that describes the ratio between the results of the comparison of inputs and outputs. This ratio then shows that efficiency can be controlled by manipulating the management between input and output, or even both. Efficiency can be used to measure the Decision-Making Unit (DMU). The concept of efficiency also has two sides: input-oriented and output-oriented (Coelli et al., 2005; Tuffahati et al., 2019). The relative efficiency of the DMU is improved by adjusting the output level for each input and comparing it to other DMUs. A DMU that achieves 100% efficiency is considered effective, while a DMU that achieves less than 100% is considered ineffective (Lee et al., 2012).

### **Data Envelopment Analysis**

Data Envelopment Analysis (DEA) was first introduced by (Charnes A. et al., 1978). DEA measures the performance of the Decision-Making Unit (DMU). This method identifies the DMU that uses Input to provide Output efficiently and optimally. DEA is a technique that has linear programming, which is useful for evaluating the relative efficiency of each DMU by comparing one DMU with another DMU that utilizes the same resources to produce the same output (Tsai & Mar Molinero, 2002), where the solution of the model indicates the productivity or efficiency of one unit with other units (Taylor, 2014). The goal of DEA is intended as a method for evaluating performance and benchmarking (Zhu et al., 2014).

## **METHODOLOGY**

The research method used is a descriptive research method with a quantitative approach. According to Sekaran et al. (2013), research with a descriptive approach is a type of research that is conclusive and aims to describe something, which is usually an explanation of characteristics.

In this study, the authors use input and output variables. The input variables are stock investment, bond investment, securities investment, debt, labor, and claims expenses, while the output variables are investment returns and premiums. This study uses a population of joint venture life insurance companies in Indonesia. The sample used in this research is a joint venture life insurance company in Indonesia, based on the ten orders with the largest income in 2021. The sample was taken by purposive sampling, meaning that the sample selection method was chosen based on consideration. According to Turner (2020), purposive sampling is used when the writer already has a target with characteristics appropriate to the research. In this study, the authors have certain reasons when selecting the study sample. Therefore, the author uses ten joint venture life insurance companies in Indonesia based on income where these ten companies have been market leaders for ten years starting from 2011 - 2021

## RESEARCH RESULT

### Efficiency Calculation Results

The following are the results of calculating the efficiency of each joint venture life insurance company in Indonesia or DMU, which was sampled in this study before and during the Covid-19 pandemic or from 2019 to 2021.

Table 2. Efficiency Value of each DMU for the 2015 - 2021 Period

Company Name	Year							
	2015	2016	2017	2018	2019	2020	2021	
PT Prudential Life Assurance (PRUL)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
PT Asuransi Allianz Life Indonesia (AALI)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
PT AIA Financial (AIAF)	0,884	1.000	0,916	1.000	0,977	1.000	0,924	
PT Asuransi Jiwa Manulife Indonesia (AJMI)	0,949	1.000	0,977	1.000	0,965	1.000	1.000	
PT AXA Mandiri Financial Services (AMFS)	0,991	0,971	1.000	1.000	1.000	1.000	1.000	
PT Asuransi BRI Life (BRIL)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
PT BNI Life Insurance (BNIL)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
PT Sun Life Financial Indonesia (SLFI)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
PT Asuransi Jiwa Sinarmas MSIG (LIFE)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
PT Asuransi Jiwa Sequis Life (AJSL)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	

Source: DEAP 2.1. Data is processed

Based on what has been presented in the table above, several DMUs are said to be efficient because they have a value of 1. Those that are said to be efficient in the 2015 - 2021 period are PRUL, AALI, BRIL, BNIL, SLFI, LIFE, and AJSL. Then the DMUs with an efficiency level that does not reach 1 (one) or

100% were AIAF in 2015, 2017, 2019, and 2021. Then followed by AJMI in 2015, 2017, and 2019. Then AMFS in 2015 and 2016.

### **Effect of Risk-Based Capital (RBC) on Efficiency Levels**

As stated in the Financial Services Authority Regulation (POJK) Number POJK 71/POJK.05/2016 concerning health insurance companies with a minimum standard of RBC size of 120% (Financial Services Authority, 2016). As for the results of this study, it influences Risk-Based Capital (RBC) on company profits or profits, where RBC has a negative effect on profits. If the solvency level is too high and the RBC is too high, an insurance company's acquisition or profitability level will also be lower, making the insurance company inefficient (Kirmizi et al., 2011). The RBC value has a negative effect on the profit level of an insurance company. If the RBC value is too high, it is feared that the funds that have settled in the company have not been used optimally, resulting in inefficient insurance companies (Agung Eko Supriyono, 2013).

In 2020, the OJK issued regulation Number 14/POJK.05/2020 regarding the Countercyclical Policy on the Impact of the Spread of Corona Virus Disease 2019 for NBFIs. To calculate the level of solvency of insurance companies, namely, assets that are allowed to become part of the assets that affect the level of solvency, namely sukuk or sharia bonds listed on stock exchanges, corporate bonds listed on stock exchanges, securities issued by the government of the Republic of Indonesia (RI), and sharia securities issued by the Indonesian government (Financial Services Authority, 2020). Due to the influence of changes to OJK regulations as outlined above, the three input variables used in this study will affect investment returns and RBC significantly.

Referring to what Kirmizi et al. (2011) said, efficiency can still occur if the RBC value becomes very high if investment returns can be realized and are right on target and get positive results. Suppose it is related to the assets owned by the DMU. In that case, it can also be said that it has many assets. Still, if the DMU cannot realize or place its assets incorrectly, losses can occur, resulting in inefficiency or inefficiency.

### **The Effect of Income Output Variables or Premium Earnings on Efficiency Levels**

The results of this study illustrate that the results of income or premium acquisition on the level of efficiency in a life insurance company or DMU in this study have a significant effect on the level of efficiency in a DMU or an insurance company. Premium income is also influenced by the input variables used in this study, especially in the input of labor expenses and claims expenses. The greater the number of workers influences the premium income at a DMU at an insurance company, and of course, it will also impact the burden of claims that must be paid. This means that the greater the premium income earned, the greater the risk of an increase in the value of the claim burden that must be paid or borne (Kirmizi & Susi Surya Agus, 2011).

Based on what has been described above, premium income will have an impact. It will be at risk of claims or benefits that an insurance company must

bear, but this can be overcome by maximizing one's ability to analyze the risk of applying for insurance before the insurance company accepts the application. As a field or expert who can control the risks that will be borne by insurance companies, namely Underwriting, Underwriting is a person or expert who selects risks and classifies them according to the level that can be borne so that the amount of premium that the prospective customer must pay to the insurance company can be determined. Underwriting can also decide between accepting or rejecting an insurance application (Bramantyo Djohanputro, 2006; Hasyim Ali et al., 2007). In connection with the results of data processing related to the level of efficiency at a DMU in 2015, one of the DMUs that showed inefficiency that occurred due to the high ratio of claims to premium income, namely AIAF in the 2015 period, which reached 66%, but when linked to the results of this study, not all the high ratio of claims to premium income resulted with an efficiency level that does not reach 1 (one) or 100%. There is an efficiency level of 100%. Still, the claims to premium income ratio are high at one of the DMUs, which illustrates that LIFE 2015 had a claim ratio of 137%.

### **The Effect of Investment Returns Output Variables on Efficiency Levels**

The return on investment significantly affects the efficiency level of an insurance company or DMU. This, of course, has certain reasons, namely because the greater the return on investment in a DMU illustrates that the DMU can invest or place their assets to benefit in the future (Ali Fikri et al., 2009; Rina Dhaniati, 2011).

An advantage derived from investment results means that profitability is not only obtained from the acquisition or income of a premium at an insurance company, but investment returns can also influence and even help insurance companies obtain a good and optimal level of efficiency if the investment composition made by the DMU is good and appropriate. In this study, the input variables that affect the output variable of investment results are taken, namely the composition of investments in stocks, bonds, and securities issued by the government of the Republic of Indonesia (RI). Of course, the three input variables that affect investment returns are compositions with a larger portion than others. 14/POJK.05/2020.

According to the Regulation of the Minister of Finance of the Republic of Indonesia (2012) Number 53/PMK.010/2012 concerning the Financial Soundness of Insurance Companies and Reinsurance Companies. This Minister of Finance regulation was made to encourage the insurance industry's growth and increase protection for the insured or policyholder. Where contained in this PMK is stated in article 9 regarding restrictions on assets that are allowed in the form of investment, and this rule lasts until 2023 with changes to the Financial Services Authority Regulation (POJK) Number 5 of 2023 concerning the second amendment to POJK number 71/POJK.05/2016 (Financial Services Authority Regulation (POJK), 2023). Acquisition of return on investment in a DMU influences a level of efficiency in this study apart from obtaining premium income in all DMUs. The return on investment has a significant impact if the premium income is not optimal, so the return on investment becomes one of the others that makes a profit for all DMUs. However, in this study, there was one

DMUN as an example where the return on investment suffered very large losses and even reached a minus, namely PRUL in 2015, which reached - IDR 4,680,834,000,000, but PRUL can be efficient when obtaining a premium of IDR 26,883,390,000,000.

### **The Effect of DMU Internal Factors on Efficiency Levels**

In this section, the authors obtain supporting secondary data to support the continuity and validity of this research, which come from the financial reports, sustainability reports, and annual reports of each DMU available on the internet or the official website of each DMU. Deciding on parties interested in an issuer is based on clear information related to reports published by the issuer. The parties mentioned above include management, investors, employees, creditors, government, customers, and the public based on specific goals and motivations to trust the issuer. Therefore, a company's report, including annual financial reports and annual performance reports, is important for publication (Indonesian Accounting Association, 2018). Three companies publish their annual reports from 2015 - 2021: AALI, AJMI, and LIFE. Then two companies do not publish their annual reports, namely SLFI and AJSL. Quoted from PRUL's 2020 sustainability report, where the new management started issuing this sustainability report for the first time in 2020 and will continue to issue it every year. Management implements alignment with the Sustainable Development Goals (SDG) to align with Prudential Indonesia's goal of 'Helping People to Get the Best in Life.' It implements a sustainable strategy that includes environmental, social, and governance aspects. This strategy has a positive impact on effectiveness. The steps taken by Prudential Indonesia carried out by their Group Holding, namely Prudential Ltd. Bore good results, one of which is a significant reduction in electricity use for company operations to 2,705,992 kWh in 2020. This value decreased from the previous year, namely 4,703,846 kWh in 2019. Then, PRUL also implemented energy efficiency in 2020 compared to 2019 at 42.47%. The financial industry of the world, both banks, and non-banks, continues to be faced with uncertain risks, one of which occurred in 2019, namely the emergence of the covid-19 pandemic, where all business people are faced with a big challenge on this matter, PRUL through its sustainable strategy continues to strive for effective performance to achieve efficient performance, PRUL implements a 'green insurance and responsible investment' policy. It relaxes situations that occur quickly by developing technology to support market needs that are required not to be able to conduct offline meetings between marketers and customers. PRUL also maximizes in terms of risk control through risk management to prioritize forms of risk, including the environment, which includes saving electricity consumption, one of which is to make it more efficient, and the economic aspect has more new initiatives to align customer needs through Product Enhancement so that marketing and sales targets are aligned and in line with the expected targets (PT Prudential Life Assurance, 2020).

Through PRUL, the implementation of SDGs will have a good impact on the company and produce good output for significant companies. Based on the annual report of AALI (2015) states that management fully invests in technology for more effective efficiency, considering that in 2015 AALI experienced an increase in operational costs and decreased its revenue by approximately 9% and other things that affected the decline in company profits including the consolidation of the Bancassurance distribution channel (BAS) and conditions weakened economy. The problems are related to the company's efforts to accelerate economic growth, which is the main goal of AALI, where efficiency is needed. This step aligns with the Allianz Group's goal of utilizing technology to maintain their business. Then, AALI's management invested in their human resources by increasing the ability of their marketers to attend education that focuses on providing solutions to customers and prospective customers. In 2016, AALI stated through its President Director, Mr. Joachim Wessling, that the company experienced an increase in gross premium income with net profit growth of IDR 899.43 billion, 11.6% from the previous year. This is one of the optimal results from the company's breakthroughs or steps in the previous period. Then, the company successfully adapted to the BAS consolidation in 2015, where the gross premium income was dominated by the BAS distribution channel of 50.5% (PT Asuransi Allianz Life Indonesia, 2016). Based on the company's strategy in 2015, AALI is investing continuously in technology. This step was taken to provide comfort, increase productivity and protect against risks that occur in the future. AALI had a high claim ratio of 59%. Of course, this is a concern for management to better guard against the risks that will be experienced by launching the Expert Underwriting System (EUS), which aims to maintain risk control for each insurance application and increase individual productivity to achieve a good level of efficiency and optimal (PT Asuransi Allianz Life Indonesia, 2017).

According to AIAF's sustainability report (2020), management supports the Green Operations and Sustainable Investment Movement by making energy use efficient and applying the 3R principles (Reduce, Reuse, and Recycle). The next step is to divest tobacco issuers, clusters, and munitions currently divesting in the coal sector as a form of corporate concern for the green movement. This step has shown efficient performance in 2020, namely achieving a reduction in electricity use at the head office by 47%. Of course, related to this study, AIAF has an efficiency of 100% in 2020. AIAF defines eight main topics in reporting referring to SDGs, including No Poverty, Good Health and Well-Being, Quality Education, Gender Equality, Reduced Inequalities, Sustainable Cities and Communities, Climate Action, and Peace, Justice, and Strong Institutions (PT AIA Financial, 2020). In 2015, the annual report of AJMI through its president director, Mr. Indren S. Naidoo, said achieving stable growth through net premium income insurance premiums increased 3% from 2014, which was driven by superior products, namely individual product and Group Savings. AJMI carried out several important initiatives, namely formalizing several partnerships with several banks, Bank Muamalat, DBS, and Bank BRI, and distribution cooperation with Bank OCBC NISP to strengthen

the company's business amid the competitive insurance market in Indonesia. This initiative expanded AJMI's business reach in Indonesia and Asia. Other steps supporting company profits include developing insurance products that align with community needs, investing in technology, and activating insurance literacy programs to increase public knowledge of the importance of life insurance (PT Asuransi Jiwa Manulife Indonesia, 2015). As the author quotes in AMFS' annual report, which is abbreviated (AMFS) in 2020, the company's management has taken steps to support the continuity of their business and improvise in Indonesia's competitive insurance market. AMFS develops products and value propositions oriented to customer needs, then advances digitization and implements data analytics to strengthen data management which, of course, will significantly affect customer needs and behavior and generate optimal profitability. Do not forget to strengthen the operational side to support the sales process. Excellence includes processes underwriting, policy service, and premium collection to increase productivity, efficiency, and effectiveness. Then relax to adapt to existing developments, such as transforming salespeople focused on increasing professionalism and competence to provide insurance solutions that suit customer needs and profiles. The steps that all the management has implemented above will significantly affect the efficiency of an insurance company in a very competitive market situation (PT AXA Mandiri Financial Services, 2020).

In 2017, BRIL mentioned a marketing strategy focused on Bancassurance (BAS) in its annual report. BAS is marketing personnel placed in partner branches of an insurance company itself. BRI Life has a partnership with BRI Bank, the Holding of BRI Life itself. Taking advantage of the many branches of Bank BRI that are spread throughout Indonesia, BRIL is advancing aggressively in advancing its goal of being at the forefront of the BAS business in Indonesia. 2017 through their strategy, BRIL experienced an increase in net premium income of 24.31% from the previous period in 2016 of IDR 3,542,156,000,000. BRI Life is consistently efficient every year. BRIL continues to strengthen its strategy to mitigate all risks by forming a Risk Monitoring Committee (RMC) tasked with monitoring risks that will occur. It is proven by the results contained in this research, namely BRIL has an efficiency value of 100% every year, namely in 2015-2021 (PT Asuransi BRI Life, 2017). Through the 2017 annual report, BNIL realizes that business success depends on the quality of Human Resources (HR) who have the ability and competence, and valuable mindsets and behaviors. BNIL, through the Human Capital & Employee Training (HCT) division, has an integrated roadmap to support its human resources to be in line with the vision and mission of BNIL itself. HCT stated that it has a strategy: planning, acquiring, developing, maintaining, and retaining. This is inseparable from the support of parties directly affiliated with BNIL, including the two largest shareholders, PT Bank Negara Indonesia (Persero) Tbk. and Sumitomo Life Insurance, a company from Japan. This step was taken to take advantage of the extensive network between each shareholder to expand the reach of a broad insurance market, so that in 2017, BNIL has a focus on developing good and appropriate human resources to take

advantage of the insurance market they have (PT BNI Life Insurance, 2017). Through LIFE's Annual Report (2015), the company has introduced Brand SMiLe (LIFE) to increase corporate brand awareness. This strengthening was carried out from 2014 to 2015 through various platforms, especially social media. For three decades, the company has remained steadfast in its commitment to presenting various innovative products that meet people's needs. The global economic challenges because the Chinese government devalued its currency against the US dollar. LIFE officially appointed Mr. Premraj Thuraisingam as President Director, where he has extensive experience and success in developing and implementing several strategies to build business unit distribution capacity, brand awareness, and product innovation. Through this new President Director, the company hopes to make the company more optimal to increase success in the company's business. The breakthroughs created by the new President Director include efforts to restructure distribution channels to increase accountability and transformational changes to the distribution channel model, especially Bancassurance (BAS).

In 2020, based on the poor performance of LIFE stock performance, another big problem caused a significant decline in global economic conditions due to the Covid-19 pandemic. Of course, this is one of the main causes behind the decline in global economic performance. LIFE continues to adopt an attitude of adaptation to this to support company stability. It requires companies to focus more on developing digital-based systems and establish strategic steps that focus on developing and improving the quality of their human resources to support the company's business success in the future. Of course, the strategic policies implemented by the company give very positive results to the level of company efficiency throughout the year. The company's efficiency values are said to be 100% efficient from 2015 to 2021. In 2021, AJSL mentioned participating in the SDGs program through its sustainability report. The company fully supports the Government's steps to realize sustainable programs, formulated through a Sustainable Finance strategy focusing on 3 (three) main pillars: digital transformation, excellent services and support systems, and Strength of Human Resources (HR), finance, and Corporate Governance. In implementing this strategy and as an effort to implement the Sustainability strategy, the Company increases awareness of environmental preservation through education and other activities, as well as the green office concept. In addition, in implementing the 2021-2025 RAKB, the Company also optimizes internal employee participation so that increased education is needed for employees. The company believes that with a commitment to implementing Sustainable Financial Action, the Company's business and operational performance will grow healthily, customer protection can be guaranteed in the long term, and the Company's role in encouraging inclusion and literacy can be optimized so that it directly contributes to maintaining the stability of the country's economy (PT Asuransi Jiwa Sequis Life Sustainability Report, 2021). Of course, with the strategy implemented by the company, the company showed positive performance following the results in this study, namely the

level of efficiency value of joint venture life insurance companies for the period 2015 - 2021, indicating that AJSL has been 100% efficient every year.

### **DMU External Effects on Efficiency Levels**

According to David (2011), external factors are long-term goals, measurable and hierarchical in that they are related and influence the company. Factors must be widely communicated and distributed to the company regarding opportunities to create optimal and efficient performance and threats that can become major external factors. The main external factor that influences the efficiency level is the economic factor. According to the Annual Report of LIFE (2015), In unfavorable economic situations and conditions marked by negative stock and bond market performance and the weakening (depreciation) of the rupiah against the US dollar, business economic growth, in general, will also experience inhibition. In March 2019, the world faced the emergence of the covid - 19 pandemic, which had a big impact on all industries worldwide. This situation resulted in a slowdown in economic growth in the global and national insurance industry. The investment results of a joint venture life insurance company in 2020 where after, one year after the covid -19 pandemic emerged, the pandemic had such a big influence on one of the life insurance companies in Indonesia, namely PRUL, which suffered losses reaching -Rp 519.448 billion. , where traditional products fell by 10.0% and became the main contributor to the decline. Capital market conditions directly influence investment product growth. The Composite Stock Price Index (IHSG) recorded a significant decline from the end of January to the end of the first quarter of 2020 by more than 30% in less than 2 (two) months (PT Asuransi Sinarmas MSIG Life Annual Report, 2020). Of course, it significantly influences a company's performance, especially in the global and national life insurance industry. Based on several types of products traded by the insurance industry, the sales are very large, namely investment products. Of course, this is a significant obstacle to the company's growth and performance, which causes the level of efficiency in the company.

### **CONCLUSIONS AND RECOMMENDATIONS**

Based on the results of this research using the Variable Return to Scale (VRS) assumption with an output orientation, it can be concluded that of the 10 (ten) joint venture life insurance companies in Indonesia in the period before and during the COVID-19 pandemic or 2015 to 2021 the samples in this study did not all produce an efficiency level of 1 (one) or 100%.

Companies with a good level of efficiency or reaching 1 (one) or 100% for the period from 2015 to 2021 are PRUL, AALI, BRIL, BNIL, SLFI, LIFE and AJSL. Companies with an efficiency level that does not reach 1 (one) or 100% include AIAF in 2015, with an efficiency level score of 0.884. In 2017 with an efficiency level score of 0.916, then in 2019, with an efficiency level score of 0.977 and in 2021, had an efficiency level score of 0.924 with an average efficiency level of 43%, then AJMI in 2015 with an efficiency level score of 0.949, in 2017 it has an efficiency level score of 0.977 and in 2019 with an efficiency level score of 0.965 then an average efficiency level score of 57% and AMFS in

2015 with an efficiency level score of 0.991 and in 2016 it achieved an efficiency level of 0.971 with an average efficiency level score of 71%. Further analyses prove that investment portfolio performance serves as the pivotal efficiency driver and the company business strategy dictates such portfolio constructions in the industry. Pandemic, in turn, changes the strategy of some of the companies being analyzed.

Based on the research above, several suggestions can be made, namely as follows:

1. For companies with an efficiency level that does not reach 1 (one) or 100% in certain periods improve their performance by using the variables used in this study to increase their efficiency level. Increasing the efficiency level can be done by increasing or decreasing the value of each input variable to obtain a more optimal and efficient output based on the results of calculations in this study in inefficient periods.
2. For the management of companies that experience losses from their investment returns, they should pay attention to the return on the placement of assets to be invested so that they do not always focus on types of investments that have an aggressive risk profile because it will affect the investment returns obtained by the company, coupled with unpredictable future situations and conditions.
3. This study provides a perspective for companies that have not focused on strategy in terms of implementing the Sustainable Development Goals (SDGs) so that they can focus on implementing the SDGs strategy as soon as possible because it is a form of caring for the environment, human rights and social development which will then have an impact on the company's financial performance which is better and more optimal and efficient.
4. For companies that have not focused on digital transformation, they should immediately focus on development strategies or digital transformation to avoid situations that may occur in the future companies can still compete in a competitive market and can reduce the company's operational burden from the Human Resources (HR) side.

## ADVANCED RESEARCH

Future studies may use more samples to be studied and using more input and output variables.

## REFERENCES

- Agung Eko Supriyono. (2013). Pengaruh Risk Based Capital (RBC) Terhadap Profitabilitas Pada Perusahaan Asuransi Syariah. *Universitas Pendidikan Indonesia*.
- Ali Fikri, & M. Agung. (2009). Pengaruh Premi, Klaim, Hasil Investasi dan Underwriting terhadap Laba Asuransi Jiwa (studi kasus PT.Asuransi Syariah Mubarakah). Institut Pertanian Bogor.
- Alizade, Shamshad. (2017). The Role Of Insurance In The World Economy And Its Effect On Macroeconomic Indicators. *EurasianUnionScientists*.
- Antonio, M. S., Ali, M. M., & Akbar, N. (2013). A Comparative Analysis of the Efficiency of Takaful and Conventional Insurance in Malaysia. *The International*

- Journal of Excellence in Islamic Banking and Finance, 3(1), 1-13.  
<https://doi.org/10.12816/0001416>
- Ari Siswati. (2021). Dampak Pandemi Covid-19 pada Kinerja Keuangan (Studi kasus pada Perusahaan Teknologi yang Listing di BEI).  
<Http://Jurnal.Unw.Ac.Id/Index.Php/Jibaku/Index>, 2.
- Bramantyo Djohanputro. (2006). Manajemen Risiko Korporat Terintegrasi. PPM.
- CENFRI. (2017). Funding the Frontier: The Link Between Inclusive Insurance Market, Growth and Poverty Reduction in Africa. Cenfri.Org.
- Cenora, E., & Hermawan, D. (2022). Asuransi dan Pandemi Covid-19: Peran Persepsi Konsumen dalam Keputusan Pembelian. Ekonomi, Keuangan, Investasi Dan Syariah (EKUITAS), 3(3). <https://doi.org/10.47065/ekuitas.v3i3.1033>
- Charnes A., Cooper WW., & Rhodes E. (1978). Measuring the efficiency of farms. European Journal of Operational Research.
- Coelli, T. J., Rao, D. S., O'Donnell, C. J., & Battese, G. E. (2005). Introduction to Efficiency and Productivity Analysis (Second Edition ed.). Boston: Springer.
- David, Fred. R. (2011). Strategic Management (12th ed.). Salemba Empat.
- Hasyim Ali, Agustinus Subekti, & Wardana. (2007). Kamus Asuransi. PT. Bumi Aksara.
- Ikatan Akuntansi Indonesia. (2018). Standar Akuntansi Keuangan. Salemba Empat.
- Indonesia Financial Group. (2021, June). Menilik Dampak Pandemi pada Industri Asuransi dan Prospeknya. Ifg. Id.
- Indonesia. (2020). Balance Our Path for Sustainable Future. [Https://Indonesiare.Co.Id/Uploads/2023/03/Ab1f9b7cc23cc20adc01c87c965b2fb0\\_40cce32965caa0285462357cd5c9bed0.Pdf](Https://Indonesiare.Co.Id/Uploads/2023/03/Ab1f9b7cc23cc20adc01c87c965b2fb0_40cce32965caa0285462357cd5c9bed0.Pdf).
- Kirmizi, & Susi Surya Agus. (2011). Pengaruh Pertumbuhan Modal dan Aset terhadap Rasio Risk Based Capital (RBC), Pertumbuhan Premi Neto, dan Profitabilitas Perusahaan Asuransi. Pekbis Jurnal, 3, 391-405.
- Laporan Berkelanjutan PT Asuransi Jiwa Sequis Life. (2021). Laporan Berkelanjutan PT Asuransi Jiwa Sequis Life.
- Laporan Tahunan PT Asuransi Sinarmas MSIG Life. (2015). Laporan Tahunan PT Asuransi Sinarmas MSIG Life.
- Laporan Tahunan PT Asuransi Sinarmas MSIG Life. (2020). Laporan Tahunan PT Asuransi Sinarmas MSIG Life.
- Lee, H., & Kim, C. (2012). A DEA-SERVQUAL approach to measurement and benchmarking of service quality. Procedia - Social and Behavioral Sciences.
- Otoritas Jasa Keuangan. (2016). Peraturan Otoritas Jasa Keuangan.
- Otoritas Jasa Keuangan. (2020). Peraturan Otoritas Jasa Keuangan No 14/POJK.05/2020.
- PERATURAN MENTERI KEUANGAN REPUBLIK INDONESIA. (2012). Peraturan Menteri Keuangan No. 53/PMK/010/2012.
- Peraturan Otoritas Jasa Keuangan (POJK). (2023). Peraturan Otoritas Jasa Keuangan (POJK) Nomor 71/POJK.05/2016 .
- Pratama, F. R. P., & Cahyono, E. F. (2020). PENGUKURAN EFISIENSI DAN PRODUKTIVITAS RUMAH ZAKAT INDONESIA DENGAN METODE INDEKS MALMQUIST. Jurnal Ekonomi Syariah Teori Dan Terapan, 6(4), 774. <https://doi.org/10.20473/vol6iss20194pp774-786>
- PT AIA Financial. (2020). Laporan Keberlanjutan PT AIA Financial .
- PT Asuransi Allianz Life Indonesia. (2015). laporan tahunan PT Asuransi Allianz Life Indonesia.

- PT Asuransi Allianz Life Indonesia. (2016). Laporan Tahunan PT Asuransi Allianz Life Indonesia.
- PT Asuransi Allianz Life Indonesia. (2017). Laporan Tahunan PT Asuransi Allianz Life Indonesia.
- PT Asuransi BRI Life. (2017). Laporan Tahunan PT Asuransi BRI Life.
- PT Asuransi Jiwa Manulife Indonesia. (2015). Laporan Tahunan PT Asuransi Jiwa Manulife Indonesia.
- PT AXA Mandiri Financial Services. (2020). Annual report PT AXA Mandiri Financial Services.
- PT BNI Life Insurance. (2017). Laporan Tahunan PT BNI Life Insurance.
- PT Prudential Life Assurance. (2020). Laporan Berkelanjutan PT Prudential Life Assurance.
- Putri Ade, Susie Suryani, & Azmansyah. (2018). Analisis Perbandingan Efisiensi pada Perusahaan Jasa Asuransi Umum Syariah dan Konvensional di Indonesia dengan Pendekatan Two-Stage Data Envelopment Analysis. Universitas Islam Riau.
- Rambe, Muhammad Romi Syahputra., & Isnaini Halimah. (2017). Aplikasi Data Envelopment Analysis (DEA) Untuk Pengukuran Efisiensi Aktivitas Produksi. *Journal of Mathematics Education and Science*, 2.
- Rina Dhaniati. (2011). Analisis Pengaruh RBC, Rasio Underwriting, Rasio Hasil Investasi, Rasio Penerimaan Premi, Dan Rasio Beban Klaim Terhadap Laba Perusahaan Asuransi. Universitas Gunadarma.
- Rusydiana, A. S. (2018). Efisiensi Dan Stabilitas Bank Umum Syariah Di Indonesia. *Akuntabilitas*, 11(2). <https://doi.org/10.15408/akt.v11i2.7033>
- Sekaran, U., & Bougie, R. (2013). Research Methods for Business. In *A Skill-Building Approach*, 237-266.
- Swiss Re. (2022). Global insurance premium volumes to reach new highs in 2022. *Swissre.Com*.
- Taylor. (2014). *Sains Manajemen Introduction to Management Science*. Penerbit Salemba Empat.
- Tsai, P. F., & Mar Molinero, C. (2002). A variable returns to scale data envelopment analysis model for the joint determination of efficiencies with an example of the UK health service. *European Journal of Operational Research*, 141(1), 21-38. [https://doi.org/10.1016/S0377-2217\(01\)00223-5](https://doi.org/10.1016/S0377-2217(01)00223-5)
- Tuffahati, H., Mardian, S., & Suprpto, E. (2019). Pengukuran Efisiensi Asuransi Syariah Dengan Data Envelopment Analysis (DEA). *JURNAL AKUNTANSI DAN KEUANGAN ISLAM*, 4(1), 1-23. <https://doi.org/10.35836/jakis.v4i1.27>
- Turner, D. P. (2020). Sampling Methods in Research Design. *Headache: The Journal of Head and Face Pain*, 60(1), 8-12. <https://doi.org/10.1111/head.13707>
- Zhu, J., Cooka WD., & Tone K. (2014). Data Envelopment Analysis: Prior to Choosing a Model. *Omega*, 44.