Full Length Research Paper

An assessment of the contribution of marine insurance to the development of insurance markets in Nigeria

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This paper examines the contribution of marine insurance to the development of Nigerian insurance market in the period 1984 to 2006. It is not intended to extend the study to other countries of the world, but mainly to Nigeria where the public opinion has been that insurance is of no benefit to the economic well being of the people. Research was conducted in the Nigerian Insurance Market, Central Bank of Nigeria, National Bureau for Statistics, Insurance Department of Finance and Economic Development and Research and the Development Department of Nigerian Reinsurance Corporation, Lagos. Premiums accruing to the Marine Departments of insurance companies were collected, analysed and it was confirmed that marine insurance has significant impact on the level of the development of insurance market in Nigeria.

Key words: Assessment, impact, marine insurance, development, insurance market, contribution, premium.

INTRODUCTION

Marine insurance is a contract whereby the insurer undertakes to indemnify the assured, in manner and to the extent thereby agreed against marine losses, that is to say, the losses incident to marine adventure (Marine Insurance Act 1906, S.1). Indemnity is provided against the majority of losses which can occur during transit. The marine insurance market comprises insurance companies, Lloyds underwriters and private underwriters and in practice, each insurer pools the premiums received from the insured in order to pay claims and expenses, to build reserve fund against future losses and to secure a small margin of profit, hence insurance is said to be based on the principles of contribution (Harrington et al., 2004).

Insurance may be defined with emphasis on its financial nature or with emphasis on its legal nature (Dorfman, 1980). To carry out this research on insurance, key terms must be defined carefully. These terms include loss, chance of loss, peril, hazard and risk.

The mathematical background of insurance must be understood if this paper is to be fully appreciated. The law of large numbers is the key to understanding the mathematics of insurance operation (Irukwu, 1990).

The first definition of insurance to be examined is the financial one. In this instance, insurance is a financial arrangement which redistributes the cost of unexpected losses (Dorfman, 1988). Dorfman went further to explain that throughout human history unexpected economic losses have occurred, such losses he opined, would continue to occur regardless of whether or not a system of insurance were ever devised by man, but through the operation of an insurance system losses can be predicted before they occur. The predictability of losses is a basic necessity of an insurance system's operation. Because an insurance system allows losses to be predicted in advance of their occurring, it allows the cost of losses to be financed and redistributed in advance of their occurring (Leget, 1982). An issuance system accomplishes the redistribution of the cost of losses by collecting a premium payment from every participant in the system (Irukwu, 2004). In exchange for the payment of the premium the insured receives a promise from the insurance system to be indemnified in the event of a loss. In most insurance systems only a small percentage of those insured suffers losses. Thus, an insurance system redistributes the cost of the losses from the unfortunate

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few members who experience them to all the members of the insurance pool (including those who suffer losses) who have all paid premiums. The following figure illustrates the way an insurance system redistributes the costs of losses. Assume that all the members are exposed to loss of their ships by perils of the sea. Each member therefore will contribute his premium (say, #20,000) to the insurance pool. Assume that ship-owner number four loses his insured ship to the peril insured against. He will collect ₦300,000, the insured value of his ship, from the insurance pool. If there were no insurance pool, the unfortunate victim would lose #300,000, or with the insurance system operation, all the members of the pool will have to pay ₦20,000. Thus, each insured has paid a part of the #300,000 loss experienced by one member. The ₦20,000 premium which each insured paid in advance was calculated on the losses predicted by the insurance system. When the year began it was not predicted that ship number four would sink, but that 33 ships from among the 5,000 insured would sink. From this prediction came the decision to charge each ship owner ₦20,000 for his insurance. In its second sense insurance is a legal contract whereby one party agrees to indemnify another party for losses. The party agreeing to pay for the losses is called the "insurer". The party who will receive the payment for his losses is called the "insured". The payment the insurer receives from the insured is called the "premium." The insurance contract is called a "policy". The losses that will cause the insurer to make payment to the insured are the result of the insured's "exposure to loss." We say the insured transfers his "exposure to loss" to the insurer by purchasing an insurance policy. The insurance policy like all contracts is viewed as an arrangement that creates rights and corresponding duties for those who are a part to it (Dorfman, 1983). Dorfman went further to say: "for instance, the insurance contract creates the right of the insured to collect from the insurer when a covered loss takes place. There is a corresponding duty on the part of insurer to pay for such losses". The insurance contract creates other rights and duties as well. There is the right of the insurer to specify the rules and conditions for participating in the insurance pool, and the corresponding duty of the insured to obey them if he expects to collect for a loss. In analysing an insurance contract one must remember that the right created for one party represents a duty for the other party (Irukwu, 1990). Perhaps the word "duty" is too strong a word to describe the obligations of an insured to insurer. Generally, an insurer cannot legally force an insured to pay premiums, but he may cancel the insurance if premiums are not paid. Likewise, an insurer cannot force an insured to meet the conditions set forth in the contract, but if the insured does not meet the conditions, losses will not be paid (Irukwu, 1990). Thus, it seems fair to note that an insurance contract creates rights and corresponding obligations for the insurer and insured.

MEANING, PURPOSE AND FUNCTIONS OF INSURANCE

Risk and uncertainty are two most fundamental facts of life. We all know that the one event which is certain about our lives on this planet is that one day we will die, but the actual date, time and circumstances of our deaths remain in the realms of uncertainty. Despite, the certainty of ultimate death which most of us prefer not to contemplate, everything else about our lives and future remain uncertain (Irukwu, 1996). Irukwu further opined that having recognised this element of risk and uncertainty as inevitable features of our lives coupled with the fact that we do not know what the future will bring then as intelligent, rational and creative beings, we have had to devise methods of combating and responding to the possible adverse effects of this permanent feature of risk and uncertainty. The most important responses to risk and uncertainty is insurance. He added that as a risk management tool, the basic role of insurance in the economic and social structure of society is the provision of relief from the financial consequences of element of uncertainty. Its principles have over the years been perfected and utilised for the purpose of protecting individuals and corporate bodies against financial losses arising from death or injury in the case of life or accident insurance.

Insurance protection may be obtained directly from a registered insurance agent or broker. As consideration for the insurance protection given by insurer the insured is required to pay an agreed premium which depends on the extent of the risk introduced into the insurance programme by the insured or policy holder (Chorley and Giles, 1992). From the forgoing, Irukwu (1996) postulates "it is evident that the insurance industry exists primarily for the purpose of providing protection against financial losses arising from unexpected events". In addition to this primary function of financial protection the insurance industry today provides several other secondary services to their policy holders and the wider society in such areas as risk management and loss prevention advice, inspection of plant and buildings and the promotion of savings and investments. In spite of the importance of these secondary functions, the primary function of insurance is the provision of the insurance cover against the financial consequences of uncertainty or the provision of financial security to the insured or policy holder. The traditional legal definition of insurance describes it as a contract whereby one party, the insurer undertakes in return for a consideration, the premium, to pay the other, the insured or assured a sum of money in the event of the happening of one or various certain events.

Class of insurance

Apart from marine insurance which covers marine risks

there are other classes of insurance. The other classes of insurance include life and personal accident insurance in which the sum becomes payable on death of the life assured, or on injury or illness, accident, casualty or property insurance, in which the agreed sum becomes payable on the happening of an accident, such as fire, theft, flood or any other perils insured against and liability insurance which provides that the sum insured shall become payable when legal ability is incurred by the policy holder or any other person covered by the policy, as for example, when the insured had incurred legal liability under a professional indemnity policy as a result of his professional negligence or some other tortuous act.

THE RIGHT TO INSURE AND LIMITS TO THE SCOPE OF INSURANCE

Botos, (2002) states that as a general rule any person (including corporate or juristic persons) may insure property, a right in property, a pecuniary interest in property, any potential or possible legal liability, if as a result of the destruction and loss of, or damage to such property, right or interest, or the incurring or accruing of such legal liability, he will suffer financial loss, Irukwu (1996) added that in exercising their right to insure, all the parties to the insurance contract must comply with the general law of contract as well as those peculiar and fundamental rules of law which apply specially to insurance contracts such as the uberrimae fidei rule or the doctrine of utmost good faith, the principles of indemnity and insurable interest. These fundamental rules of law are further amplified by the Marine Insurance Act 1906, Section 4 as stated thus:

(1) Every contract of marine insurance by way of gaming or wagering is void.
(2) A contract of marine insurance is deemed to be a gaming or wagering contract:
(a) where the assured has not an insurable interest as defined by this Act and the contract is entered into with no expectation of acquiring such an interest; or
(b) where the policy is made "interest or no interest" or "without further proof of interest than the policy itself" or "without benefit of salvage to the insurer" or subject to any other like term.

Provided that, where there is no possibility of salvage a policy may be effected without benefit of salvage to the insurer.

Capacity to enter into insurance transactions

Irukwu (1996) opined that in accordance with the general law of contract the rule is that everyone is capable of king

a valid contract. The only exceptions to this general rules are; persons of unsound mind and persons under the influence of drink. He went on to reiterate that since the general rule is that contracts made by a minor are voidable at his option, the Courts would refuse to enforce such contracts of the minor so requested, but contracts for the minor's benefit will be enforced. For instance, contracts generally for the benefit of the minor who enters into them will be enforced whenever necessary, Irukwu averred. However, Olowude (2000) added that if a minor is tricked or induced to enter into an expensive insurance contract which deprives him of all his financial resources or is made to pay an unreasonable high premium, the insurance contract would be voidable at his option.

It is also a settled law that persons of unsound mind and persons who enter into contracts under the influence of drink or drugs may avoid such contracts provided that they do so without delay after their return to a normal state. In an English case of Imperial Life Assurance of Canada. Brown (1983), an insurance agent obtained a proposal for life assurance from a man who he knew to be drunk at the time the proposal form was completed. The court held that the contract was not binding on the proposer.

Limit to the scope of insurance

Insurance is conceded with risks, but not all risks or peril are insurable (Chrismas, 1999). There are definitely limits to scope of insurance.

Irukwu (1995) in a paper he presented at Maritime Seminar of Judges explained that the first limitation is that the thing or object to be insured must have monetary value so that its loss or damage must result in a monetary loss to the insured. If not it is not insurable. Thus, an object of high sentimental value only to its owner cannot be insured. The scope of insurance is quite often limited by law as Marine Insurance (Gambling Policies) Act 1909 Section 1, (1) and (2) says that an illegal transaction or any event, contract, project or property that is tainted with illegality cannot be insured, and similarly transactions that are considered to be against public policy cannot be insured.

For example, Birds (2004) stated that no person can insure against the consequences to him of his own fraudulent or deliberate acts. He went on to add that a professional man such as a lawyer or a medical practicner or an insurance broker cannot insure against the effects of being disqualified from practising his profession as a result of his own professional misconduct. This is not the same as taking out a professional indemnity policy. A professional indemnity policy insures the professional man against the possible liability of paying damages to an aggrieved third party client of his through some unintentional error or oversight in carrying out his professional duties Coghlin (2002).

Coghlin threw more light on the matter by explaining that this is quite different from deliberate fraudulent or intentional misconduct which would be uninsurable. He affirmed his argument by stating that smuggling ventures cannot be insured and any event or venture which contravenes the law of the land or is against public policy cannot be insured. It is definitely illegal or against public policy to take out an insurance against fines imposed by the courts for motoring offences or Court fines and penalties generally.

In addition to the limits to the scope imposed by law there are other risks generally regarded as uninsurable by the insurance industry in most countries, Irukwu (2003) listed such risks as follows: war risks or warlike operations such as civil strike and civil commotion loss or damage resulting from radioactive contamination and explosive nuclear devices or components; losses arising from confiscation or detention of goods and other property; a government authority such as the customs or other official bodies; wear and tear or depreciation as opposed to actual accidental loss or damage. Deacon (2005) says that however, these could be insured on special terms at very expensive premiums but both on normal terms of usual policies.

DEVELOPMENT OF MODERN INSURANCE IN NIGERIA

Although, the institution of insurance has existed in Europe and some other parts of the world for a long time, the practice of modern commercial insurance is relatively new to Nigeria, Irukwu (1996). The concept of insurance in its modern form was introduced into Nigeria by the British during the closing years of the 19th century (Unigwe, 2001).

Unigwe went on to explain that with the establishment of trading posts on the West Coast of Africa now known as Nigeria towards the end of the last two centuries by European trading companies mostly British, these companies started effecting their insurance contracts with established insurers in the London insurance market. As time went on some British insurers appointed Nigeria to represent their interests in the country agents. These agencies later gave way to full branch offices of their parent companies in Great Britain. Irukwu confirmed that the first insurance company to establish a full branch office in Nigeria was the Royal Exchange Assurance in 1921, which was later followed by other British companies. He is of the opinion that indigenous Nigerian insurers later followed including some State-owned insurance and reinsurance organizations such as the National Insurance Corporation of Nigeria (NICON) which was established in 1969 and the Nigerian Reinsurance Corporation established in 1977.

Irukwu (2003) averred that the position today is that we have well over 150 direct insurance companies and five professional reinsurance companies operating in the country. Unigwe (2001) asserted that the law and regulations governing insurance operations in Nigeria are contained in the Insurance Act 1961, Insurance decree 1976, Insurance decree 1991 and lately the Insurance Act 2003. Having set the tone for this paper by examining in detail the origin purpose, function, scope of insurance and the development of insurance in Nigeria, we now proceed to the next stage of assessing the impact of marine insurance on the Nigerian economy (Lee, 2005).

DUTY OF DISCLOSURE

As stated earlier, the contract of marine insurance like other insurance contracts is a contract of "utmost good faith". This is confirmed by Section 19 of the Marine Insurance Act 1990 which describes a contract of marine insurance as a contract based upon the utmost good faith, and, if the utmost good faith is not observed by either party, the contract may be avoided by the other party." Augustine (2003), is of the opinion that although the duty arising from utmost good faith doctrine applies to both parties to the insurance contract, in practice the burden tends to fall often more on the insured than on the insurer.

Ogundekan (2004), confirms in accordance with the provisions contained in Section 20 of the Act, the major practical consequence of the requirement of utmost good faith is the duty of disclosure imposed on the insured.

METHODOLOGY

This assessment is carried out by formulating a hypothesis thus: Marine insurance does not significantly impact on the level of insurance market development in Nigeria. The period of study is 1984 to 2006, no attempt is made to extend the area of study to other countries of the world.

Sources of data

The study employed secondary sources of data as collected from the following sources:

i) Central Bank of Nigeria (CBN) publications, statistical bulletin and economic research seminar papers.
ii) National Bureau for Statistics – Annual Abstract of Statistics.
iii) Insurance Department of Finance and Economic Development.
iv) Research and Development, Nigerian Reinsurance Corporation, Lagos.

Procedure for data analysis

The data generated for this paper was analysed employing both descriptive statistics. The hypothesis formulated was analysed using multiple regression model. This was in view of the five explanatory variables (independent variables) involved in the hypothesis of the study. Therefore, the analysis of variance (ANOVA) and coefficient of determination R^2 were employed in the test.

Table 1. Hypothetical ANOVA table.

Source of variation	Sum of squares (SS)	Degree of freedom (DF)	Mean square (MS)	F-ratio
Regression	$SSR = \sum y^2 R^2$	k	$MSR = SSR\ K$	$F = MSR$
Residual	$SSE = SST-SSR = \sum y^2\left(1 - R^2\right)$	n-k-1	$MSE = SSE\ n\text{-}k\text{-}1$	MSE
Total	$SST = \Sigma y^2$	n-1		

SSR = Sum of squares of the regression; SSE = Sum of squares of the error term; SST = Sum of squares of total variation; K = Number of independent variables; N = Number of observations. Note: $R^2 = b_1 \Sigma x_1 Y + \Sigma b_2\ \Sigma x\ 2Y\ \Sigma Y2$.

Operational definition of variables/Hypothesis testing

The study is concerned with the analysis of the impact of marine insurance business on the level of development of insurance market in Nigeria. Hence, the study requires the specification of the dependent and independent variables in order to encourage effective analysis.

In the hypothesis, we have the following dependent variable:

$GDPINSC_t$ = Level of Insurance Gross Domestic Product in year, t; for the hypothesis however, the independent variables are given as:

$FIRE_t$: Level of Fire insurance (total premium income) in year, t.
$MOTOR_t$ = Level of Motor Insurance (total premium income) in year, t.
$GEACCIDENT_t$ = Level of General Accident Insurance (total premium income) in year, t.
$MARINE_t$ = Level of Marine Insurance (total premium income) in year, t.
$LIFE_t$ = Level of Life Insurance (total premium income) in year, t.

Hypothesis testing

Ho = Marine Insurance does not significantly impact on the level of development of insurance market in Nigeria.
(a) Here, the independent variables are the levels of fire, motor, general accident, marine and life insurance businesses from 1984 to 2006.
(b) The dependent variable is insurance market development proxied by the level of insurance market Gross Domestic Product for the same period and denoted as $GDPINSCE_t$.

Mathematically, therefore, we have:

$GDPINSCE_t = f(FIRE_t, MOTOR_t, GEACCIDENT_t, MARINE_t, LIFE_t) + e$
$GDPINSCE_t = \beta_o + \beta_1 FIRE_t + \beta_2 MOTOR_t + \beta_3 GEACCIDENT_t + B_4 MARINE_t + \beta_5 LIFE_t + e$

Where:

$GDPINSCE_t$ = Level of Insurance Gross Domestic Product in year, t; $FIRE_t$ = Level of Fire Insurance in year, t.; $MOTOR_t$ = Level of Motor Insurance in year, t; $GEACCIDENT_t$ = Level of General Accident Insurance in year, t; $MARINE_t$ = Level of Marine Insurance in year, t; $LIFE_t$ = Level of Life Insurance in year, t; β_1 = Estimated Parameter of Coefficient of Regression; e = Error Term.

TEST OF SIGNIFICANCE

Test of model significance

For the hypothesis to be tested, it is imperative for a test of model as a whole to be conducted. Carrying out such a test has the advantage of confirming the appropriateness of the model specification. The two ways of achieving this are:

1) The analysis of variance approach (ANOVA) and
2) The coefficient of determination approach, R, both calculated from the regression model.

The analysis of variance approach (ANOVA) seeks to split the variations of the Dependent Variable (Insurance Gross Domestic Product with its component parts).

Variations in the Dependent Variable that are accounted for by the explanatory variables are called the EXPLAINED VARIATIONS. Other sources not thus explained are due to random or chance factors. These are estimates of the population disturbance variable 'u' and are represented by 'e' otherwise called the residual or error term (Table 1).

Test of the model: Coefficient of determination and the F-test approach

Another method to test the statistical significance of the estimated regression model is through the coefficient of determination (R^2), calculated from the regression R^2 gives the proportion of the total variation in the depend variable. R^2 from the sample is a statistical estimate of the population P^2, {row-squared). Values of R^2 range from 0 to 1. In setting up the test, the following hypothesis is tested: HO: $P^2 = 0$ (that is, the regression in a given year has no significant relationship with the actual dependent variable for that year).

HA: $P^2 = 0$ (One-tailed 0 test of significance) (that is, at least there is a significant relationship between one of the independent variables and the actual dependent variable).

Decision rule

If f- ratio (calculated) is greater than the f- ratio (tabulated) at Alpha (a)- level of significance, and (k-1) (n-k) degree of freedom then we reject H_O and accept H_1 and state that there is some truth in the estimated model (that is, the regression model is significant since the repressors significantly account for the variation in the dependent variable).

Here;

$$\text{f-ratio (calculated)} = \frac{(R^2)/(K-1)}{(1-R^2)/(N-K)}$$

Where: R^2 = R squared of the model; K = number of variables (independent and dependent); N = number of observations.

Test of the significance of the explanatory variables

Having established the significance of the estimated model as a whole we now go further to test the specific strengths of the various regressors in bringing about this result. We can cheek this through conducting t- test on the estimated parameters of the regressors. The test statistics, t-ratio is calculated thus;

t-ratio = Bk_for k = I   (1)

Se (BK)

Where Bk = estimate of the population parameters for the regressors and Se (BK) = standard error of the estimate.

Decision rule

If absolute value $\left/ \dfrac{BK}{Se\,(BK)} \right/ > t_n\text{- k a}/_2$

Level of significance we reject Ho and accept H_1 and conclude that the variable belongs significantly to the model.

Assumption of the linear regression model

In choosing the previous model, we made the following principal assumptions about our population disturbance term, ut. These assumptions about the distribution of the values of "ut" are very crucial for the estimates of the regression. These include the following:

(a) **Assumption of randomness:** The value "ut" being a random real variable may be positive, zero or negative each with a certain probability of occurrence for a particular period.
(b) **Assumption of zero mean:** The mean value of "ut" in any particular period is zero. This being the case the expected value, (E(ut), of "ut", for all observations, t = 1,2,3…………n is equal to zero.
(c) **Constant variance assumption:** The variance, $\beta^2 ut$, is constant in each period, that is, the variance of "ut" for each explanatory variable is constant. This being the case "ut" will show the same dispersion for all values of the explanatory variables $(E(u^2 t)) = 8^2$. This is called the assumption of Homoscedasticity. If this assumption does not apply then the condition of Hetroscedasticity obtains under which condition, therefore, it will be difficult for us to construct confidence intervals on the regression estimates. These tests then become inapplicable.
(**d**) **Normality assumption:** The variable "ut" has a normal distribution that is the values of "ut" (for each explanatory variable) have a bell- shaped symmetrical distribution.
  The previous four principal assumptions are symbolically represented as ut- N $(0,8^2 ut)$, that is, ut is a random variable with a normal distribution, zero mean and a constant variance.
(e) Other assumptions of the model:

i. Cov (uiuj) = 0 (there is no co-variance between the disturbance terms if different observations.
ii. Cov (xisui) = 0 (no covariance between the disturbance terms and the explanatory variables)
iii. Cov (xis) = 0 (that is, No multicollinearity exists).
iv. The relationship is Identified- that is the model; has a unique mathematical form. Its explanatory variables are not found in any other mathematical equation related to the phenomenon being studied.
v. It is also assumed that the model is correctly specified mathematically.

FINDINGS

Here, the study presents the necessary data set for the study of the result and discussion of the test carried out to buttress the argument transformed into hypothesis. Hence mainly secondary data were employed as sourced from the Central Bank of Nigeria, National Bureau for Statistics (NBS) Publications and the Research and Development Department, Nigerian Re- Insurance Corporation and the Insurance Department of the Ministry of Finance and Economic Development.

Data presentation

Here, we present the data employed in the analysis. As already stated, only secondary data were employed as sourced from the four main sources explained earlier (Table 2).

Data analysis and hypothesis testing

The contribution of Marine Insurance to Insurance Market Development in Nigeria. This hypothesis states that: Ho: Marine Insurance does not significantly impact on the overall Nigerian Insurance Market. The result of this hypothesis is presented in Table 3. To confirm the specification status of the model, two tests were conducted, and they included:

(1) The analysis of variance (ANOVA) test and
(2) The coefficient of Multiple Determination, R^2 test

Test of model significance – ANOVA method

One way of testing the specification of the model, is through the analysis of variance or ANOVA; for short. The ANOVA result is presented in Table 3. Table 3 shows that the lower degree of freedom (k-1, 6-1) = 5, while the upper degree of freedom (N-K; 23-6) = 17, for both 1 and 5% levels of significance.

Decision rule

If calculated f-ratio is greater than the tabulated f-ratio,

Table 2. Data set on gross domestic product GDP and premium income of five classes of insurance in Nigeria (1984 to 2006).

S/N	Year	Fire	Motor	Geaccident	Marine
1	1984	107204656.00	134793142.00	136498650.00	72499784.00
2	1985	117835887.00	135169979.00	12016582.00	74273649.00
3	1986	9825851.00	140045797.00	139357452.00	74078774.00
4	1987	202786785.00	157717219.00	253638817.00	251933911.00
5	1988	219520000.00	203000000.00	222048000.00	104400000.00
6	1989	280000000.00	273644000.00	385500000.00	464000000.00
7	1990	300000000.00	354000000.00	475500000.00	2100000000.00
8	1991	180060000.00	583650140.00	650705080.00	2850640000.00
9	1992	860900.00	1350868.00	25875830.00	5775850145.00
10	1993	752700.00	1484940.00	1013190.00	2434870.00
11	1994	925770.00	2110360.00	977080.00	1142270.00
12	1995	1557780.00	2994590.00	1292000.00	2944460.00
13	1996	2850071.00	4061407.00	17672122.00	2992406.00
14	1997	22914160182.00	5269160721.00	6137423121.00	2445379358.00
15	1998	2784213352.00	5572915068.00	4377652453.00	3541757118.00
16	1999	2760614222.00	5268561896.00	3776047282.00	4636622617.00
17	2000	3445549871.00	7046210483.00	7953682914.00	4071701211.00
18	2001	3697248037.00	8797454838.00	5648363502.00	855931963.00
19	2002	4751655905.00	10816015116.00	7310288803.00	13353666773.00
20	2003	6016097000.00	13809144000.00	10232577000.00	15696362000.00
21	2004	7335994000.00	15071809000.00	13819477000.00	20989737000.00
22	2005	9518785000.00	16484517000.00	16307327000.00	21013148000.00
23	2006	12931350750.00	18957194550.00	20384158750.00	22063805400.00

Ho is rejected while Ha is to be accepted. Here, the f-ratio calculated (18.942) > f-ratio tabulated or theoretical (4.34, 2.81), at both 1 and 5% levels of significance respectively. It therefore, follows that Ho is rejected and Ha accepted to conclude that marine insurance significantly impacts on the overall Nigerian insurance market.

**** The hypotheses tested here include:

H_01a: Fire insurance does not contribute significantly to insurance market in Nigeria

H_01b: Motor insurance does not contribute significantly to Nigerian insurance market

H_01c: General accident insurance does not contribute significantly to Nigerian insurance market.

H_01d: Marine insurance does not contribute significantly to Nigerian insurance market

H_01e: Life insurance does not contribute significantly to Nigerian insurance market.

Here, t-calculated respectively for fire, motor, general accident, marine and life insurance (0.087, 0.675, 0.282, 0.234, 0.047) < t-tabulated (2.898, 2.110), respectively at 1 and 5% levels of significance. We, therefore, reject H_a and accept H_o in each case, to conclude that none of the explanatory variables (Fire, motor, general accident, marine and life insurances) makes a significance to the overall insurance market in Nigeria.

Test of model significance - R^2 method

Similarly, in testing with the coefficient of multiple determinations, we adopt the formula:

$$\text{f-ratio calculated} = \frac{(R2)\,/(k-1)}{(1-R^2)\,/(N-k)}$$

Where: $R^2 =$ 0.883; k = 6; N = 23

$$= \frac{(0.883)/\,(6-1)}{(1-0.883)/\,(23-6)}$$

Hence,

$$\text{f-calculated} = \frac{(0.848)\,/\,(6-1)}{(1-0.848)\,/\,(23-6)}$$

Similarly, f-ratio calculated (18.942) > f-ratios tabulated (4.34, 2.81) for both 1 and 5% levels of significance respectively. Hence, Ho is rejected to accept Ha and thus conclude that the model is in fact, significant and that marine insurance impacts significantly on the overall insurance market in Nigeria.

The resulting estimated model is:

Table 3. Hypothesis results /output.

Variable	Coefficient		Std error	T (df = 17)	Significance
Intercept	β_0	368.370	18.105		
Fire	β_1	-3.97E-010	0.000	-0.087	0.932
Motor	β_2	1.82E-008	0.000	0.675	0.509
Geaccident	β_3	3.62E-009	0.000	0.282	0.781
Marine	β_4	1.86E-009	0.000	0.234	0.818
Life	β_5	-1.73E-009	0.000	-0.046	0.964

ANOVA table					
Source	**SS**	**DF**	**MS**	**F = 18.942**	**0.000******
Regression	423491.49	5	84698.297		***
Residual	76016.703	17	4471.571		**
Total	499508.19	22			

R	0.921
R^2	0.848
adjusted R^2	0.803
Std. error of the estimate	66.86980
Observations	23
Predictor variables	5
Dependent variable	Y

****, ***, ** Significant at 0, 1 and 5%, respectively; f- ratio tabulated, df (5, 17) 1% = 4.34, 5% = 2.81, t-ratio tabulated, df (17), 1% = 2.898, 5% = 2.110.

GDPISCEt = 368.37-3.97E – 010FIREt + 1.82E-008MOTORt + 3.62E-009GEACCIDENTt + 1.86E-009MARINEt-1.73E-009LIFEt   (2)

Test of the significance of explanatory variables

In order to confirm the extent of contribution of the individual explanatory variable to the insurance market in Nigeria, having confirmed the significance of the model as a whole, we carry out the student t-test. Here, we also refer to Table 2 for hypothesis 1 results.

Decision rule

Once the calculated t-ratio is greater than the tabulated t-ratio, at a specified alpha level, we reject Ho and accept Ha at that level of significance and degree of freedom. The associated degree of freedom is (N-K: 23-6) or t(df = 17). Reading from the Table 3, we have the following: t-ratio tabulated at 1% = 2.898 and at 5% = 2.110. The hypotheses tested here include:

Ho (a) Fire insurance does not contribute significantly to the development of insurance market in Nigeria.
Ho (b) Motor insurance does not contribute significantly to the development of insurance market in Nigeria.
Ho© General accident insurance does not make a significant contribution to the development of insurance market in Nigeria.

Ho (d) Life insurance does not make a significant contribution to the development of insurance market in Nigeria.

Here, t- ratio calculated respectively for fire, motor, general accident, marine and life insurances (0.087, 0.675, 0.282, 0.234, 0.047) < t-tabulated (2.898, 2.110), respectively at 1 and 5% levels of significance, Ha is rejected while Ho is accepted in each case to conclude that none of the explanatory variables (Fire, motor, general accident, marine and life insurances) offered a significant contribution to the overall development of insurance market in Nigeria in the period of investigation.

DISCUSSION

The result of the tested hypothesis has been quite revealing. Therefore, our discussion follows basically the line of the hypothesis tested.

This hypothesis posted some interesting results, for instance, there is a high level of correlation between the variables taken together (92%). This is followed by an R^2 of 84.8%, suggesting that the variations in the explanatory variables (different classes of insurance) have been able to explain at least 84% of the total variation in the total insurance gross domestic product (GDPINSCEt) for the period under review. Also the resulting estimated model:

$$GDPINSCEt = 368.370 - 3.97E - 010FIREt + 1.82E - 0086MOTORt + 3.62E - 009GEACCIDENTt + 1,86E - 009MARINEt - 1.73E - 009LIFEt \quad (3)$$

Shows that the motor, general accident and marine insurances contributed positively to the development of the insurance market in Nigeria, by their positive coefficients, while fire and life insurance businesses are negative contributors the insurance market development. Similarly, from the estimated model of (3), whereas one unit increase in motor, general accident and marine insurances will contribute to 1.82E-008, 3.62E-009 and 1.86E-009 units to the insurance market development as proxies by the insurance gross domestic product, both fire and life insurances, with a unit decrease will contribute 3.97E-010 and 1.73E-009 unit increases respectively to Nigerian insurance market development.

However, in terms of correlation, the highest correlation is recorded between insurance market development and motor insurance, posting a correlation of 92% for general accident, 89% for marine insurance, while the least (58%) is recorded between the insurance market development and fire insurance.

In summary, this study investigated the contribution of marine insurance to the development of insurance market in Nigeria from the year 1984 to 2006. The study generated a major hypothesis in order to achieve some objectives. The major findings of the study therefore, include the following:

(1) There is a positive significant relationship between marine insurance and the development of insurance business in Nigeria.
(2) On the basis of the hypothesis tested the study proved to be significant. Hence, marine insurance exerted significant influence on the overall insurance business in Nigeria.

Conclusions

On the basis of the previous findings some conclusions are reached as follows:

(1) Marine insurance is a desirable phenomenon in Nigeria and should be encouraged.
(2) There is a positive and insignificant relationship between marine insurance and the level of economic development in Nigeria; hence, the need for Government support and control to develop the business to the level of invisible source of income to the nation as in Britain and the United States of America.
(3) Both fire and life insurance businesses exerted negative effects on the economic development, therefore, there is need for total enlightenment of the public on this obvious source of foreign currency earner to the nation.

RECOMMENDATIONS

With the aforementioned findings and conclusions in mind, the study offers the following recommendations:

(1) Underwriters should obviously make frantic effort to avoid underwriting sub-standard risks. In the same vein policy wordings should be designed basically not to recompense the insured for loss, damage or expense which is inevitable or not properly incurred.
(2) There is real need for insurance clauses to be constructed free from ambiguity to reduce the litigation of claims. Therefore, this study specifically advises underwriters, naturally to adopt a realistic approach to the enormous build up of exposures in the maritime trade. This is realistic indeed because the cost of operation has escalated generally at a frightening rate.
(3) In like manner, underwriters should be able to command fair premiums in relation to potential losses otherwise, many may opt out of this class of insurance and affordable and insurable covers may shrink accordingly in the market.
(4) Furthermore, the prospective assured shall try not to admit any terms in the contract which he knows or ought to know could not be fulfilled.
(5) Therefore, the Ministry of Finance, as a regulatory body should do more in addition to recapitalization keep eyes on the insurance market.
(6) In appreciation of the influence of marine insurance in the insurance market, the Government should regularly formulate enabling regulations to sanitise the insurance market in order to reduce fraud to the barest minimum.
(7) In furtherance of the regulatory ability of the Government for example, the recapitalization process, it is strongly recommended that the Marine Insurance Act 1990 which is a complete copy of the British Marine Insurance Act 1906 be reformed because of the fact that the world has drastically changed since 1905 when the Act first passed through the Parliament at Westminster.
(8) Howbeit, reforming the Act is desirous, there should be no much softening of the more stringent provisions of the Act so that the reform will not be so pro-consumer that insurers are discouraged from entering or remaining in the market, also the reform shall not be sidestepped by a contractual choice of non- Nigerian law.
(9) The research identified the need for ship-owners to establish a protecting and indemnity club (P&1) in the African region to alleviate them of the effect of those risks not coverable by the ordinary policy of the Marine Insurance Act 1906.

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