“Determinants of operational efficiency on the financial health of non-life insurance companies in South Africa”

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DETERMINANTS OF OPERATIONAL EFFICIENCY ON THE FINANCIAL HEALTH OF NON-LIFE INSURANCE COMPANIES IN SOUTH AFRICA

Abstract

This study aimed to determine the effect of operational efficiency on financial health of non-life insurance companies in South Africa. Operational efficiency refers to an insurer's ability to deliver its services while minimizing costs and maximizing profitability. A descriptive research design was used to achieve the objective of this study. The panel data from 2008–2019 used secondary data sourced from S&P Capital Q and Refinitiv Eikon, well-known databases with readily available data. The population of this study focuses on 32 non-life insurance companies with measurable markets of 57 domestic non-life insurance providers in South Africa. Data were analyzed using Fixed-effect regression, (Random-effect GLS regression, correlation, and the Hausman test. The result reveals that of all the variables, only premium growth correlates significantly (negative correlation) with financial health. This could be a result of a specific investment that resulted in a lower rate than that of a risk-free security. It is also important to note that a negative premium does not always indicate a problem. This can happen due to cancellations of reinsurance, reinsurer closures, paid off reinsurance ahead of time, under- pricing policies, inadequate reserves, high claim frequency, operational inefficiencies, investment losses, inadequate risk assessment, economic downturn, regulatory changes, catastrophic event, and any other events. It is essential for non-life insurance companies to carefully manage their underwriting practices, risk assessment, pricing strategies, and investment portfolios to avoid negative premium situations and maintain financial health.

Keywords gross domestic product, inflation, premium growth, panel data

JEL Classification M10, C10, G22

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INTRODUCTION

The insurance sector is crucial to the survival of an economy (Babuna et al., 2020). For insurance companies to achieve their objectives, the sector must be reliable in providing best financial protection in the event of loss or damage of asset, safe in minimizing losses that might arise in the future risks or uncertainties (Mazviona et al., 2017). Pension funds and insurers are significant stockholders in economic marketplaces (Pinkus, 2023). They are a basis for stabilizing monetary needs (Peksevim & Ercan, 2023). Nevertheless, insurers help protect household stability and professional equilibrium by protecting their risks (Babuna et al., 2020). Insurers and pension funds are managed and supervised (Park & Stańko, 2019).

Operational efficiency measures an entity to create income (Kaydos, 2020). Therefore, it is crucial to examine the effect of South African non-life insurance companies' operational efficiency and financial health. For a long time, operational efficiency has been a significant challenge for insurance companies; the pressure of low investment

returns, the pressure to change to the digital age to be relevant and compatible with modern technology, the lack of performance to the standard and strategic vision are the primary challenges to further the transformation effort. Several studies have been conducted in this area to assess a company's financial health in the banking sector by examining how its resources are employed to promote operational efficiency and productivity. At this stage, it is essential to understand the determinants of the financial health of non-life insurance; it is necessary to identify and examine the effect of micro and macroeconomic variables on the financial health of non-life insurance companies.

1. LITERATURE REVIEW

The South African insurance sector has contributed to the short-term and long-term economy (Altarhouni et al., 2021). The latest average value of South Africa insurance assets as at 2000-2020 is 60.14 percent, compared to the 2020 global average based on 85 countries, which is 26.96 percent (The Global Economy, 2020). Profit before tax of R42.3 billion is a substantial improvement on the R2.0 billion profit report in the year 2022 (Deloitte, 2022). Gross premiums for short-term insurance came to over R100bn, and R42bn claims were paid out. 3% GDP was contributed by the short-term mark. However, it is noteworthy for insurance companies to sustain their operational efficiency to maintain effectiveness despite challenging market conditions (Rajapathirana & Hui, 2018). It is crucial to provide quick access to data and prompt client communication. It will enhance transparency and truth (Losada-Otálora & Alkire, 2019).

Generally, insurance companies and any other goal-oriented organization cannot overemphasize efficiency to get oriented results (Owoyele, 2017). Operational efficiency is a company's ability to optimize its resources and processes to minimize costs and maximize output (Osazefua, 2019). Financial health encompasses various dimensions, including profitability, solvency, liquidity, and overall stability (Mavlutova et al., 2021). For an insurer to earn the trust of policyholders, the ability to yield a given set of productions via involvements efficiency is required (Shetty et al., 2022).

The literature suggests that the connection between operational efficiency and financial health is of paramount importance (Taheri et al., 2020) as efficient operations can lead to cost savings, increased customer satisfaction (Yi et al., 2021) and improved financial health (Tran et al., 2020). Several key indicators are often used to measure operational efficiency within non-life insurance companies (Bilbao-Terol et al., 2022) These include expense ratios, claims processing times, underwriting efficiency (Olarinre et al., 2020), and investment management practices. Effective utilization of technology and streamlined processes can help improve these metrics (Moretto & Caniato, 2021). Financial health indicators reflect the overall stability and viability of a company (Rajesh, 2020). Common financial health indicators include return on equity (ROE), combined ratio, solvency margin, and liquidity ratios (Tsvetkova et al., 2021) These indicators provide insights into a company's ability to generate profits, manage risks, and meet its obligations (Karman & Savanevičienė, 2021).

A range of empirical studies has investigated the relationship between operational efficiency and financial health in the context of non-life insurance companies and found a positive correlation between lower expense ratios and higher profitability among non-life insurers (Msomi, 2023). Similarly, it was highlighted that streamlined claims processing resulted in improved customer satisfaction and reduced loss adjustment expenses (Mehmood, 2021). The insurance industry operates in a complex environment influenced by macroeconomic factors, regulatory changes, and consumer preferences (Abrardi et al., 2022). Regulatory reforms affect both operational practices and financial performance (Ellili, 2022). Advancements in technology, such as data analytics, artificial intelligence, and digital distribution channels, have transformed the operational landscape of non-life insurance companies (Banu, 2022). Integrating these technologies can lead to enhanced risk assessment, efficient claims management, and personalized customer experiences, all of which contribute to financial health (Grewal et al., 2020).

However, insurance companies with lower expense ratios tend to exhibit higher profitability (Bărbuță-Mișu et al., 2019). Insurers with efficient cost structures could achieve higher returns on equity (ROE)

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due to reduced overheads (Edouard, 2021). Effective cost management and streamlined operations can positively affect financial health (Dwivedi et al., 2021), and insurers that successfully expedite claims processing can enhance customer satisfaction (Wai, 2019) and reduce loss adjustment expense (Prakash, 2023). Also, the size of a company can has a significant impact on its operational efficiency (Hirdinis, 2019). However, larger companies have advantages related to economies of scale, access to resources, and diversification, they must also manage the challenges associated with their size (Dickler & Folta, 2020). According to Risal (2020), the size of non-life insurance companies has a significant positive effect on the non-life, and this leads to sustainability for insurers. Big insurers regularly have more capacity to deal with contrary market instabilities than smaller ones, and insurers with large sizes can benefit from financial prudence of scale in terms of labor cost (Kramarić et al., 2019). However, it is not easy to measure insurance companies' size precisely before the total assets' logarithm is used as a directive for insurers (Tefera, 2016). The Indian non-life insurance market has a modest level of applicability, allocative efficiency, scale, and cost, and there is a significant potential for growth. The results also show that general underwriters outperform private insurers in terms of cost efficiency. It is also clear that, regardless of size and asset class, all insurers operate under expanding returns to scale. Malmquist Index results show that insurer inefficiency is increasing, which is due to the use of the best technologies; the effectiveness and output of the Indian non-life insurance business have not been significantly impacted by the global financial crisis of 2008, according to bootstrapped DEA and bootstrapped Malmquist index data. The shortened regression findings show a statistically significant negative association between size, reinsurance, and efficiency. Furthermore, it displays a statistically significant positive relationship. The relationship between age competence and productivity also suggests that the 2008 global financial crisis did not significantly affect the effectiveness and productivity of the Indian non-life insurance business. The shortened regression findings show a statistically significant negative association between size, reinsurance, and effectiveness. Additionally, this demonstrates a statistically significant beneficial age efficiency link (Ilyas & Rajasekaran, 2019). The findings showed that among the crucial internal variables of a company's efficiency, operating costs, and technological provision is its owners' equity (Nguyen et al., 2019). Size, type, return on assets, and efficiency are significantly correlated with the external characteristics. Logit model using the DEA, Slacks, and Logit Model is used to analyze the determinants and effectiveness of Jordanian insurance companies. Twenty-two active insurance companies in Jordan between 2000 and 2016 are used in the study. The study uses data envelopment analysis to evaluate the technical competency scores and examines the efficacy components using logit and slacks-based models (Jaloudi, 2019). However, a study conducted in Saudi Arabia demonstrated a negative impact on working efficiency. It discovers an unbroken decline in the internal obligations of stakeholder equity (Ali & Tausif, 2019). The study examined financial information from insurance companies and documented internal analysis for Saudi Arabia for the years 2013–2017; data from 2010–2015 were used for external analysis (Ali & Tausif, 2019). This study found that whether it was conventional or Islamic banking, MENA banks demonstrated an advantage in their operations. The current loan movement is less leveraged for Islamic banks than other banks, resulting in higher "financial health ratios" performance. Comparing Islamic banks with foreign banks, it is possible that Shariah compliance does not result in a higher rate of capital growth and equity formation ("balance sheet efficiency"). Banks are much more involved in asset building and equity formation due to Islamic banking practices' impact on interest-free loans.

Conversely, nations with fewer foreign economic institutions typically display greater efficiency levels in their "financial health indicators" sub-structure, indicating a negative impact due to stricter regulatory policies towards foreign businesses; financial performance in a dynamic network DEA model was examined to explain the example of banking performance in the Middle East and North Africa. Information was obtained from the Bank Scope database between 2006 and 2014 (Wanke et al., 2019). Operational efficiency is a significant determinant of financial health of Africa non-life insurance (Msomi, 2023).

The purpose of the study is to determine the factors of operational efficiency and financial health of non-life insurance companies in South Africa.

2. METHOD

A descriptive research design was used to achieve the objective of this study. Secondary data were used and sourced from S&P Capitall Q and Refinitiv Eikon, well-known databases with readily available data. Data were analyzed using regression analysis (Fixed-effect regression), (Random-effect GLS regression), correlation, and the Hausman test. Good post-estimation tests were conducted to determine the appropriate model for the data set. Hence, this study was a panel study, combining data from 32 non-life South African companies from 2008–2019. This study is limited to this period due to the COVID-19 impact on companies, which affected all the insurance companies based on gross domestic product and unemployment, resulting in a 15 percent fall in total gross domestic pool, which is predicted to return to the pre-pandemic stage by 2024 (Umar et al., 2020). However, data analysis did not include insurers with less than R38,167 million (m) turnover in 2019 (Atlas Magazine, 2020). As such, the population of this study focuses on 32 non-life insurance companies with measurable markets of 57 domestic non-life insurance providers in South Africa.

To achieve the objective of this study, the following model was used:

$$TLA_{it} = \alpha + \beta_1 OE_{it} + \beta_2 SE_{it} + \beta_3 PG_{it} + \\ + \beta_4 GDP_{it} + \beta_5 IF_{it} + \varepsilon_{it}, \quad (1)$$

where *TLA* = dependent variable, which is financial health and financial performance; *OE* = operational efficiency; *SE* = size of companies; Natural log of Total Assets; *PG* = premium growth; *GDP* = GDP growth rate; *IF* = inflation rate; ε = the error component or company *i* at time *t* assumed to be zero $[\varepsilon_{it}] = 0$; α = constant or parameter interpretation; β = 1, 2, 3...8 are the slope of the estimated coefficient or parameters.

This model was specified to test for the effect of operational efficiency and financial health of non-life insurance in South Africa.

- Total assets: TLA (financial health) = Total liabilities;
- Total Income: OE = Operational efficiency= Total cost.

3. RESULTS

The results are presented in tabular form and the following five tables present the statistical results of the study. Table 1 indicates the descriptive characteristics of variables. The descriptive analysis of pooled observations of variables was used to investigate the effect of operational efficiency and financial health falling under this section. The descriptive characteristics include means, median, standard deviation, minimum, and maximum values.

Table 1 presents the descriptive statistics effect of operational efficiency on the financial health of non-life insurance companies in South Africa. The table reveals the average operational efficiency, size of business, premium growth, gross domestic product, and inflation observations for 45.6, 47.5, 296, 1.541, and 5.72, respectively. The findings imply that operational efficiency is improving positively as Table 1 shows the minimum and maximum values of operational efficiency 2.12 and 136, size of a firm –33.2 and 137, premium growth 75.0 and 602.0, gross domestic product –2.00 and 3.28, and inflation 4.06 and 10.0. This shows the values at which operational efficiency, premium growth, size of a firm, and inflation have been deviated from the speculative expected value. The standard deviation of variables stood at operational efficiency 115, size of a firm 115, premium growth 205, gross domestic product 1.37, and inflation 1.60. But Table 1 only gave a glance description of the variable used in this study.

Table 1. Descriptive characteristics of variables

Variables	Obj	Mean	Std. Deviation	Min	Max
TLA	368	.488	.555	.000	.446
OE	368	45.6	115.	2.12	136
SE	368	47.5	115.	–33.2	137
PG	368	296.	205.	75.0	602.
GDP	368	1.54	1.37	–2.00	3.28
IF	368	5.72	1.60	4.06	10.0

Note: Obj stands for the number of observations, Std. Dev stands for standard deviation, Min stands for the minimum values, and Max stands for the maximum. Operational efficiency (OE), company size (SE), premium growth (PG), gross domestic product (PG), and Inflation (IF).

The correction coefficient in Table 2 shows the effect of non-life insurance companies' operational efficiency and financial health. The variables are operational efficiency, company size, premium

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Table 2. Correlation analysis

Variables	TLA	OE	SE	PG	GDP	IF
TLA	1	–	–	–	–	–
OE	–.047	1	–	–	–	–
SE	–.047	.999**	1	–	–	–
PG	–.109*	–.210**	–.208**	1	–	–
GDP	–.006	–.112*	–.112*	.007	1	–
IF	–.005	–.026	–.024	–.017	.055	1

Note: * Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed).

growth, gross domestic product, and inflation. The table shows the correlation analysis of existing relationships between some experimental parameters. In particular, the result reveals that of all the variables, only premium growth significantly correlates (negative correlation) with financial health. The unique source of income for insurance companies resulting activities is the gross written premium (Tegegn et al., 2020). An increased premium growth rate means business is growing (Bocken et al., 2020). Under typical situations, the growing businesses regularly hunt for external funds to preserve their growth standing, since internally made funds may not cater for all finances needed for investment opportunities (Leach & Melicher, 2020). As development is also a proxy of administrators' risk attitudes, it is anticipated that the bigger the firm is, the more likely it expands to discover diverse lines of action that signal an increased financial performance (profitability and returns). Under normal circumstances, the premium growth rate captured as the ratio of changes in gross written premium should be positively linked to the financial performance of a company (Kozak, 2011). This shows that variables – OE, SE, GDP, and IF – move in the same direction as the operational efficiency on the financial health of non-life insurance firms, increasing or decreasing together with it. They fluctuate depending on operational efficiency, and/or financial health falls

Table 3. Regression analysis fixed effect (within data)

```
. xtreg TLA OE SE PG GDP IF, fe

Fixed-effects (within) regression               Number of obs      =       368
Group variable: ID                              Number of groups   =        31

R-sq:  within  = 0.0132                         Obs per group: min =         8
       between = 0.0261                                        avg =      11.9
       overall = 0.0063                                        max =        12

                                                F(5,332)           =      0.89
corr(u_i, Xb)  = -0.3787                        Prob > F           =    0.4882
```

TLA	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
OE	.000193	.0003958	0.49	0.626	-.0005856	.0009716
SE	-.0001921	.0003955	-0.49	0.628	-.0009701	.000586
PG	.000067	.0000413	1.63	0.105	-.0000141	.0001482
GDP	-.0008363	.0012546	-0.67	0.505	-.0033043	.0016317
IF	.0014171	.0010732	1.32	0.188	-.0006942	.0035283
_cons	.0196466	.0147226	1.33	0.183	-.0093148	.0486079
sigma_u	.05659004					
sigma_e	.03259262					
rho	.75091423	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(30, 332) =    22.51                 Prob > F = 0.0000
```

Table 4. Regression analysis random effect

```
. xtreg TLA OE SE PG GDP IF, re

Random-effects GLS regression                   Number of obs      =       368
Group variable: ID                              Number of groups   =        31

R-sq:  within  = 0.0008                         Obs per group: min =         8
       between = 0.0258                                        avg =      11.9
       overall = 0.0102                                        max =        12

                                                Wald chi2(5)       =      2.22
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.8175
```

TLA	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
OE	.0001718	.0004775	0.36	0.719	-.0007642	.0011078
SE	-.0001787	.0004772	-0.37	0.708	-.001114	.0007565
PG	-.0000211	.0000196	-1.07	0.283	-.0000595	.0000174
GDP	-.0010595	.0015259	-0.69	0.487	-.0040502	.0019313
IF	.0008541	.0012993	0.66	0.511	-.0016926	.0034008
_cons	.052134	.0109142	4.78	0.000	.0307426	.0735253
sigma_u	.01691751					
sigma_e	.03259262					
rho	.21224034	(fraction of variance due to u_i)				

and/or improves. Financial health, operational efficiency, company size, gross domestic product, and inflation, while premium has an inverse linear association. Due to the weak and extremely weak correlations between operational efficiency, company size, gross domestic product, and inflation, the magnitude of these correlations does not support the existence of multi-collinearity. The results of the correlation analysis, which illustrate how some of the measured parameters are currently related to one another, are shown above. Particularly, the outcome demonstrates that of all the variables, only premium significantly negatively correlates with financial health.

Table 3 shows the multiple regression analysis with a fixed effect model. The result shows that none of the predictors significantly affects the dependent variable TLA. The R^2-value = 0.0063 shows that the predictors only account for 0.63% of the total variance of the dependent variable. The F-value = 0.89 is not significant at 5% (p = 0.4882). This is consistent with the finding in Nigeria's insurance industry that the sector's operational efficiency has not been performing as expected (Ujunwa & Modebe, 2011). This also confirmed that the South African non-life insurer operates with about 50% inefficiency (Alhassan & Biekpe, 2015).

Table 4 highlights the regression analysis random effect. This table shows that no predictor significantly affects the dependent variable of financial health. According to the R2-value of 0.0102, only 1.02% of the total variation of the dependent variable can be attributed to the predictors. The outcome shows that the variation has no significant effect on the variable at 1.02% of the systematic variation. In the determinants of operational efficiency on financial health as proxied by the ratio of company size, premium growth, gross domestic product, operational efficiency, and inflation. The Wald Chi2 = 2.22 is not significant at 5% (p = 0.8175), which suggests that none of the model's factors have a meaningful impact on the relationship between operational efficiency and the financial well-being of non-life insurance companies.

Table 5 shows the results of the Hausman test to determine the appropriate model for the data set. The result shows that the value Chi^2 = 4.41 (p = 0.4921) implies that the null hypothesis is accepted that the random effect model is appropriate for the data. At the same time, this study rejects the alternative hypothesis that the fixed effect model is appropriate.

It is possible to emphasize that the random effect model estimation was efficient and trustworthy with the valid instrument. There is no over-specification of the instrument utilized in the operational efficiency and financial health of non-life insurance companies in South Africa. The result of the study leads to the rejection of the fixed effect model.

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Table 5. Hausman test

```
. hausman fe re
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	Coefficients (b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
OE	.000193	.0001718	.0000212	.
SE	-.0001921	-.0001787	-.0000133	.
PG	.000067	-.0000211	.0000881	.0000363
GDP	-.0008363	-.0010595	.0002232	.
IF	.0014171	.0008541	.0005629	.

```
                b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =        4.41
                Prob>chi2 =      0.4921
                (V_b-V_B is not positive definite)
```

4. DISCUSSION

4.1. Operational efficiency

This finding shows that operational efficiency considerably improves the financial health of non-life insurance businesses in South Africa, as shown in Table 3. This demonstrated the importance of operational efficiency for the financial health of non-life insurance companies. As a function of operating costs, i.e., maintenance and administration of daily operations, the operational efficiency of a South African non-life insurance company is essential to its financial performance and profit efficiency. The higher the operating efficiency, the more profitable a company or investment is. This is done so that the organization can earn profits at lower costs. The financial market, which includes the stock market, currency market, and bond market, is essential to the efficient operation of the capitalist economy because it is where securities are traded. When business costs and fees are decreased, operational efficiency occurs. According to Zhang et al. (2022), an internally efficient market is another name for a market with high operational efficiency.

As a function of operating costs, that is the upkeep and management of routine activities (Errandonea et al., 2020). The higher the operating efficiency, the more advantageous a company or investment is (Kaydos, 2020). This is so that the entity can generate returns for less money (Ichsan et al., 2021). Reducing corporate expenses and fees results in operational efficiency. Internally efficient markets are another name for operational efficiency markets. Operational effectiveness improves financial performance in times of insurer insolvency (Hemrit, 2020). Additionally, they correlate favorably with financial achievement. The outcome showed that the relationship between the financial health of non-life insurance companies and the size of the business is negative and insignificant. The results are in line with those from Pakistan, Takaful, Ethiopia, Nigeria, and Egypt (Batool & Sahi, 2019) However, a company's size has a little impact on how well it performs (Husna & Satria, 2019). Before the total asset's logarithm is used as a guide for insurers, it is difficult to determine the exact size of insurance companies (Terdpaopong & Rickards, 2021).

4.2. Size of companies

In Asia, company size is an insignificant predictor of the profitability performance of life insurance companies (Zainudin et al., 2018). In Albania, company size is positively correlated with the financial health of insurance companies, but their impact is statistically insignificant (Kripa & Ajasllari, 2016). Also, in Nairobi, company size was statistically insignificant in determining a company's performance (Ayako et al., 2015).

However, in Ethiopia, company size can be negatively financially distressed if there are no inter-

nal factors and strategies to manage the situation (Isayas, 2021). In the United Kingdom, company size is the significant determinant that affects insurance companies' financial performance (Sharma et al., 2021). Furthermore, negative GDP creates fear among stockholders (Himanshu et al., 2021). The effect of GDP in 4 of the nine countries, Japan, Spain, the US, and the UK, was weaker than the effect of inflation. This confirms that a negative inflation rate can be detrimental to capital accumulation (Tien, 2021). Capital accumulation motivates the pursuit of profit, involving the investment of money to increase initial monetary value (Chen et al., 2021).

This confirms that a regular price shift of +/−0.46 of South African prices relative to the US dollar on the open market will cause a proportion level of change in inflation in a normal economy system when all other influences remain constant. Papadamou et al. (2020) revealed shock inflation that affects 7 of 9 countries: Canada, Australian, Greece, France, US, and UK. According to Mose and Kaboro (2019), negative inflation among EAC countries reduces the exchange rate with the region. Urom et al. (2019) reject the null hypothesis of a linear relationship between inflation and growth and that there is a statistically negative impact of an increase in the inflation rate above the threshold of 10.2%. A stable economy growth may be achieved by keeping inflation below threshold to attract both local and foreign investors, while government introduces fiscal discipline as a means of controlling inflationary pressure (Kiptum, 2022) Inflation rate is negative but has a significant impact on an insurance company's financial health (Deyganto & Alemu, 2019). However, in Indonesia, premium growth does not affect the return on assets or equity. This implies insurance companies need to perceive managing due expenses and the ability to pay one's debts (Septina, 2022). In Russia, it was revealed that premium growth has a negative relationship with return on assets (Tsvetkova et al., 2021). According to Shari's Insurance registered in the OJK, premiums do not significantly affect the profitability of Islamic public insurance companies listed in the OJK (Fadah et al., 2021). The Indonesia Stock Exchange revealed that premium income significantly distresses the profit growth of insurance companies (Sudirman & Anthoni, 2021). It was also revealed that if profitability can be sustained, premium growth can be booted (Olarewaju & Msomi, 2022).

4.3. Premium growth

The result revealed that the premium is negative and is not statistically important for financial health with non-life insurance companies in South Africa. Consistent with the findings in Russia, it was revealed that premium growth has a negative relationship with return on assets (Tsvetkova et al., 2021). According to Sharis, insurance, registered in the OJK, premiums have no important effect on the profitability of Islamic general insurance companies listed in the OJK (Fadah et al., 2021). It was revealed on the Indonesian Stock Exchange that premium income significantly retards profit growth of insurance companies (Sudirman & Anthoni, 2021). It was also revealed that if profitability can be sustained, premium growth can be accelerated (Olarewaju & Msomi, 2022). In Turkey, the result shows a negative premium growth rate. In Turkey, non-life insurer profitability is observed (Özen & Çankal, 2020). However, a negative premium in non-life insurance is a highly unusual and atypical occurrence. In standard insurance practices, premiums are payments made by policyholders to insurance companies in exchange for coverage and protection against specific risks (Santri et al., 2022). These premiums are designed to cover an insurance company's costs, including administrative expenses, claims payments, and a margin for profit. The idea is that the total premiums collected should exceed the total claims and expenses, allowing an insurance company to operate profitably (Abdikerimova & Feng, 2022). A negative premium would imply that the insurance company pays the policyholder to have coverage, which is highly counterintuitive and economically unsustainable for the insurer. There are a few hypothetical scenarios where you might come across the term "negative premium," although they are quite rare and usually involve specific financial or contractual arrangements. In some reinsurance agreements, a reinsurer may reimburse the ceding insurance company more than the premiums received for specific policies (Skeoch & Ioannidis, 2023). This could be due to negotiated terms that involve the reinsurer taking on more risk than the premiums collected would suggest. In such cases,

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it may appear as if there is a "negative premium" for the ceding insurer, although it is not a standard premium but rather a financial transaction related to reinsurance. Premium Refunds or Rebates: In certain situations, insurance companies may provide policyholders with refunds or rebates of their premiums (Killins & Chen, 2022). For example, if an insurance company has overcharged a policyholder or made a billing error, they may issue a negative premium as a refund to correct the mistake.

4.4. Gross domestic product

The result revealed that gross domestic product is statistically negative with respect to the financial health of non-life insurance companies. Consistent with the study in the UK and the US, which finds that gross domestic product per capita is a statistically significant determinant of financial performance, gross domestic product is negatively related to performance (Batool & Sahi, 2019). In Kenya, the study found that gross domestic product has an insignificant positive connection with the financial performance of insurance companies (Kimani, 2021). At the same time, in countries like Pakistan, Kenya and the Philippines, their gross domestic product is not meaningfully related to their financial performance, which implies that poor monetary conditions would deteriorate the superiority of the financial portfolio. However, if the gross domestic product increases, the probability of marketing insurance strategies would also increase, and insurers are likely to benefit from that in the form of increased profits (Nariswari & Nugraha, 2020). The gross domestic product and the financial health of non-life insurance companies are not directly related in a way that a negative gross domestic product statistically implies poor financial health for these companies. GGP is a macroeconomic indicator that measures the total economic output of a country, while the financial health of insurance companies depends on a variety of factors specific to the insurance industry which are economic environment, a declining gross domestic product can signal economic challenges, such as a recession or economic downturn. During economic downturns, non-life insurance companies may face increased risks in terms of lower consumer demand for insurance products, higher unemployment leading to fewer policyholders, and potentially more insurance claims due to adverse economic conditions. This can have an indirect impact on the financial health of insurance companies. Investment portfolios since insurance companies often invest premiums, they collect to generate income and cover future claims. A negative gross domestic product growth rate can influence the performance of these investments. If the overall economy is struggling, it can affect the returns on their investment portfolios, which, in turn, can impact the financial health of the insurance company. Risk assessment as in economic conditions, as reflected in the gross domestic product, can influence an insurance company's underwriting and risk assessment practices. In a declining economy, insurance companies may need to reevaluate their risk exposure and pricing strategies to adapt to the changing economic landscape and catastrophic events impacted by natural disasters which can result in a higher number of claims for non-life insurance companies, affecting their financial health. It's essential to recognize that the financial health of non-life insurance companies is intertwined with broader economic conditions. A negative gross domestic growth rate signifies economic challenges that can have a cascading effect on the insurance industry. However, the exact impact can vary based on the severity and duration of the economic downturn, the specific strategies employed by individual insurance companies, and the regulatory and competitive landscape. Additionally, effective regulatory oversight and capital adequacy requirements become even more crucial to ensure the stability of the insurance industry during times of economic stress.

4.5. Inflation

The result revealed that inflation is positive and statistically significant for the financial health of non-life insurance companies (Siddik et al., 2022). A negative inflation rate can be detrimental to capital accumulation (Chen et al., 2020). Moreover, capital build-up encourages the pursuit of profit, involving the asset of money with the goal of growing initial monetary value (Elder-Vass, 2021). According to the department of Statistics South Africa (2022), this confirmed that a regular price shift from July 2021, when the rate was 4.6%, consumer prices increased on an average of 0.9 % between June 2023 and July 2023 in South Africa

(Stats SA, 2022). Inflation is significant because inflation amongst EAC countries reduces the exchange rate with the region (Mose & Kaboro, 2019).

According to Urom, null hypotheses should be rejected that there is a linear connection between inflation and growth, and that a rise in the inflation rate above the threshold of 10.2% has a statistically detrimental effect (Urom et al., 2019). By keeping inflation below the level needed to draw in both domestic and foreign investors and enforcing fiscal restraint as a means of reducing inflationary pressure, the government can promote stable economic growth (Angelina & Nugraha, 2020). Inflation rates are negative but have an important impact on insurance companies' financial health. This implies that it can positively or negatively affect profitability, depending on whether inflation is expected. Inflation is regularly defined as a state where "too much currency is chasing after insufficient goods". The increase in price level does not fully reflect the actual inflation rate (Kolodko, 2021). Whenever inflation occurs, currencies lose purchasing power (Cooper, 1993). It is important to note that the relationship between inflation and the financial health of non-life insurance companies can be complex and may vary based on factors such as the type of insurance, the specific market conditions, and the company's risk management and investment strategies. While positive inflation generally has positive effects on insurers' financial health, extreme or rapidly rising inflation can create challenges, such as increased claims and uncertainty in the financial markets. Additionally, insurers need to carefully manage their portfolios and pricing to adapt to changing economic conditions. In conclusion, while there may be indications and historical evidence that inflation can have positive effects on the financial health of non-life insurance companies, predicting future outcomes requires a holistic understanding of the complex interplay between inflation, the insurance industry, and broader economic factors. Careful risk management and adaptation to changing economic conditions are essential for insurance companies to maintain financial health in an inflationary environment.

This study is limited by the fact that secondary data sourced was used from S&P Capital IQ and Refinitiv Eikon. Unlike primary data, secondary data may not be error-free and thus may be inaccurate. Also, the small sample size may generalize the study results statistically incorrectly. Further research should consider other financial institutions, most importantly, life insurance companies in South Africa, and evaluate the operational efficiency of life insurance companies in South Africa. Especially focus should be on two pillars such as advertising activities and asset activities. Even though the features that regulate the operational effectiveness of insurance companies are surrounded by other organizational activities that involve assets in several possessions to the output achievement.

CONCLUSION

This study aimed to examine the effect of operational efficiency and financial health of non-life insurance companies in South Africa. From the analysis in this study, only PG negatively affects financial health (the correction coefficient = –0.109; correlation is significant at the 0.05 level), while other variables have a positive and significant effect on financial health. It is therefore concluded that the determinants of financial health in South African non-life insurance are operational efficiency (–.047), company size (–.047), gross domestic product (–.006), and inflation (–.005) as they are the only significant variables. It is also important to note that a negative premium does not always indicate that there is a problem. It is essential for non-life insurance companies to carefully manage their underwriting practices, risk assessment, pricing strategies, and investment portfolios to avoid negative premium situations and maintain financial health. Diversification by introducing new products or expanding into complementary lines of insurance to reduce overreliance on a single type of coverage can lead to excessive premium growth. Strategies must be developed to address the potential impact of increased claims, regulatory changes, and economic fluctuations tied to premium growth. Also, ensure that insurance companies maintain adequate capital reserves to cover potential losses associated with premium growth. Adhere to regulatory requirements and be proactive in managing solvency concerns.

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In conclusion, addressing the negative impact of premium growth on the operational efficiency and financial health of non-life insurance companies in South Africa requires a multifaceted approach. By implementing the recommendations mentioned above, insurance companies can better navigate the challenges associated with premium growth and work toward ensuring their long-term financial health and operational efficiency in a competitive marketplace.

AUTHOR CONTRIBUTIONS

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