The Impact Of Underwriting Policy On Loss Ratio And Insurance Surplus (Deficit) Activity In The Egyptian General Insurance Market

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ABSTRACT

Underwriting policy, one of the main insurance functions, where insurance functions include; Underwriting, Pricing, Production, Claims settlements, Reinsurance, and Investment. Underwriting insurance policy means accept or reject to cover insured propose of risk(s),by a profession way that makes the insurance company able to cover the expected claims, general & administrative expenses, with making satisfactory profit margin. Underwriting policy has directly reflected in loss ratios, and indirectly reflected in insurance surplus (deficit) of activity. The main concept of this research is to find the impact of underwriting policy of the Egyptian insurance companies on its loss ratios and its surplus (deficit)of underwriting insurance activity, may it be useful to the Egyptian insurance companies to continue and to achieve satisfactory levels of growth and profitability, through establishing a regression model which includes the most affecting factors of loss ratio result for Egyptian general insurance market.

Keywords: Underwriting, Loss Ratio, Surplus (Deficit) of Insurance Activity, Egyptian Insurance Market

INTRODUCTION

Good insurance activities depending on its good underwriting and investment plans, where the insurance activity consists of two main activities; the underwriting activity which represents in the insurance coverage to the policyholders, and the investment activity, which includes the all insurance company accumulated money from policyholders premiums, to invests in various aspects investment cannel that has to be suitable to Egyptian insurance law, and by the way that guarantee to pay its expected claims from its available current liquidity in its due time, and achieve a good margin of profit. Underwriting insurance activity that may measures by surplus or deficit insurance activity, reflected in loss ratio. Good underwriting affect in loss ratio, it leads to decrease loss ratio, what in tern leads to increase in insurance surplus. Loss ratio represents the autocorrelation between net claims and net premiums, increase the premiums do not necessarily mean increasing the insurance surplus, where the insurance surplus is related to achieving the lowest loss ratio, and at least this low loss ratio does not require to be due to an increase in premiums, Premiums may be the less rate of loss because of good underwriting policy, which result verifies the largest insurance surplus. It is also in the case of premium increase may be it occurs as a result of not apply a good underwriting policy which depends on accept more insurable risk coverage regardless its risk degree, what reflects in a bad results and thus adversely affect in the insurance surplus. It is supposed to increase the size of the compensation with the increase in the volume of premiums written, because they reflect an increase in the risk, therefore as the size of written premiums increases, the size of paid claims increases.

The following table (1) illustrates insurance surplus in the Egyptian general insurance market through 2008\2009 to 2013\2014 (Insurance Market Annual Report, different years),

Table (1)

Years	Insurance Surplus
2008\2009	768717
2009\2010	149130
2010\2011	474773
2011\2012	877821

Insurance Surplus in market (L.E.000) 2008\2009: 2013\2014

2012\2013	582214
2013\2014	1073562

General Insurance

Table (1), shows that, there is no specific duration of insurance surplus, it decreases at some years, and increased at another years, **what means there is fluctuation in its value from year to another year, what reflects in a research problem to establish a regression model which could be useful in involving the most affecting factors of loss ratio result.**

Theoretical Background and general analysis for Egyptian non-life insurance market

About loss ratio and its components

Loss ratio is use to measure the incurred claims in comparison with unearned premiums, and this measurement used in ion of insurance underwriting policy(Elkholy,2007,p22).

Egyptian insurance market structure includes (Annual Statistical Report of Insurance Egyptian Market, 2013\2014);

- **Only one public sector Company conducting property and liability insurance**.
- **About 16 private sector companies conducting property and liability.**
- **only one public sector company conducting life insurance**.
- **About 12 private sector companies conducting life insurance**.

Property and insurance companies conducting in almost 11 class of business, they are; Fire, Marine Cargo, Inland Transport, Marine Hull, Aviation, Motor Comprehensive, Motor Act, Engineering, Oil, Accident, and Health insurance(Annual Report- Insurance Market ,2010\2011).

The following figure illustrates the insurance surplus in non life activity market:

Figure (1)

Surplus or deficit Insurance Activity in Non Life Insurance (L.E.000)

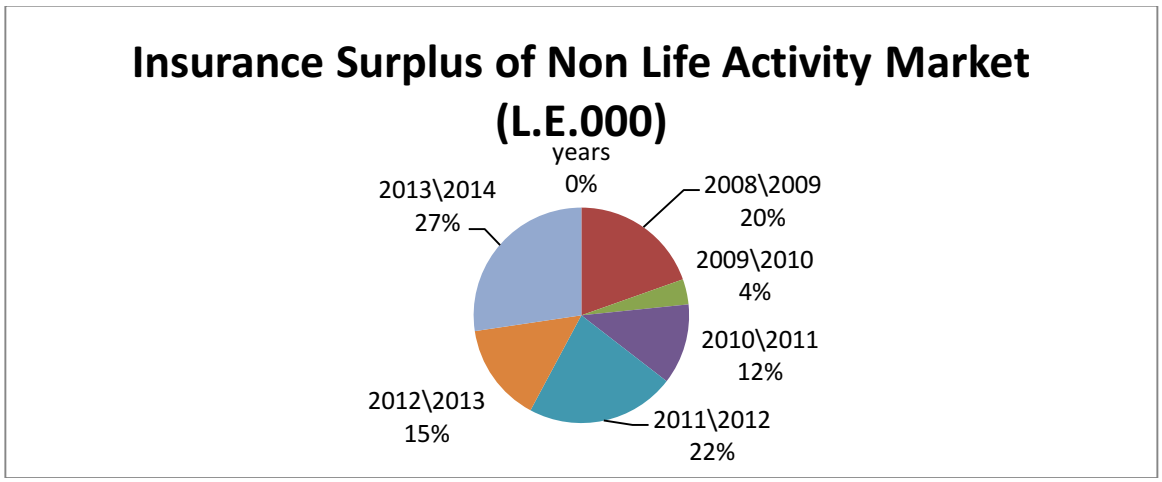


Figure (1) illustrates that the Non Life insurance has a fluctuation in years 2019\2010 and 2012\2013.

The following figure (2) illustrates the Direct Premiums, Total Premiums, and Net Premiums in Non Life Insurance sector;

Figure (2) Direct, Total, and Net Premiums

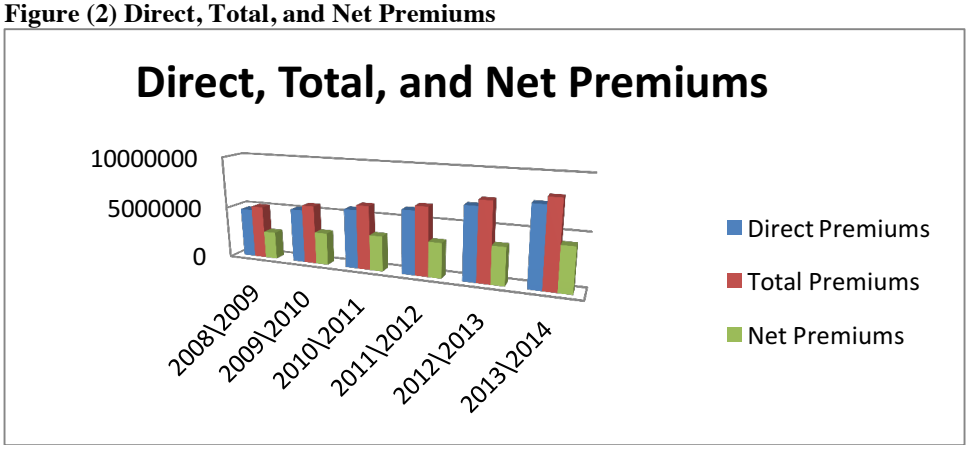


Figure (2), shows there is an increasing direction in each Direct, Total, and net premiums through the sample time series.

The following Figure illustrated the loss ratio of Non Life Insurance sector through 2008\2009 to 2013\2014;

Figure (3) Loss Ratio Trend through time serious 2008\2009 to 2013\2014

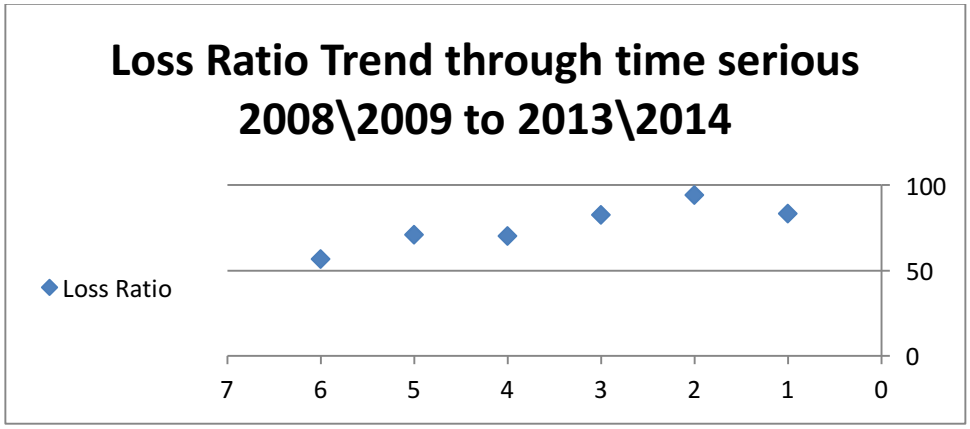
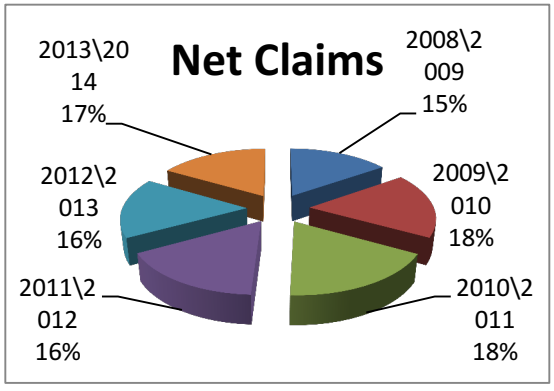
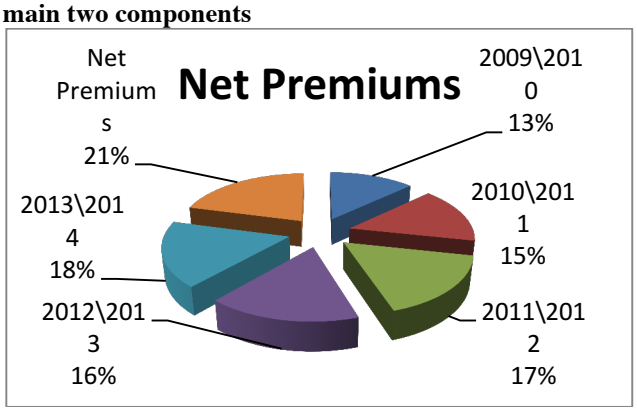


Figure (4) illustrates that there is fluctuation at the loss ratio of the sample time serious.

As the loss ratio represents a autocorrelation between Net claims and Net premiums, so the next figure illustrates that

Figure (4) Comparison between Net claims and Net premiums and Loss Ratio with comparison with its main two components





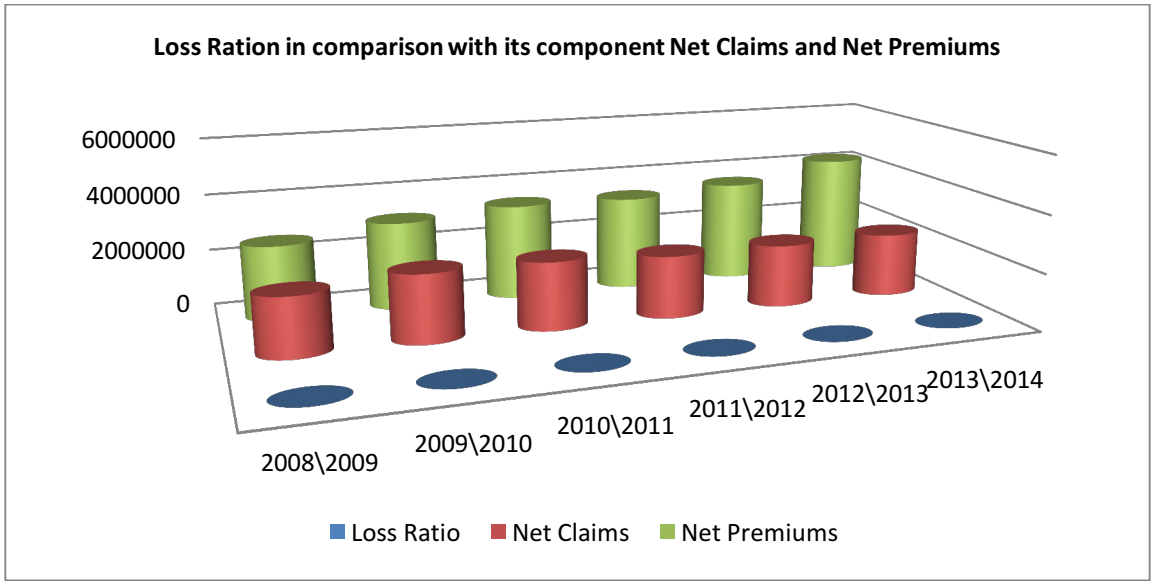


Figure (4), illustrates that approximately there is an increasing in loss ratio and its main two components net claims (claims +outstanding claims reserve c\f – outstanding claims reserve b\f), and net premiums (Premiums unearned premiums reserve b\f-unearned premiums reserve c\f).
So from the last figures, it is clear that:

- There is an increasing in net premiums at 2013\2014 (4230905 L.E.000) in comparison with the previous year 2012\2013(3576375 L.E.000), which means 18.3% increasing rate.
- There is an increasing in net claims at 2013\2014 (2239816 L.E.000) in comparison with the previous year 2012\2013 (2207413 L.E.000), which means 1.5% increasing rate.
- Although loss ratio represents a high ration, but it decreased in 2013\2014 (56.7%) in comparison with the previous year 2012\2013 (70.9%), by 20% decreasing rate.

This research aims to analyze the impact of underwriting policy on loss ratio and insurance surplus (deficit) of activity in the Egyptian general insurance market, through using the regression analysis to establish a model of insurance surplus and loss ratio. To achieve the aim of this research, the following statistical hypothesis has to be tested **"There is no significant autocorrelation between insurance surplus and loss ratio".**

Statistical Regression Model

Multiple Regression Model is illustrated the autocorrelation of dependent variable(Y) and more than one independent variables(X,S), where the multiple regression model will be at the form(Amen, 2008, p103):

$Y= B_0 +B_1X_1 + B_2X_2+.... +B_kX_k$

Where (k) represents number of independent variables.

1- Model Variables:

Y: Insurance Surplus
X_1: Direct Premiums.
X_2: Direct Claims.
X_3: Loss Ratio.

2- Sample

Sample will include; Insurance Surplus, Direct Premiums, Direct Claims, and Loss Ratio of Egyptian Non life insurance market, through 2008\2009 to 2013\2014 (annual statistical reports of Egyptian insurance market, 2008\2009, 2009\2010, 2010\2011, 2011\2012, 2012\2013, and 2013\204).

3- Statistical Model

IBM Statistical Package for Social Sciences (SPSS) version (20) will be used, in conducting a regression model

3-a- Step Wise Regression Model

The next table (Table 2) of model summary will determine the best regression model, that includes the most independent variables that affect on the dependent variable;

Table(2)
Model Summary [c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.867[a]	.752	.690	181402.784	
2	.996[b]	.993	.988	36027.871	1.160

a. Predictors: (Constant), X_3

b. Predictors: (Constant), X_3, X_1

c. Dependent Variable: Y

Model Summary table illustrates that, there are two regression models; Durbin-Watson value for both models is less than 2, which means there is no in Residuals in both models, but the first regression model (that includes only X_3) has explanatory ability by 69%, while the second one(that includes X_3 and X_1) has 98.8%, **What leads to use the second regression model.**

The next table (3) of ANOVA confirms that the second regression model is significant model.

Table(3)
ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	5.276E11	2	2.638E11	203.220	.001[b]
	Residual	3.894E9	3	1.298E9		
	Total	5.315E11	5			

a. Predictors: (Constant), X_3

b. Predictors: (Constant), X_3, X_1

c. Dependent Variable: Y

The last ANOVA table (3), illustrates that Model 2 is significant model, where its Sig.value is less than 0.05.

3-b Selected Regression Model equation

Table(4)
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
	(Constant)	6.010E6	385865.590		15.576	.001		
	X3	-44750.564-	2639.700	-1.799-	-16.953-	.000	.217	4.610
	X1	-.322-	.032	-1.053-	-9.920-	.002	.217	4.610

. Dependent Variable: Y

:

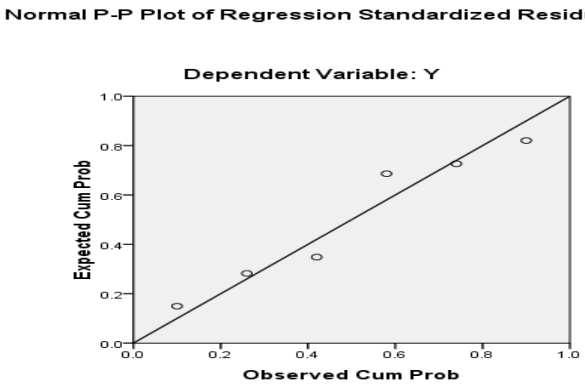
$Y=6.010E6 - 44750.564X_3 - 0.322X_1$, where;

$\beta0=6.010E6$, $\beta1=-44750.564$, $\beta2=-0.322$

3-c- Validity for the selected regression model

- As its shown in table (3) of ANOVA, P.Value =0.001 < 0.05, which means the selected regression model is significant.
- As its shown in table (4) of coefficients, P.Value of B_0 =0.001< 0.05, P.Value of B_1=0.000<0.05, and P.Value of B_2=002<0.05, which means all the selected coefficient regression model are significant.
- The next figure illustrates that the Residuals regression model is Normality.

Figure (5)
Normal P-P Plot of Regression Standardized Residual Dependent Variable: consumption



The last figure(5), showed that the Residual has normal distribution, and for more confirmation about Normality, the next table(5) shows the Kolmogorov-Smirnov and Shapiro-Wilk as follows;

Table(5)
Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Standardized Residual	.234	6	.200*	.924	6	.535

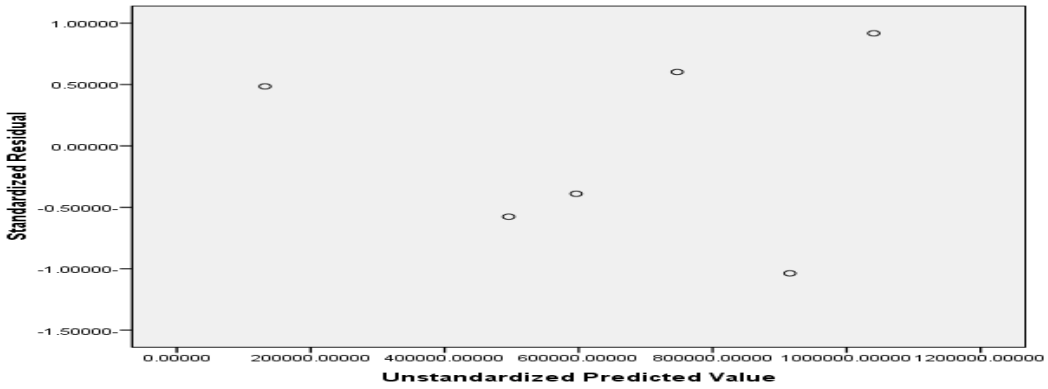
a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

Table (5) of Normality Test, it is clear that the P.Value =0.535> 0.05, which proves that Residual Dependent Variable has Normality distribution.

- Table (2) of model summary, showed that the value of Durbin-Watson = 1.160<2, which means there is no between Residuals. Table (4) of coefficients, showed that the variance inflation factor (VIF), is 4.610 < 5, which confirmed that, there is no autocorrelation for independent variables in the model.
- The next figure(6) shows that there is homoscedasticity in the Residual, where it has randomly figure as follows;

Figure (6)
Homosedasticity



The last figure (6) for Homosedasticity shows that there is random trend for the variance of Residuals.

Results

- Estimation Regression Model is: Y=6.010E6-44750.564X3-0.322X1 , where;

β0=6.010E6, β1=-44750.564, β2=-0.322

- Adjusted R Square = 98.8%, which means, 98.8% from the changes that occurs in Insurance Surplus Activity, because of changes in both Loss Ratio and direct premiums, and 1.2% for other factors such as random error.
- All good conditions of regression model(significant for regression as a whole and significant of the coefficients of regression model as showed at ANOVA table, are available in the regression model, Normality condition is available as it showed from p-p plot and Kolomogorov-Smirnov and Shapiro-Wilk tests, autocorrelation is not available as it showed in summary model table for Durbin Watson value, and there is random trend for the variance of Residuals, which means the Homosedasticity condition is available in the regression model, what proves the validity of the estimated regression model.
- Null hypothesis of this research is rejected, which means there is a significant autocorrelation between insurance surplus and loss ratio.

Recommendation

- Good underwriting policy leads to reducing in loss ratio and thus increasing in insurance surplus, so the insurance companies have to interested by its underwriting policies, by good selection of its proposed risks, by fair pricing for these risks in case of accept its coverage, and by not involved in illegal pricing Competitions, which is reflected in poor results in any of the class of insurance.

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