

The Contribution of Life Insurance Companies to The Gross Domestic Product in Rwanda. A Case of SORAS-VIE LTD (2010 – 2017)

Jean Bosco SIBOMANA¹, Jean Bosco NDIKUBWIMANA¹, Angeliqe DUKUNDE² and Cickey NALUBEGWA³

¹Applied Statistics Department, School of Economics, College of Business and Economics, University of Rwanda. email: sjeanbosco545@gmail.com, ndikujeanbosco@gmail.com

²Faculty of Business and Economics, University of Kigali and ACE-DS/University of Rwanda. E-mail: adukunde@uok.ac.rw & angeliquedukunde@gmail.com , (+250) 788803313

³Accounting Department, School of Business, College of Business and Economics, University of Rwanda. E-mail: ckenjiri@yahoo.com

Corresponding author e-mails: sjeanbosco545@gmail.com, ndikujeanbosco@gmail.com

Abstract

The study investigates the contribution of life insurance companies (LIC) to the gross domestic product (GDP) in Rwanda, case study of SORAS-VIE Ltd from 2010 to 2017. Specifically, investigate the level of investments within the LIC, examine the factors influencing the GDP, and examine the significant relationship between investment of life insurance business and the GDP in Rwanda. Descriptive research design, Pearson correlation and multiple linear regression analysis were used to investigate the extent of the investment, cost of sales, other income, and the gross profit to the GDP. Most of the existing researches concentrated on low penetration and a small number of life insurance in Rwanda. This study has a look at LIC and the contribution they play to the GDP of Rwanda. The findings, show that the investment, cost of sales, gross profit were statistically significant and had positive contribution at 5 %, while other income had insignificant contribution on the GDP of the country. Therefore, the coefficient of determination, shows that the variation on GDP was explained by life insurances about 99.8% which was a good indicator of the higher contribution of Rwandan LIC from 2010 to 2017. It was recommended that investment, income generated should be re-invested into the Rwandan economy to enhance long run economic growth and development. Government of Rwanda under regulator organ (BNR) should keep on motivating the LIC through their policies and those LIC should try to increase the awareness of their products and services to the public.

Key words: Life Insurance, Insurance Companies, Insurance industry, LIC, Gross Domestic Product, Rwanda GDP.

Introduction

The role of insurance sector in mitigating sudden and devastating occurrences thereby stimulating economic growth cannot be over emphasized. Both in developed and developing countries, insurance sector contributes to economic growth both sectorally and geographically.

The elements of protection and investment are present only in case of life insurance. In property insurance, only protection element exists. In most of the life policies elements of saving predominates. These policies combine the programs of insurance and savings. The saving with insurance has certain extra advantages: systematic saving is possible because regular premiums are required to be compulsorily paid. The saving with a bank is voluntary and one can easily omit a month or two and then abandon the program entirely, in insurance the deposited premium cannot be withdrawn easily before the expiry of the term of the policy. As contrast to this, the saving which can be withdrawn at any moment will finish within no time. The insurance will pay the policy money irrespective of the premium deposited while in case of bank-deposit; only the deposited amount along with the interest is paid. After a certain period, it would be a part of

necessary expenditure of the insured. In absence of such forceful compulsion elsewhere life insurance is the best media of saving (Shaun Crawford, 2015).

Family Needs Death is certain, but the time is uncertain. So, there is uncertainty of the time when the sufferings and financial stringencies may be fall on the family. Moreover, every person is responsible to provide for the family. It would be a more pathetic sight in the world to see the wife and children of a man looking for someone more considerate and benevolent than the husband or the father, who left them unprovoked. Therefore, the provision for children up to their reaching earning period and for widow up to long life should be made. Any other provision except life insurance will not adequately meet this financial requirement of the family. Whole life policies are the better means of meeting such requirements. Old-age needs the provision for old-age is required where the person is surviving more than his earning period. The reduction of income in old-age is serious to the person and his family. If no other family member starts earning, they will be left with nothing and if there is no property, it would be more piteous state. The life insurance provides old age funds along with the protection of the family by issuing various policies. Re-adjustment

Need sat the time of reduction in income whether by loss of unemployment, disability, or death, adjustment in the standard of living of family is required. The family members will have to be satisfied with meager income and they have to settle down to lower income and social obligations. Before coming down to the lower standard and to be satisfied with that, they require certain adjustment income so that the primary obstacles may be reduced to minimum. The life insurance helps to accumulate adequate funds. Endowment policy anticipated endowment policy and guaranteed triple benefit policies are seemed to be a good substitute for old age needs (Levine and Robert, 1993).

Individuals unwilling or unable to handle their own funds have been pleased to find an outlet for their investment in life insurance policies. Endowment policies, multipurpose policies, deferred annuities are certain better form of investment. The elements of investment i.e., regular saving, capital formation, and return of the capital along with certain additional return are perfectly observed, in life insurance. The life insurance fulfils all these requirements with a lower cost. The beneficiary of the policy-holder can get a regular income from the life-insurer; if the insured amount is left with him. Life insurance business has been started in 2010

after the new reforms that have been put in place by National Bank of Rwanda (BNR) in the separation of both life insurance and non-life insurance business in Rwanda. During the period under review, the Insurance sector continued to expand both in number of institutions and penetration picked-up. Between June 2015 and June 2016, the number of insurance agents expanded by 17 percent (from 322 to 366), and the number of brokers increased from 10 to 15. In the same period, insurance penetration, measured as total premium relative to GDP slightly increased from 1.7 percent to 1.8 percent. Generally, Rwanda's insurance sector is dominated by short term insurance businesses (i.e. non-life), whose share is 83.2 percent of total insurance assets and 89.8 percent of total gross premiums (BNR, Financial stability report, 2016).

In particular, several studies have focused on the relationship between insurance and economic growth. For example, studies such as (Yinusa&Akinlo, 2013). Found that insurance had positive impact on economic growth. However, study by (Webb I, 2005) showed that insurance had no significant positive effect on economic growth. Rwanda is the only active member of the East African Community (EAC), that levy 18% charged

on premiums this discourages the expansion of Rwandan insurance sector.

To address this challenge, the insurance sector needs to conduct a study in order to prove that VAT on premium has negative impact on the insurance penetration. According to (2010/11 Integrated Household Survey (EICV3)) there has been a significant progress of sustained economic growth and poverty reduction. There has been a reduction in poverty levels from 58% in 2000/1 to 45% in 2012. This implies that the majority of Rwandan population are still engaged in small-scale agricultural activities which, to date, cannot attract insurance because few can afford it. Livestock insurance has begun but is moving at a slow pace because of the costs associated with it. This consequently discourages companies to offer the product. Additionally, Rwanda's informal sector especially those grouped into farming associations are not engaged in micro-insurance. The benefits of micro-insurance are that they do not involve huge administrative costs like mainstream insurance. The Rwanda insurance sector lacks updated Rwanda mortality life tables accompanied by the lack of appropriate assets to match annuity liabilities. Furthermore, there is no comprehensive data on insurance that is publicly available while

no separation between data on short-term and long-term 19 RSSB spearheading social protection in Rwanda, annual report 2011/12/22 insurance. Although public perception of insurance companies may have improved in the last few years, the inefficiencies of insurance companies in processing claims and perceived unwillingness to pay claims has impacted public confidence hence reducing uptake of insurance products. The general level of awareness about insurance products is still very low. Generally, Rwanda's insurance sector is dominated by short term insurance businesses (i.e. non-life), whose share is 83.2 percent of total insurance assets and 89.8 percent of total gross premiums (BNR, Financial stability report, 2016).

National Bank of Rwanda, (2016) on Financial Stability component shows that Rwanda is the only active member of the East African Community (EAC), that levy 18% charged on premiums this discourages the expansion of Rwandan insurance sector. To address this challenge, the insurance sector need to conduct a study in order to investigate that VAT on premium has negative impact on the insurance penetration, Rwanda's insurance penetration is still low; the sector faces a demanding task of achieving penetration of 10% by 2020 from the current

level of 2.3% in order to be at par with the middle income countries. Rwanda has inadequate innovation products/services.

This study is different as most of the existing researches concentrated on low penetration and a small number of life insurance in Rwanda. The purpose of the current paper, examine the contribution of life insurance companies to the GDP of Rwanda and investigate if total investment of Life insurance companies and gross domestic product have any relationship, this helps researchers to formulate the policy which encouraging investors to increase and invest new capital in Life insurance sectors so that Life insurance market in Rwanda will expand. Currently the statistics shows that the Rwandan insurance business is increasing rapidly at the market by comparing in the recent time and this improvement in Life insurance companies has impact on gross domestic product and analyze whether the total investment of Life insurance business and the gross domestic product have any relationship. The main objective of the current work is to examine the significant contributions of life insurance companies to the growth of Rwandan economy. Specifically, is to investigate the level of investments within the life insurance companies in Rwanda, to examine the factors

influencing the Gross Domestic Product (GDP) in Rwanda and to examine the significant relationship between investment of life insurance business and the gross domestic product in Rwanda.

Materials and Methods

This study covers a period of 8 years from 2010 to 2017 because it is within this period data are available and also given the fact that the period is long enough to take care of any reforms that have been put in place BNR in the separation of both life insurance and non-life insurance business in Rwanda. This enable us examine the significant determinants of Life Insurance Companies and its effect on the GDP of Rwanda. This research is a quantitative study aimed at examining the relative contributions of life insurance Companies to the GDP as an indicator of economic growth of Rwandan economy. Researchers used secondary data to get the past figures on the growth of Life Insurance Industry with the help of yearly financial reports and journal articles of Rwanda published by National Bank of Rwanda, Ministry of economics and finance and the World Bank on Rwanda outlook, others will come from SORAS-VIE Ltd for a period of 2010 up to 2017, and other related articles, journal and papers. Therefore,

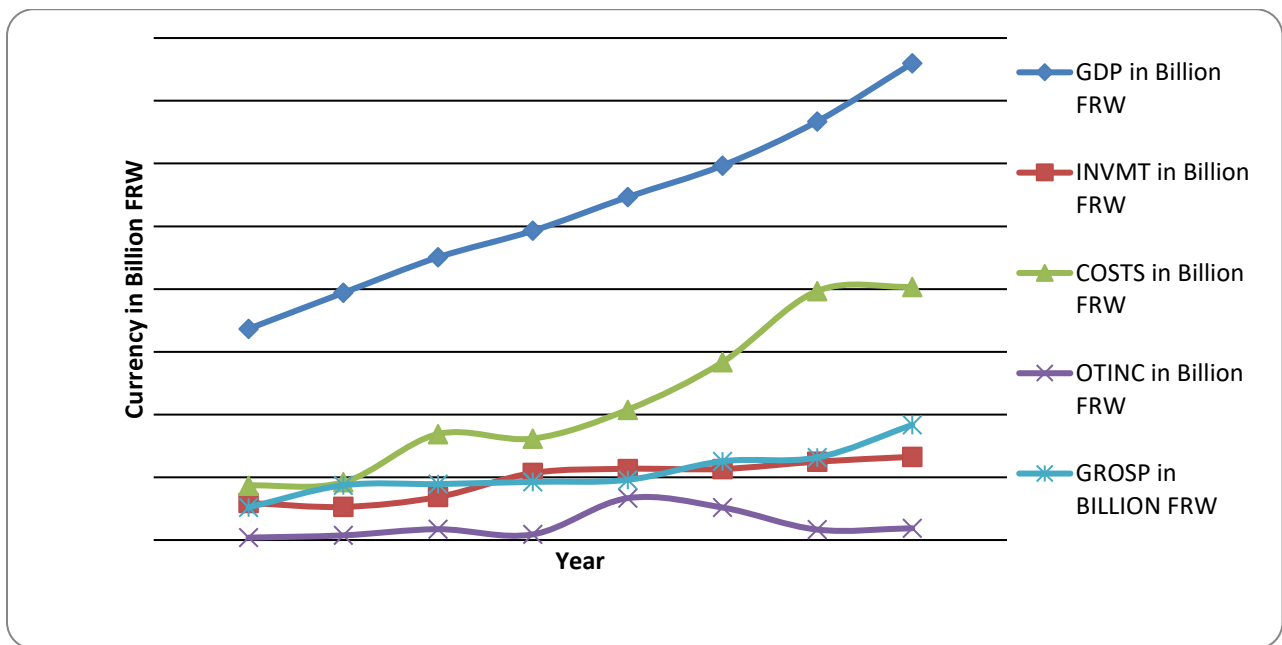
secondary source of data enable us to test hypothesis.

Results and Discussions

It describes and discusses the findings obtained from the secondary data. Descriptive and inferential results have been used to discuss the findings from time series

data of the study. The study targeted a sample of Investment Income, Cost of Sales, Other Income, Gross Profit of SORAS-VIE Ltd from 2010 to 2017 to represent life insurance companies being collected at a rate of 100%. This Collection rate was satisfactory to make generalization to the life insurance companies in Rwanda.

Data analysis



Source: Authors’ computation, (2018)

Figure 1: Graphical representation of growth movement of selected variables from 2010 to 2017. As observed in figure 1, investment, cost of sales, other income, gross profit of the life insurance companies started contributing to the Gross Domestic Product of Rwanda in 2010. In our presentation of results described using tables the results for our dependent and

independent variable which is the gross domestic product and life insurance companies respectively and establishing the correlation between them using our indicators of GDP for Rwandan Economy and Investment, cost of sales, other income and gross profit for life insurance Companies.

Table 1: Model Summary

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate	Durbin-Watson
1	.999 ^a	.998	.996		94.81392	2.839

a. Predictors: (Constant), GROSP in Billion, OTINC in Billion, INVMT in Billion, COSTS in Billion

b. Dependent Variable: GDP in Billion

Source: Researcher’s computation, 2018

This table 1, shows the R and R^2 values. The R value represents the simple correlation and is 0.999 (the “**R**” column), which indicates a high degree of correlation. The R^2 value (the “**R Square**” column) indicates how much of

the total variation in the dependent variable, GDP, can be explained by the independent variables are, INVMT, COSTS, OTINC and GROSP. In this case, 99.8% can be explained which is very large.

Table2: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.396E7	4	3490798.741	388.312	.000 ^a
	Residual	26969.038	3	8989.679		
	Total	1.399E7	7			

a. Predictors: (Constant), GROSP in Billion, OTINC in Billion, INVMT in Billion, COSTS in Billion

b. Dependent Variable: GDP in Billion

Source: Researcher’s computation, (2018)

Recall that there were 8 years, column(C) is 4 and row(r) is 5 in the data set; the degree of freedom associated with SSR is $r-1$ therefore df is $5-1=4$ for the multiple regression model. The degrees of freedom associated with SST is $n-1=8-1=7$. The degrees of freedom associated with Sum of Square Error is df is $c-1$ therefore df is $4-1=3$. The sum of squares

Regression(SSR) is 1.396E7, Sum of Square Error(SSE) is 26969.038, Mean Square Regression (MSR) is 3490798.741, Mean Square Error (MSE) is 8989.679, The F -statistic column, is labeled F and it is 388.312.

Table 3: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	1542.487	165.177		9.338	.003
INVMT/ Billion	1.234	.273	.273	4.514	.020
COSTs/Billion	.365	.088	.322	4.160	.025
OTINC/ Billion	.273	.190	.044	1.435	.247
GROSP/ Billion	1.573	.220	.438	7.153	.006

a. Dependent Variable: GDP in Billion
Source: Researcher’s computation, 2018

The model is: $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$;

The functional equation for testing hypothesis is stated below:

$$GDP = f(INVMT, COSTS, OTINC, GROSP),$$

$$GDP = \beta_0 + \beta_1 INVMT + \beta_2 COSTS + \beta_3 OTINC + \beta_4 GROSP + \varepsilon$$

GDP: Gross Domestic Product, INVMT: Investment income, COSTS: Cost of Sales, OTINC: Other Income, GROSP: Gross Profit, ε is the stochastic error term.

The results are summarized as below:

$$GDP = 1542.487 + 1.234INVMT + 0.365COSTS + 0.273OTINC + 1.573GROSP; \text{ with } t\text{-Statistic} = \{9.338\} \{4.514\} \{4.160\} \{1.435\} \{7.153\};$$

Std. Error = {165.177} {0.273} {0.088} {0.190} {0.220}, $R^2 = 0.998$; Adjusted R Square= 0.996, F-statistic = 388.312 prob(f-statistic) = 0.000; Std. Error of the Estimate = 94.81392, Durbin-Watson = 2.839.

A regression coefficient of 1542.487 implies that there is a positive relationship between total investment (INVMT), cost of sales (COSTS), other income (OTINC), gross profit (GROSP) and gross domestic product (GDP) in Rwanda. The coefficient of

determination R-Square was 0.998 which implies that about 99.8% variations in dependent variable (GDP) is explained by the independent variables which are INVMT, COSTS, OTINC, GROSP instead of independent variables are constant. The

remaining 0.2% was due to other variables which are not considered in the regression model and these are considered as the errors, also affects GDP growth rate in Rwanda. To determine the significance of the independent variables, we conduct a t-test for the parameter. The test of the null hypothesis against the alternate hypothesis is to reject H_0 if $(t) > t_{\alpha/2, n-k-1}$ where $n-k-1$ refers to the degree of freedom and it is obtained from the t-distribution table.

Therefore, at a selected 0.05 percent level of significance with $n=8$, $k = 4$, such that $t_{0.05/2, 8-1-4} = t_{0.025, 3}$, we have critical value of 3.182. Thus, since INVMT has a t-statistic (t_c) of 4.514 and $t_{\alpha/2, 3} = 3.182$, it therefore means that $t_c = 4.514 > t_{0.025} = 3.182$, which means that INVMT growth rate has contributed significantly to the economic growth in Rwanda. Therefore, life insurance has a contribution to GDP in Rwanda. Furthermore, since COSTS has a t-statistic (t_c) of 4.160 and $t_{\alpha/2, 3} = 3.182$, it therefore means that $t_c = 4.160 > t_t = 3.182$, which means that COSTS has a Positive influence on GDP and behaves significantly in explaining the changes in the contribution of life insurance industry to the economic growth in Rwanda within the period under study. Also, OTINC of insurance industry

has a t-statistic (t_c) of 1.435 and $t_{\alpha/2, 3} = 3.182$, it therefore means that $t_c = 1.435 < t_t = 3.182$, which means that OTINC has a positive influence on GDP but behaves insignificantly therefore life insurance does not have a contribution the economic growth in Rwanda within the period under study. GROSP of insurance industry has a t-statistic (t_c) of 7.153 and $t_{\alpha/2, 3} = 3.182$, it therefore means that $t_c = 7.153 > t_t = 3.182$, which means that GROSP has a positive influence on GDP and behaves significantly. Therefore, life insurance companies have a contribution to the gross domestic product in Rwanda. Considering the F-statistic of 388.312 and relating this to $F_{\alpha, (r-1), rc(n-1)}$, at $\alpha = 0.05$, level of significance from the F-distribution, where (r) is number of row ($r=5$), and (c) is number of column ($c=4$) and n is number of observation (an) which is equal to 8, therefore we have $F_{0.05, 4, 140} = 2.44$. Thus, since $F_c = 388.312 > F_{0.05, 4, 140} = 2.44$, F calculated is greater than F tabulated therefore it infers that the model behaves significantly, the model demonstrates the contribution of life insurance companies and the GDP in Rwanda from 2010 to 2017. The F-statistic of 388.312 and prob (F-statistic) of 0.000, therefore, this confirms that there is a linear relationship between dependent and the independent variables. The Durbin-

Watson statistic of 2.839, this shows that the model does not suffer from auto-correlation.

Conclusions & Policy Recommendations

Through issuing life insurance policies, they collect funds and transfer them to deficit economic units for financing real investment. The importance of life insurance is growing due to the increasing share of the life insurance sector in the aggregate financial sector in almost every developing country with Rwanda inclusive. Considering the findings of this study, it was concluded that investment (INVMT) has contributed significantly to the GDP in Rwanda from 2010 to 2017. Cost of Sales, Other Income and Gross Profit of life insurance companies have Positive influence on the GDP and behave significantly except other income which behaves insignificant in the contribution of life insurance companies to the GDP as an indicator of economic growth of Rwandan economy from 2010 to 2017.

Some recommendations are made based on the study findings; Life insurance investment

References

BNR. (2016). Financial stability report. Kigali: BNR.

Buckingham, D. e. (2009). *The Impact of the Commercial World on Children's*

income generated should be reinvested into the Rwandan economy in order to enhance long run economic growth and development. Life insurance companies may engage actuaries who perform actuarial work and valuations with professionalism so that they can advise them how they should gain more profits by applying actuarial techniques and practices to avoid loss or deficit problem of the company. Regulatory framework by National Bank of Rwanda should be effective for compliance by the players in the life insurance industry, practitioners in Rwanda should be ethical in their business practices and adhered to the principles of life insurance especially in prompt claims settlement.

Government of Rwanda through regulatory organ (BNR) should keep on motivating the life insurance companies through their policies formulations and implementations because of the determinant contribution they play in the economy and that life insurance companies on their own part should try to increase the awareness of their products and services to the public.

Wellbeing: Report of an Independent Assessment’,. Report to the Department of Culture, Media & Sport.

cahoy, E. (2018). Empirical Research in Education and the Behavioral/Social Sciences.

- Fred. (1986). *Research Methodology*.
- Han, L., Li, D., Moshirian, F., & Tian, Y. (2010). *Insurance Development and Economic Growth*. Geneva: The Geneva Studys on Risk and Insurance-Issue and Practice.
- KPMG. (2015). *LLP annual report on International Markets and Government*. London.
- Levine and Robert. (1993). *The Theory of Financial Intermediation* .
- National Bank of Rwanda. (2016). *Financial Stability Report*. Kigali.
- Ntiedo J. Umoren, Emem Matthew Joseph. (2016). Relative Contributions of the Insurance Industry to the Growth of the Nigerian Economy. *IJERMT* , 192.
- Shaun crawford. (2015). *Global insurance outlook*.
- Simon, Marilyn K. (2013). *Dissertation and Scholarly Research: Recipes for Success*. seattle, wa: *dissertation success llc*.
- Thiel M . (2001). *Finance and Growth – a review of theory and available evidence*.
- Thiel M. (2001). *Finance and Growth – a review of theory and available evidence*.
- Webb I, G. M. (2005). The effect of Banking and Insurance on the growth of Capital and Output. *J. Financial issues*.
- Webb I, Grace MF, Skipper H. (2005). *The effect of Banking and Insurance on the growth of Capital and Output*.
- Yinusa&Akinlo. (2013). *Journal of Economics and International Finance*. 218.