

EVALUATION OF THE RELEVANCE OF INVESTMENT TO THE MANAGEMENT OF AN INSURANCE COMPANY

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Abstract

This study seeks to determine if there is any relationship between the investment income of an insurance company and its profit-after-tax, on one hand and (the incomes and the asset-base of the company on the other using Nigeria Reinsurance Corporation as a case study. Ten years annual reports were collected, hypotheses were formulated and tested. The results revealed that there exists a positive relationship between the investment income and the profit-after-tax, but the relationship was not significant at 5% level of significance. However, there exists a positive and significant relationship between the investment income and the growth of the company at 5% level of significance and at 8 degrees of freedom.

Introduction

There is a growing concern over insurance company's increasing default in claim settlements fairly, promptly, and as at when due apart from broadening their asset base. This problem has often been associated with cash constraint. Apparently, the management of these insurance funds has not been to the best interest of the sustenance of the companies especially as the investment of the insurable funds has been relegated to the background. It is, therefore, necessary to find out the role of investment in the management of these insurance funds.

Investment from the point of view of an insurance manager is the conversion of money, the insurance funds and reserves, into some species of property from which an income or profit is expected to be derived either immediately or at some future date in the normal course of business. The object of investment is to increase income. (Irukwu, 1977; Braithwaite, 1975; Ikupolati, 1993)

According to Ikupolati (1993), the efficiency and effectiveness of an investment manager depends to a great extent on his ability to strike a balance between all the interrelated and sometimes opposing forces that are capable of shaping the attainment of the organizational objectives, especially that of maximizing the shares of the company. Asomugha (1993) also supported this assertion stressing the importance of investment in any industry, be it the banking, insurance, or any industrial outfit. That is, given that investment serves as a cushion between liquidity reserves and loans and advances.

The principal objective of investment portfolio management, therefore, should be the realization of maximum contribution to the resolution of the liquidity portfolio syndrome. In other words, the objective should be to so order the investment portfolio that it makes maximum contribution to both liquidity and profitability and fulfill other functions. These include providing assets diversification and counter cyclical balances to the interest rate by generating fund when loan demand is weak. This balances the liquidity and income needs of an industry and keeping funds fully employed at all times are among the key tasks of the investment manager.

Position Prior to the Regulation of Investment of Insurance Fund in Nigeria

Insurance industries in the early history of their evolution were not subject to any regulatory controls as regards their investment (Asomugha, 1993). However, the Insurance Act of 1961 made no provisions for the control of investment policies of insurers licensed under it. Consequently, many of the insurance companies were not investing in Nigerian securities and there was a high degree of outflow of capital to more advanced countries. There was also a limited scope of investment opportunities in Nigeria at this period. This anomalous situation was corrected by the Insurance Miscellaneous Provisions Act of 1964, which provided that every insurer should invest at least two-fifths of its previous years premium in Nigerian Securities. The 1976 Insurance Act required all assets in respect of insurance business transacted in Nigerian to be invested in Nigerian securities, shares, in cooperative societies, bills of exchange and loans on property, machinery and plants.

While the country would gain from the fact that the provisions will conserve its foreign exchange, it stands to lose the invisible imports, which would have accrued to it from the dividends and interests on such foreign investments.

The Nigeria Reinsurance Corporation, which was established by the Nigeria Reinsurance Corporation

Decree No. 49 of 1977 as a reinsurer by conception and practice, is an operator in the secondary market. Its business inevitably is closely linked to the business of its ceding companies, the operators of the primary market, whose own fortunes are largely dependent on the state of the economy. The relationship is such, that what affects the primary insurance industry, affects its reinsurer, and both are therefore susceptible to conditions in the domestic economy.

Section 7 of the Decree provides the most specific responsibility of the corporation, which is the compulsory acceptance of 20% of the sum insured in every insurance policy issued or renewed by all registered insurers on January 1978. The ceding companies are to compulsorily cede the 20% of every policy to the corporation, while the corporation is responsible for the settlement of 20% share of the claims incurred by the ceding companies.

Sub-section 2 of the same section imposes on the corporation the liability of paying a reinsurance commission to such companies taking into account any applicable commercial consideration. To further ensure that no reinsurance business is arbitrarily placed outside the country with the remittance of scarce foreign resources, the corporation was imbued with the right of first refusal of any reinsurance business compulsory 20% before such is placed in the international reinsurance market. S.7 (3).

Hypotheses

- 1) There is no positive and significant correlation between investment incomes and the yearly-retained profits of the industry (profit-after-tax).
- 2) There is no significant correlation between the investment incomes and the growth of the industry.

Methodology

In determining the relevance of investment in the management of an insurance company, it is note-worthy to examine the various sources of income and the industry's investment income vis-a-vis the retained profits. The financial statement of Nigeria-Reinsurance for 10 years (1991-2000) was analyzed. The generated statistics were subjected to Pearson Product Moment Correlation Coefficient. The critical value of the correlation coefficient at 5% level of significance was used to test if there was any significant relationship between the variables.

Findings and Discussion

Hypothesis One: From the various investments made over a period often (10) years, the incomes received (denoted by variable X) rose from less than Nil million in 1991 to N48.238 million in the year 2000. The profit-after-tax (denoted by variable Y) fluctuated from N20.364 million in 1991 to N85.877 million in the year 2000 (see appendix 1).

Points (a) and (b) which are the intercept and parameter of the regression techniques used to show the relationship between the two variables X and Y were found to be 39.55 and 1.51 respectively.

While using correlation coefficient analysis to measure the strength of the linear relationship between the two variables X and Y, the standard deviation of X and Y variables were found to be 1.13 and 5.86 respectively. These values were then used to determine the Pearson Product Moment Correlation Coefficient which resulted to $R = 0.41413$. (See Appendix 2).

Hypothesis Two: The trend of investment income and the growth of the corporation asset base were also examined over the same period of ten (10) years. The result, therefore, gave an increase in the incomes from less than Nil million in 1991 to N48.238 million in the year 2000. The asset-base, likewise, rose from N15.879 million to N2, 441.827 million over the same period (See appendix 1). The points (a) and (b) (interception and parameter) of regression used to show the relationship between the two variables X and Z were found to be 1.94 and 53.55 respectively.

Correlation coefficient analysis was also used to measure the strength of the linear relationships between the two variables X and Z. The standard deviations of X and Z variables were found to be 16.33 and 938.42 respectively. These values were used to determine the Pearson Product Moment Correlation Coefficient which gave a value of $R = 0.93$ (See Appendix 3).

Since the values of the coefficient only tell whether a relationship exists, and nothing more, hence the t test was utilized, as the number of years and quantity of data involved were relatively few. While in testing whether there is any significant relationship between the variables, a 5% level of significance was examined, (as the two hypotheses were one - tailed). Therefore, in the data contained in the tables of appendix

1,2, & 3, the coefficient of correlation of the two categories of variables (X & Y), and (X & Z), showed positive relationship because the values are positive.

For the two categories of data and their respective analysis, there existed a positive relationship between the investment income and the yearly-retained profit (profit-after-tax) and the growth (asset - based) of the industry (See Appendix 2 and 3). The t - calculated values for income Vs profit-after-tax (1.2868) is slightly LESS than the critical (table) value (1.860) oft. While the t-calculated values for income Vs asset-base (7.1565) is GREATER than the t- critical, (1.860). The decision rule in testing the significance at a chosen level and at an 8 degree of freedom when calculated t values fall within the critical values oft, (thus area of acceptance) the null hypothesis is accepted.

Conclusion

From the examination and evaluation carried out on the financial history of Nigeria Reinsurance Corporation over a period often years, it was noted that the pattern of investment vis-avis the asset base rose steadily over the years while the incomes staggered upward. This actually corroborated Osoka's (1999) assertions as the ratio of investments being made each year declined with respect to the increase in the asset base.

The ideal situation would have been to adhere to the 35% ratio of the Company's Asset Base (as stipulated in the Insurance Decree of 1999, Section 18(g)) to be invested to enable, at least, an average investment income of same proportion to the overall yearly income of the company. It would have been better according to Irukwu (1977) for the insurance practitioners to be wise and prudent in order to enhance their investment portfolio and sharpen their appraisal techniques for greater performance in the modern economy. This, he believes, would assist the industry attain a more comfortable and financially stable position to absorb any economic shocks in the future. The return on investment would also make the industry much more attractive to both the investors and the consumers of the services provided (Osoka, 1999).

References

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Appendix I: Nigeria Reinsurance Corporation Financials 2000.... >> 1991

	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991
A ASSET	N'000	N'000	N'000	N'000	N'000	N'000	N'000	N'000	N'000	N'000
i Fixed assets	900,402	905,053	840,710	769,358	716,530	348,232	249,941	176,643	147,676	136,27
ii Investments	246,342	277,081	225,836	174,560	145,374	124,829	116,791	119,350	120,495	121,95
iii Net current assets	1,295,083	12,245,321	1,462,433	1,228,096	761,954	635,891	356,809	289,115	273,682	257,65
iv Total (Capital Reserve)	2,441,827	2,427,455	2,528,979	2,172,016	1,623,858	1,108,952	723,541	585,108	541,853	515,87
B Investment / Assets (%)	10.09	11.41	8.93	8.04	8.95	11.26	16.14	20.40	22.24	23.64
C PROFIT & LOSS										
i Investment premium income	2,415,918	2,123,907	2,781,403	3,046,303	3,117,322	3,196,535	1,262,216	1,156,555	922,301	611,48
ii Investment income	48,238	38,872	36,000	45,700	28,200	30,800	10,000	11,000	NA	
iii Other Incomes	881,040	843,506	0	137,881				1,383,734		
iv Expenses	2,378,279	2,111,672	2,708,318	3,146,791	2,999,730	3,166,880	1,390,109	40,405	1,057,662	659,25
v Profit - After - Tax	85,877	51,107	73,085	83,093	190,849	163,928	43,741		33,329	20,36
D Investment & other income	929,278	882,378	0	183,581	73,257	134,273	171,634	267,584	168,690	68,12
E Claims, Comm & Services	-1,54,727	-1,473,922	0	-1594,158	2,852,139	3,043,884	1,307,461	-1,317,107	-1,010,205	-626,93
F Ratios:										
i Invest Income/ Expenses (%)	2.03	1.84	1.33	1.45	9.94	0.97	0.72	0.79	#VALUE!	0.0
ii Invest & Other Income Expenses	39.07	41.79	0.00	5.83	2.44	4.24	12.35	19.34	15.95	10.3
iii Invest Income / Claims, Comm	3.12	2.64	#DIV/0!	2.87	0.99	1.01	0.76	0.84	#VALUE!	0.0
iv Invest & other income / Claims C	69.04	59.87	#DIV/0!	11.52	2.57	4.41	13.13	20.32	16.70	10.8
G SUMMARY	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991
Million	Million	Million	Million	Million	Million	Million	Million	Million	Million	Million
i Gross Premium	2,415.9	2,123.9	2,781.4	3,046.3	3,117.3	3,196.5	1,262.2	1,156.5	922.3	611
ii Investment Income	48.2	38.9	36.0	45.7	28.2	30.8	10.0	11.0	NA	NA
iii Profit-After- Taxation	85.9	51.1	73.1	83.2	198.8	163.9	59.6	40.4	NA	NA

Appendix II Regression And Correlation Coefficient Analysis Techniques

A Using Regression Techniques to show the relationship between the two variables X & Y

	Years	Variable X	Invest Income Variable Y	Profit -After - Tax Multiple of X by Y	Multiple of x by Y
Y = f(X)	1	2000	48.2	85.9	2,323.24
Y = a + bx	2	1999	38.9	51.1	1,513.21
Sum Y = a n + b Sum x	3	1998	36	73.1	1,296.00
Sum xY = a Sum x + b Sum x to the power 2	4	1997	45.7	83.2	2,088.49
NB: a & b are Intercept & Parameter Constants respectively		1996	28.2	198.8	795.24
From Equation 3 & 4:		1995	30.8	163.9	948.64
794.75 = 10a + 264.40b		1994	10	56.6	100
24,551.80 = 264.40a + 9,333.42b		1993	11	40.4	121
a = 39.55 and b = 1.51		1992	11.4	20.8	129.96
		1991	4.2	20.95	17.64
Summations =			264.40	794.76	9,333.42
					24,551.80

B Using Correction Coefficient Analysis to measure the strength of the linear relationship between the two Variables X & Y, that is Investment and Profit-After - Tax

Years	X - Y	X-X	d ² X	Y - Y	d ² Y		
(X-X)(-Y)							
The Sample Mean (X) of X variable = 26,44	2000	48.2, 85.9	21.76	473.50	6.42	41.22	139.70
The Sample Mean (Y) of Y variables = 79,48	1999	38.9, 51.1	12,46	155.25	-28.38	805.42	(353.61)
The Covariance of X and Y	1998	36, 73.1	9,56	91.39	-6,38	40.70	(60,99)
Covar (X, Y) = (Sum (Xi-X) (Yi-Y) / n - 1)	1997	45.7, 83.2	19,26	370.95	3.72	13.84	71.65
	1996	28.2, 198.8	1.76	3.10	199.32	14,237.26	71.65
Therefore Covart (X, Y) = 3,538,64/9=393,18	1995	30.8, 163.9	4,36	19,01	84.42	7,126.74	368.09
And R = Covart (Y) / Sx, Sy	1994	10, 56.6	-16,44	270.2	-22.88	523.49	368.07
Where Sx Standard deviation of scores.	1993	11.0, 40.4	-15,44	238.39	-39.08	1,527.25	603.40
And Sx = Sqr Root (Summation of dx) / n-1	1992	11.4, 20.8	-15,04	226.20	-58.68	3,443.34	882.55
Sy = Sqr (Summation of dy / n-1)	1991	4.2, 20.9	-22,24	494.62	-58.63	3,425.76	1,301.71
Hence, Sx = 16.13 and Sy = 58.86							
		Therefore, R = .41413					
This is the Pearson Product Moment Correction Coefficient		Summations =				2,342.68	

APPENDIX III

Using Regression Techniques to show the relationship between the two variables X & Z (that is, Investment Income and Asset

Years	Variable X	Variable Z	multiple X by X	multiple X by Z
2000	48.2	2,441.83	2,323.24	11,696.21
1999	38.9	2,427.46	1,513.21	94,428.19
1998	36	2,528.96	1,296.00	91,043.28
1997	48.7	2,172.02	2,088.49	99,261.31
1996	28.2	1,623.86	795.25	45,792.85
1995	30.8	1,108.95	948.64	34,155.66
1994	10	723.54	100.00	7,235.40
1993	11	585.11	121.00	6,436.21
1992	11.4	256.84	129.96	2,927.98
1991	4.2	308.11	17.64	1,294.06
Summations =	264.40	14,176.70	9,333.42	500,271.15

Z = f(X) 1
Z = a + b x 2
Sum Z = a n + b Sum x 3
Sum xZ = a Sum x + Sum x to the Power 2 4
NB: a & b are intercept & Parameter
Constants respectively
From Equation 3 & 4
14,176.70 = 264, 40a + 9,333,42b
500,271.15 = 264, 40a + 9,333, 42b
Therefore, a = 1.94 and b = 53.55

Using Correction Coefficient. Analysis to measure the strength of the linear relationship between the two Variable X & Z* that is Investment Incomes and the Asset Base

The Sample Mean (X) of X variables = 24.06							
The Sample Mean (Z) of Y variables = 1,290.57							
The Covariance of X and Z	Years	X, Z	X-X	d, X	Z, -Z	d, Z	(x-x)(z-z)
Covar (X,Z) = (Sum (Xi - X) (Zi - Z) / n - 1)	2000	48.2, 2441.83	24.14	582.74	1,151.26	1325,399.59	27,791.42
	1999	38.9, 2427.46	14.84	220.23	1,136.89	1,292,518.87	16,871.45
	1998	36, 2,528.98	11.94	142.56	1,238.41	1,533,659.33	14,786.62
	1997	45.7, 2172.02	21.64	468.29	881.45	776,954.10	19,074.58
Therefore Covart (X, Z) = 128,464.19/9 = 14273.80	1996	28.2, 1623.86	4.14	17.14	333.29	111,082.22	1,379.82
And R = Covart (X, Z) / Sx, Sz	1995	30.8, 1108.95	6.74	45.43	(181.62)	32,985.82	(1,224.12)
Where Sx = Standard deviation of x scores	1994	10, 723.54	-14.06	197.68	(567.03)	321,523.02	7,972.44
And Sz = Standard deviation of z scores	1993	11, 0585.11	-13.06	170.56	(705.46)	497,673.81	9,213.31
Sx = Sqr Root (Summation of d2x) / n - 1	1992	11.4, 256.84	-12.66	160.28	(1,033.73)	1,068,597.71	13,087.02
Sz = Sqr Root (Summation of d2z) / n - 1	1991	4.2, 308.11	-19.86	394.42	(982.46)	965,227.65	19,511.66
882,55							
Hence, Sx = 16.33 and Sz = 938.42		Summation = >>					
This is the person product moment correction coefficient					2399.33	7,925,622.14	128,464
					The Magnitude of Correction can be thus:		
		Coefficient R			Relationship		
		0.00 0.20			Negligible		
		0.20 0.40			Low		
		0.40 0.60			Moderate		
		0.60 1.00			High		

Appendix IV: Some Performance And Key Financial Indicators For Reinsurance Companies; 1994

	gross premium	Total Assets	Underwriting profit	Investment income	Total Profit	^N'OOO	Ratio:%
	=PTDOO	=N'OIIO	=N'0«0	=N'000	=N'000		Inv. Income Profit
Africa re-ratio: percentage (%) to total	1,0,12,0] 40	1,728,3,15 63	52,375	31,913 57	79,9,1 1	595,354 50	39,9
Continental Re Ratio: Percentage (%) to total	130,544 5	133,256 5	19,219 19	1,989 4	21,208	125,099 II	9,4
Globe Re Ratio: Percentage (%) to total	83,436 .1	84,fffS ,1	16	4,619 8	Li. 158 8	69,914 6	35,1
Nigeria Re Ratio: Percentage (%) to total	1,261,215 49	723,541 26	ffl,42G 10	10,037 18	43,74 1 26	327,656 28	22,9
Universal Re Ratio: Percentage (%) To Total	73,494 3	82,1GZ 3	2,281 2	7,2<->4 13	1 0,595 6	62,446 5	68,6
Total	2,5S1,0.1	2,752,2S2	10(1,013	55,822	l6S.633	1,180,48 9	33,1

Sources: Nigerian Insurance Year Book 1995 & 1997

T- Calculated = 1.2868
 Degree of freedom = $n - 2 = 8$
 For Variables X and Y
 $T\text{-calculated} = r * \text{Sqr root of } (n - 2) / (1 - r^2)$
 Therefore, T- calculated = 1,2868
 Degree of freedom = $n - 2 = 8$
 At 5% level of significance (0.05), T- table = 1,860
 That is, level of significance for a one tailed test
 Hence, T-cal. Is LI-SS than T - table
Therefore, NULL HYPOTHESIS IS ACCEPTED.

T-calculated-7.165 Degree of freedom = $n - 2 = 8$
 For Variables X and Z
 $T\text{-calculated} = r * \text{Sqr of } (n - 2) / (1 - r^2)$
 Therefore, T - calculated = 7,1565
 Degree of freedom = $n - 2 = 8$
 At 5% level of significance (0.05), T- table = 1,860
 That is, level of significance for a one tailed test. Hence, T - cal. is GREATER than T - table
 Therefore, **NULL HYPOTHESIS IS REJECTED.**

