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Insurance Risk and Claim Settlement of Insurance Firms in Nigeria

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Abstract

This study empirically investigates the empirical nexus between insurance risk and claim settlement of insurance firms in Nigeria using evidence from ten (10) sampled insurance big players (firms), examined over the period 2007-2018. Aside insurance risk being the main variable of interest, an array of other claim settlement determining variables were included to make the study robust. They include cash flow and macroeconomic risk. Employing correlation analysis, descriptive statistics, unit root test and Ordinary Least Squares method, the result shows that insurance risk has a positive but not significant impact on claim settlement of insurance firms in Nigeria. Also, macroeconomic risk was found to have a positive and significant impact on claim settlement of insurance firms in Nigeria. Lastly, cash flow of insurance firm is found to have a positive and weak impact. Against the backdrop of the foregoing findings, sound risk minimizing policies and measures on the part of insurance firms, premium and cash flow-enhancing policies and strategies and sound and stable macroeconomic environment, as well as strong regulatory and institutional framework to guard the operations of insurance firms, so as to enhance their role for rapid national development, are recommended.

Keywords: Insurance, Uncertainty, Firm and Government Policy

JEL Classification: G22, D8, H32, G28

Paper Classification: Research Paper

Introduction

The issues relating to insurance sector, particularly with respect to the risk and claim settlement cannot be treated with utmost disregard in a developing country like Nigeria, where the safety and viability of the insurance sector is critical to rapid economic growth (Agiobenebo & Eziri, 2012).

So far, claim settlement of insurance firms is dependent on the risk suffered. Such risks could be unanticipated and accidental loss through fire, floods, banditry and other insurable risks (Anila, 2015). Due to the uncertain nature of the business and investment environment, probable risks are usually insured through the provision of insurance cover made possible through premium(Davidson, 2010). As a result of the increasingly diverse role of the insurance sub-finance

sector in the economy in provision of risk cover to economic activities such as business and investment in an increasingly dynamic and uncertain world fraught with risks, greater empirical and policy attention has been devoted to insurance activities (Ajemunigbohun, 2015).

While this importance is more pronounced in developed economies than that of the developing countries, has nonetheless be minimal. With increased economic activities around the globe that require appropriate cover, the insurance sector capacity to effectively and efficiently play its unique role in the overall financial system has become more imperative (Afolabi, 2018). Due to the emergent nature of research in insurance firms in a developing country like Nigeria, critical issues relevant to stability of insurance firms, which have not received empirical attention relating to risk and settlement claims need to be examined.

Statement of the Research Problem

The Nigerian insurance sector has experienced several failures/distress in the past owing to poor risk analysis and management and in its effect on claim settlement (Eze & Victor, 2013). Apart from previous failures that rocked the insurance-sub-finance sector, the period of 2004 -2007 was particularly instructive owing to the wave of systematic distress which necessitated an aggressive policy of insurance recapitalization and reforms. The failures, arising in from poor risk determination, analysis and management became a matter of grave concern not only to regulators of the financial sector but to government, researchers, the academia and all stakeholders in Nigeria (Adebisi, 2014).

Insurance distress/failure has often left a trail of woes for the insured, investors, shareholders, employees and other stakeholders, with the eventual loss of confidence in the sector (Adebisi, 2014). The negative consequence it has had on the domestic economy has been growth-retarding. In order to minimize the negative impact of this recurring trend on the economy, since the stability and growth of any economy is dependent largely on stability of the productive sector in terms of insurance cover for business and investment, the financial sector reform, became a child of necessity ((Butler & Francis, 2015). Given that the determination of claim settlement in insurance firms is largely dependent on the risk suffered by the insured, there is a need to empirically examine the relationship between insurance risk and claim settlement in Nigeria.

Few empirical studies exist on the analysis of insurance risk in Nigeria, and the link between such risk and claim settlement of insurance firms in Nigeria. It is this perceived literature gap that has necessitated this empirical study. Against this background, this study seeks to,

i. examine the relationship between insurance risk and claim settlement of insurance firms in Nigeria.
ii. determine the effect of macroeconomic risk on claim settlement of insurance firms in Nigeria.
iii. analyze the impact of cash flows on claim settlement of insurance firms in Nigeria.

Scope of the Study

The study focuses on the empirical relationship between insurance risk and claim settlement of insurance firms in Nigeria using a sample of ten selected listed insurance firms on the Nigerian Stock Exchange. The period of study covers 2007 to 2018. The choice of the period is partly based on the fact that it encompasses the period of fundamental reforms in the insurance sub-finance sector in Nigeria, and partly due to data availability.

Literature Review

Concept of Insurance Risk, Risk Management and Claims Settlement-The Nexus

According to (Torbira, 2018), Torbira (2018) insurance can be defined as the conveyance of losses to an insurance pool and distributing again the same among group. According to him, monetary compensation for loss from pools of individuals that are very buoyant; and precise ability to predict losses are the practical ultimate purpose of insurance world. Risk management includes hedging and diversification (Haiss & Sumegi, 2008). Hedging has to do with capital commitment on a property or investment on asset in a pay-off method offsetting one's condition of been exposed to a given form of risk in a portfolio. While the act of diversifying moderates the risk imbedded in portfolio by putting financial commitment on varieties of property or asset. Hence exposures to risk on a particular transaction is marginalized (Boadi, Antwi , & Larty, 2018).

Insurance company helps to provide a weapon or instrument for risk control, which entails the act of curbing any form of risk of loss involving one's life or asset. Of course, losses are not what anyone hopes for, unexpected decrease of economic value (Dorfman, 2015). Insurance performs the risk management function by substituting certain small expenditure in exchange for large unknown losses for a large uncertain financial loss through the pooling of people who share similar loss exposure. Uncertain risks of individuals and corporate bodies are combined under one management, allowing such losses more known, and as well creating a way out of the challenge imposed by loss. A token of an amount being paid (premium) by group members assist in providing funds of which compensation are given from it to individuals who bear the loss (Ernest & Boakye-Ofori-Attah, 2016). The reason behind the insurance platform is simply indemnity, making sure that the aggrieved party is restored to his/her original economic state. The individual restored neither gained nor loss (Torbira, 2018).

Claims Settlement in Insurance

The insurance mechanism is established for the purpose of bringing an individual who had suffered loss to his/her pre-loss position. The basic principle and objective underlying the whole essence of contract of insurance is the compensation and indemnification of the policy holder when the peril insured against occurs (Dorfman, 2015). The assurance by the insurer that, with the insured paying premiums when due, the insurer will restore or compensate the insured to his pre-loss position, is the attraction in taking insurance policies. Upon the occurrence of the loss, the insured would normally bring a claim on the policy.

The essence of this process is that the insured seeks to enforce his rights under the contract of insurance, represented by the terms contained in the policy. On the other hand, the insurer is being asked to fulfil its obligation under the insurance contract; represented by the promise that forms part of the terms of the policy (Olusegun, 2018). The rights and obligations of the insured and the insurer would fundamentally depend on the terms of the contract of insurance and the rules under the general law (Ojukwu-Ogba, 2016).

Thus, handling claims is one of the functions of insurers. For an insurance company, claim processing is one of its core activities. It is the chance to show that the years spent paying premiums were worth the expense ((Butler & Francis, 2015). The word claim is derived from the Latin word, clamare which means to call out. The insurance mechanism is such that an individual called the insured, exchange his unknown fortuitous loss for a known cost called the premium, with the hope that he/she will be indemnified by the insurer when he/she suffers a loss. Hence the underlining relationship between an insured and insurer, abinitio, is claims payment. It is on

this basis that insurance claim, in a nutshell, is a request by someone or an entity finding to regain from an insurer loss that the policy covers.

Claims outline the benefit of the insurance promise. Insurance request ranges from a precise home structure and substance compensation settled within the period of information to difficult bodily wound demand that are yet open for several periods. It is made up of the biggest cost of any insurance establishment, therefore claims control has emerged as a vital weapon of good reputation in insurance sector. Brilliance in claim matters provides a competitive advantage for an insurance firm ahead of its competitors. Processing claims practically connects every angle of the institution, therefore, the demand for a well-organized claims administration practices and principles (Noah, 2018). Claims control confines every form of administrative measures and controls related to the payment and settlement of demands in alliance with terms related to the insurance agreement (Rejda & McNamara, 2014). An instant and proper control of authentic claim is pertinent for a fulfilled claim control and could help as well to promote goodwill.

Theoretical Framework

This study is based on the Black Swan theory. The concept of Black Swan events was popularized by Nassim Nicholas Talebin in 2001. The notion was popularized in 2008. It states that countries are thoroughly influenced by activities that are uncommon and hardly predictable, activities of low possibility but greater effect. Their outcome for investment and market are demanding and must be absorbed with seriousness. Black Swan is a vital model for knowing mistakes in computing the possibilities of various activities relating to a notable world.

The greatest risks are never the ones that can be seen and measured. Thus, risks that cannot be seen are therefore not measurable. Those ones outside the scope of usual likelihood usually unimaginable would occur in one's existence though, they occur, more frequently than we expect. What could result to black swan to the wider community may not have much impact on insurance; in like manner, some occurrence that imposes disastrous wastage may not actually be so serious from another end. People would not like to de-risk, since they would prefer taking some amount of cash off the table. It is practically about negotiating and measuring risk, and hedging it (Ross, Westerfield, & Jaffe, 2002).

Request for cover to oppose tail risk is rising each time investors respond to black swan occurrence. Base on the study, a firm may need not to attempt outsmarting when making attempt in envisaging occurrence and what hedge could do better. Hence, what is necessary is to bring together affordable cover. Insurance institution provides a relatively affordable cover in which enormous losses may be hedged through paying a certain sum called premiums. Through getting those items, insurance institution pool premiums together, been that its tendency to happen is minimal, try could result not paying at all therefore, boosting them economically.

Empirical Review

Olusegun (2018), empirically investigated the relationship between claims management and accident cover (risk) of non-life insurance companies in Nigerian insurance industry. The study adopted longitudinal design. The results revealed that there is a significant relationship between claims and the operating cost of non-life insurance companies in Nigeria. Based on the findings, he recommended that claims management be properly structured with highly technical, trained and experienced staff to manage the claims of the insurance companies properly that will enhance insurance viability.

Harrington and Niehaus (2016), analyzed the connection that exists among insurance and economic growth. The study developed two linear regression models which are helpful in forecasting future occurrence in the sector. Data were gotten from the books often insurance firm spanning between 2002—2011,on which descriptive statistics was used in analyzing, correlation and multiple linear regression. The findings reveal that for even one per cent increase in loss (risk),there was a corresponding increase of 3.67% in claim settlement.

Yusuf and Ajemunigbohun (2015), analyzed the effect, efficiency as well as the timeliness of demands controlling series within the insurance sector in Nigeria. The work made use of cross-sectional survey design. The sampling technique was judgmental and data were gathered making use of a patterned questionnaire. The sample were made up of 107 respondents comprising staff members among claims sector taken from 33 insurance firms chosen within the classification of group firm. Engaging one-sample T-test, the research reveals that controlling demands well enough will majorly influence the functional mediums in claim administration and therefore timeliness in claims management chain certainly helps in identifying fraudulent means and avoidance.

Yusuf, Ajemunigbohun &Alli (2017), empirically investigated insurance compensation control among certain insurance firms in Nigeria. The literature made use of descriptive survey design using random sampling method and questionnaire. The population includes 127 respondents consisting of compensation administrators and other staff members within it ambit. A single specimen T-test was in use in data analysis and compilation. Empirical research shows how the different expected compensation control technique had influence significantly on the claim's administration method of insurance firm. Studies from the research resolute how significantly different claims controlling measures are used in its administration by the firm in Nigeria.

Methodology

The study design is based on cross sectional research design since it focuses on the analysis of risk of insurance firms and claim settlement in Nigeria. In this study, emphasis focus on secondary data. These secondary data were gotten from the annual financial statements of 10 quoted Insurance firms in Nigeria within the period of 2007 - 2018. The hypotheses were tested with the aid of E-views 9.0 econometrics software. The justification of this technique is with respect to the assumption that the parameter estimates obtained under this technique tend to possess the desirable best linear unbiased estimates of a model.

The data obtained were analyzed using descriptive statistics, correlation, unit root test and ordinary least square model.

The functional model for the study is specified as;

$$CLS = F(IR, MR, CF) \quad (3.1)$$

The econometric form of the model is specified below as:

$$CLS_{it} = \alpha_0 + \alpha_1 IR_{it} + \alpha_2 MR_{it} + \alpha_3 CF_{it} + U_{it} \quad (3.2)$$

Where:

CLS= Claim settlement

IR = Insurance risk (This is proxy with the cost of insurance premium)

MR = Macroeconomic risk (This is proxy with exchange rate variability)

CF= Cash flow of Insurance firms

U_{it}= Error term

Apriori Expectations: $\alpha_1, \alpha_2, \alpha_3 > 0$.

Data Analysis and Interpretation

In this segment, the report of preliminary data analyses (tests) and discussion of findings was examined.

Preliminary Data Analyses

The descriptive statistics of the model is presented in Table 1

Table 1: Descriptive Statistics

	CLS	IR	MR	CF
Mean	830848.5	269.3868	26.50317	545229.1
Median	1143.850	123.9450	4.135000	480630.0
Maximum	36310000	17140.00	128.5600	1854550.
Minimum	125.7000	-3147.030	0.970000	68520.00
Std. Dev.	4719759.	1602.471	40.81221	411384.9
Skewness	6.067773	9.768494	1.559099	1.008651
Kurtosis	40.19996	104.3000	3.948385	3.608600
Jarque-Bera	7655.541	53216.94	53.11296	22.19950
Probability	0.000000	0.000000	0.000000	0.000015
Sum	99701823	32326.42	3180.380	65427489
Sum Sq. Dev.	2.65E+15	3.06E+08	198210.7	2.01E+13
Observations	120	120	120	120

Source: Eviews output 9.0, 2020

The mean value of CLS is 830848.5. It has a maximum value of 36310000 and a minimum value of 125.7000 revealing a large variation thereby showing some degree of variability. Claim settlement (CLS) was, however, skewed to the right with a value of 6.07 but not normally distributed because the Jarque-Bera statistics value is lesser than 5%. All the independent variables were positively skewed to the right. The Jarque-Bera probabilities with 0.05 is an indication that all the independent variables are not normally distributed.

Correlation Analysis

The correlation result is shown below;

Table 2: Correlation Matrix

Sample: 2007- 2018				
Correlation t-Statistic Probability				
	CLS	CF	IR	MR
CLS	1.000000			

CF	0.366847	1.000000		
	4.283624	-----		
	0.0000	-----		
IR	0.006845	-0.082273	1.000000	
	0.074356	-0.896755	-----	
	0.9409	0.3717	-----	
MR	0.262187	0.340241	-0.093608	1.000000
	2.951331	3.930457	-1.021330	-----
	0.0038	0.0001	0.3092	-----

Source: Eviews output 9.0, 2020

The correlation coefficient in Table 2 shows a mixed correlation of both positive and negative values. A closer look at the coefficients results in the matrix revealed that to a large extent all the variables coefficients are not more than 0.90.

On the association among the independent variables, it is observed that both positive and negative associations exist among all the variables. Most of the coefficients are quite low and moderate.

Unit Root Test

In order to examine the stationarity state of the variable, the augmented dickey fuller test is used the results of which are shown in Table 3 and subsequently analyzed.

Table 3: Summary of unit root at 5%

Variables	**p-values**	**Order**	**Remarks**
CLS	0.0002	I(0)	Stationary
IR	0.0000	I(0)	Stationary
MR	0.0000	I(1)	Stationary
CF	0.0058	I(0)	Stationary

Source: Researchers Computation (2020) using E-Views9.0

Table 3 presents Augmented Dickey Fuller test for stationarity of each variable covering the period 2007 to 2018 for ten (10) insurance companies in Nigeria. The critical ADF statistics is compared with the Engle-Granger value of 0.05 at 5 per cent level of significance. The decision

rule rejects the null hypothesis if the reported ADF statistic is greater than ADF Engle-Granger value of 3.05 at 5 per cent level of significance and accept otherwise.

As shown in Table 3, the Stationarity Unit Root Test result indicates that all the variables are stationary at levels except macroeconomic risk which was stationary at first difference. Thus, the null hypothesis of non-stationarity of each of the variables at first difference is rejected.

Table 4: Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.871992	Prob. F(2,114)	0.1034

Source: Researchers Computation (2020) using E-Views9.0

The test showed no serial correlation since the probability value of 0.1 is greater than 0.05. This indicates the absence of serial correlation in the model and thus the model is valid and can be used for policy making without re-specification.

Model Estimation and Interpretation

This section showed the presentations and interpretation of the results of the model specified (see Table 5 in appendix one)

CLS = 23.27 + 0.33(IR) + 0.33(MR) + 2.30(CF)

(0.33) (2.37) (2.49)

R-squared = 0. 79 Adjusted R-squared = 0.78

DW stat = 1.70 F- statistic = 90.47 Prob (F-stat) = 0.0000

An examination of the results shows that with an adjusted R^2 of 0.78, about 78 per cent of the systematic variations in claim settlement of insurance firms over the period is explained by the combined explanatory variables, making the predictive power of the model sound. The overall goodness of fit statistic indicated by the F-value of 90.47 is highly significant at the 1 per cent level. Thus, the hypothesis of a significant linear relationship between claim settlement of insurance firms, insurance risk and other explanatory variables is confirmed. The Durbin Watson Statistic of 1.70 is easily approximated to 2, indicating the absence of serial correlation in the model. This makes the estimated model amenable for structural perspective, policy formulation and implementation.

In terms of the contribution of the individual variables, their respective signs as well as their t-ratios are considered. The coefficient of insurance risk is positive and not statistically significant at the 5 per cent level. This is a clear indication that rising risk necessitates higher degree of claim settlement. The more the injury/damage suffered, the greater the claim settlement of insurance firms to the insured. Invariably, as risk increases, settlement claim increases since the insured will require and demand greater level of cover or financial compensation (indemnity). The coefficient of macroeconomic risk (a proxy for the risk of the external environment) is positive and statistically significant at the 5 per cent level. Thus, greater degree of macroeconomic risk will necessitate higher degree of claim settlement, as economic agents tend to be more vulnerable and susceptible to economic risks, uncertainty and accidental loss. This will imply that macroeconomic risk is a significant variable influencing claim settlement of insurance firms in Nigeria.

Finally, the coefficient of cash flow is positive and statistically significant at the 5 per cent level. Thus, the higher the degree of cash flow (income stream) on the part of the insurance firms (the

insurer), the greater and more enhanced ability they must pay claim settlement. A financially cash-strapped insurance firm may, therefore, not be able to pay claim settlement as financially buoyant ones.

Discussion of Findings and Policy Implications

Given the empirical analysis of this study, several important policy discussions arise. First, it is empirically evident that Insurance risk is a positive and significant variable influencing claim settlement of insurance firms Nigeria. Thus, the higher the risk suffered by the insured, the greater the claim settlement that is necessitated. The implication of this is that greater institutional monitoring of risk should be carried out by the insurance firms, as the tendency to falsify or magnify risk is possible.

Secondly, macroeconomic policy environment captured is of critical importance to the insurance sector in Nigeria. Greater level of macroeconomic risk, indicated by exchange risk or volatility, tends to warrant higher level of claim settlement. Therefore, stable macroeconomic environment should be put in place that will not only guarantee the operation of insurance firms but also minimize higher incidences of risks or damage. Lastly, cash flow of insurance firms tends to be positively related to claims settlement but is not significant. This implies that higher cash flow (income flows) on the part of the insurer (insurance firm) will engender greater claim settlement but the effect of this is weak.

Concluding Remarks and Recommendations

The critical role of insurance in resource mobilization, investment and in provision of cover for business, investment (i.e. insurance of probable risks) and life is not in contention. Such measures include minimization of Insurance risk, stable macroeconomic policy environment, and strong regulatory and institutional framework. As evident, from the empirical analysis, the greater the susceptibility of insurance firms to risk and by extension claim settlement, to the insured, the lower their virility. While the provision of greater risk cover in part, is a positive sign for the sustenance and virility of the economy, it however implies greater financial commitment on the part of the insurance firms.

By and large the growth and development of the insurance sub-sector will rapidly drive economic growth and development in Nigeria. In this, sound macroeconomic environment, sufficient premium payment and lower level of uncertainty and risks are imperative. Macroeconomic policies must be made to integrate the objective of enhancing financial markets, particularly insurance firms, in order to provide safety cover (nets) for business and investment, which in consequence, implies rapid and sustainable economic growth in Nigeria.

The recommendations are;

i. Stable financial and economic policies to reduce higher incidence of risk in Nigeria. These in part, include institutional monitoring mechanism to monitor risks suffered by insured, so as not to falsify and magnify risk indemnity that will jeopardize the future viability of the insurance sub-finance sector.
ii. Policies to increase higher premium payment on the part of the insured through proper education and guidance on the part of the insurance firms.
iii. Sound investment and income –yielding policies that will increase the cash flow of insurance firms, which will ultimately enhance their ability to pay settlement claims.

iv. Sound and stable macroeconomic policies, particularly those that will stabilize the exchange rate to minimize exchange rate risks in Nigeria.

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Data Presentation

S/N	INSUNRANCE FIRMS	YEAR	CLS(N'M)	IP (N'M)	MR	CF (N'M)
1	African Alliance Insurance Comp	2007	456.23	92.47	1.17	558178
		2008	462.30	103.91	3.15	452433
		2009	508.30	105.03	2.16	368122
		2010	483.40	115.35	0.97	490125
		2011	670.20	1027.82	4.32	490850
		2012	1040.50	129.42	2.95	520225
		2013	982.20	165.21	3.22	670200
		2014	732.30	180.27	7.17	775280
		2015	465.50	194.33	17.20	986750
		2016	980.20	169.90	54.32	975310
		2017	1494.90	145.47	91.44	963870
		2018	2009.60	121.04	128.56	952430
2	NEM Insurance Comp	2007	420.70	89.01	1.17	97380
		2008	510.30	87.12	3.15	102560
		2009	603.20	113.40	2.16	107280
		2010	445.40	110.61	0.97	110250
		2011	522.10	57.70	4.32	120725
		2012	622.40	73.55	2.95	150380
		2013	833.20	17140.00	3.22	170095
		2014	125.70	60.45	7.17	186700
		2015	450.70	178.33	17.20	220300
		2016	380.30	160.25	54.32	350420
		2017	309.90	142.17	91.44	480540
		2018	239.50	124.09	128.56	610660
3	Royal Exchange Assurance	2007	845.20	60.90	1.17	365890
		2008	760.20	73.82	3.95	480720
		2009	955.40	111.54	3.12	488260
		2010	1020.50	121.12	0.97	596750
		2011	945.80	110.32	4.32	499120
		2012	735.60	220.51	2.95	687980
		2013	625.90	272.10	3.22	404170
		2014	533.10	296.80	7.17	770280
		2015	467.30	2112.30	17.20	1365700

		2016	520.50	359.19	54.32	1276170
		2017	573.70	-1393.92	91.44	1186640
		2018	626.90	-3147.03	128.56	1097110
4	AIICO	2007	484.10	76.93	1.17	285550
		2008	472.40	84.49	3.95	356130
		2009	677.20	89.68	3.12	460420
		2010	780.20	104.34	0.97	792150
		2011	980.50	151.89	4.32	863008
		2012	1030.00	159.40	2.95	901170
		2013	815.70	186.77	3.22	1395232
		2014	7222.34	153.66	7.17	1542183
		2015	13000000.00	195.20	17.20	1780580
		2016	20770000.00	268.20	54.32	1583300
		2017	28540000.00	341.20	91.44	1386020
		2018	36310000.00	414.20	128.56	1188740
5	Consolidated Hallmark	2007	683.60	60.22	1.17	389162
		2008	780.90	71.32	3.95	492210
		2009	1042.10	73.43	3.12	405220
		2010	4262.30	76.22	0.97	525268
		2011	51820.30	95.20	4.32	677651
		2012	6030.00	140.16	2.95	785215
		2013	7156.30	152.13	3.22	592230
		2014	8120.40	156.22	7.17	690330
		2015	9173.00	183.40	17.20	797980
		2016	12210.20	179.73	54.32	1150170
		2017	15247.40	176.06	91.44	1502360
		2018	18284.60	172.39	128.56	1854550
6	LASACO	2007	568.20	73.22	1.17	77158
		2008	693.50	85.19	3.95	68520
		2009	763.50	89.90	3.12	69190
		2010	825.20	97.21	0.97	70420
		2011	1245.60	120.23	4.32	75270
		2012	2883.20	165.25	2.95	78930
		2013	3794.20	164.34	3.22	90430
		2014	5360.40	162.06	7.17	119315
		2015	7384.40	173.04	17.20	145170
		2016	9721.10	192.21	54.32	139382
		2017	12057.80	211.38	91.44	133594
		2018	14394.50	230.55	128.56	127806
7	Linkage	2007	567.20	111.06	1.17	94210

		2008	764.20	115.40	3.95	90900
		2009	1685.00	120.13	3.12	96650
		2010	3028.20	125.22	0.97	107220
		2011	4178.40	125.35	4.32	105670
		2012	6519.30	123.80	2.95	105210
		2013	7220.00	130.02	3.22	121700
		2014	8412.00	128.16	7.17	125300
		2015	9320.00	127.42	17.20	242700
		2016	12006.00	270.32	54.32	250801
		2017	14692.00	413.22	91.44	258902
		2018	17378.00	556.12	128.56	267003
8	Leadway Assurance	2007	725.30	116.06	1.17	165960
		2008	883.20	112.41	3.95	183506
		2009	994.60	134.10	3.12	227700
		2010	1854.20	153.62	0.97	387512
		2011	2823.20	176.52	4.32	420230
		2012	4755.00	195.31	2.95	515715
		2013	6122.60	201.45	3.22	698180
		2014	8193.40	216.90	7.17	760172
		2015	9210.50	374.18	17.20	1082250
		2016	7145.00	55.06	54.32	1045211
		2017	5079.50	64.06	91.44	1008172
		2018	3014.00	83.18	128.56	971133
9	Staco	2007	550.30	64.34	1.17	170330
		2008	5722.60	91.89	3.95	253167
		2009	494.60	99.40	3.12	350620
		2010	810.50	116.17	0.97	408845
		2011	929.40	123.26	4.32	683388
		2012	785.70	126.37	2.95	719710
		2013	1416.20	136.21	3.22	816117
		2014	2840.20	125.26	7.17	772201
		2015	5220.40	140.30	17.20	625050
		2016	9083.50	116.70	54.32	539278
		2017	12946.60	93.10	91.44	453506
		2018	16809.70	69.50	128.56	367734
10	WAPCO	2007	590623.00	66.30	1.17	129780
		2008	910.88	70.10	3.95	275503
		2009	935.26	73.15	3.12	320610
		2010	3860.20	91.17	0.97	527070
		2011	5275.40	92.24	4.32	685902

		2012	6918.30	95.56	2.95	719177
		2013	7772.10	87.34	3.22	670185
		2014	6219.30	108.60	7.17	783120
		2015	7720.60	135.25	17.20	665289
		2016	8207.50	128.22	54.32	572150
		2017	8694.40	121.19	91.44	479011
		2018	9181.30	114.16	128.56	385872

Appendix

Table 1: Descriptive Statistics

	CLS	**CF**	**IR**	**MR**
Mean	830848.5	545229.1	269.3868	26.50317
Median	1143.850	480630.0	123.9450	4.135000
Maximum	36310000	1854550.	17140.00	128.5600
Minimum	125.7000	68520.00	-3147.030	0.970000
Std. Dev.	4719759.	411384.9	1602.471	40.81221
Skewness	6.067773	1.008651	9.768494	1.559099
Kurtosis	40.19996	3.608600	104.3000	3.948385
Jarque-Bera	7655.541	22.19950	53216.94	53.11296
Probability	0.000000	0.000015	0.000000	0.000000
Sum	99701823	65427489	32326.42	3180.380
Sum Sq. Dev.	2.65E+15	2.01E+13	3.06E+08	198210.7
Observations	120	120	120	120

Table 2: Correlation Analysis

Correlation t-Statistic Probability				
	CLS	CF	IR	MR
CLS	1.000000			

CF	0.366847	1.000000		
	4.283624	-----		
	0.0000	-----		
IR	0.006845	-0.082273	1.000000	
	0.074356	-0.896755	-----	
	0.9409	0.3717	-----	
MR	0.262187	0.340241	-0.093608	1.000000
	2.951331	3.930457	-1.021330	-----
	0.0038	0.0001	0.3092	-----

Table 3: Unit root test

Variables	p-values	Order	Remarks
CLS	0.0002	I(0)	Stationary
IP	0.0000	I(0)	Stationary
MR	0.0000	I(1)	Stationary
CF	0.0058	I(0)	Stationary

Table 4: Serial Correlation Test

Breusch-Godfrey Serial Correlation LM Test:				
F-statistic	1.871992	Prob. F(2,114)		0.1034
Test Equation: Dependent Variable: RESID Method: Least Squares				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
IR	-76.90806	189.5839	-0.405668	0.6857
MR	-707.8321	7883.620	-0.089785	0.9286
CF	0.385657	0.782655	0.492755	0.6231
C	-178765.4	512785.9	-0.348616	0.7280
RESID(-1)	0.769501	0.092165	8.349167	0.0000
RESID(-2)	-0.170494	0.092324	-1.846681	0.0674
R-squared	0.446804	Mean dependent var		3.45E-10
Adjusted R-squared	0.422541	S.D. dependent var		4330430.
S.E. of regression	3290725.	Akaike info criterion		32.89982
Sum squared resid	1.23E+15	Schwarz criterion		33.03920
Log likelihood	-1967.989	Hannan-Quinn criter.		32.95642
F-statistic	18.41505	Durbin-Watson stat		2.049682
Prob(F-statistic)	0.000000			

Table 4: Regression Result

Dependent Variable: CLS Method: Panel Least Squares Date: 02/09/20 Time: 20:58 Sample (adjusted): 2009 2018 Periods included: 10 Cross-sections included: 10 Total panel (balanced) observations: 100 Convergence achieved after 14 iterations				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	295578.5	419287.5	0.704954	0.4826
IR	23.26617	69.61046	0.334234	0.7389
CF	2.304565	0.923874	2.494456	0.0143
MR	0.33203	0.14010	2.36992	0.0310
AR(2)	1.735479	0.110829	15.65909	0.0000
R-squared	0.792061	Mean dependent var		990939.4
Adjusted R-squared	0.783306	S.D. dependent var		5159233.

S.E. of regression	2401645.	Akaike info criterion	32.26991
Sum squared resid	5.48E+14	Schwarz criterion	32.40017
Log likelihood	-1608.496	Hannan-Quinn criter.	32.32263
F-statistic	90.46624	Durbin-Watson stat	1.704649
Prob(F-statistic)	0.000000		
Inverted AR Roots	1.32	-1.32	
Estimated AR process is nonstationary			

Author's Profile

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