A STUDY ON RELATIONSHIP BETWEEN GDP GROWTH AND LIFE INSURANCE SECTOR IN INDIA

Prof. Nilesh Kulkarni
Asst. Professor, N.L.Dalmia Institute of Management Studies and Research,Mumbai.

1. Introduction
Insurance is an agreement between two parties namely insured and the insurer, wherein the insured pays a specific amount called premium to insurer in return the insurer agrees to cover the risk as conditions of contract/Policy. The most common reason to buy life insurance is to get protection against any unforeseen events. The Compulsory saving-cum-investment: A life insurance policy is a perfect combination of saving and investment. After maturity its corpus can be used for various reasons such aschild's education or like a pension or any other needs. Life insurance proceeds also helps the family of the insured to repay the loan amount which are taken on their dwellings. Life insurance is a protection against financial loss or monetary loss resulting from insured Individual's death. In real terms, life insurance provides you and your family the financial security, stability and certainty to deal with the aftermath of any uncertain unfortunate events.

In year 2013-14 India's total Life Insurance premium amounts to USD 52.17 billion whereas worlds total life insurance premium amounts to USD 2608.09 billion, which is approximately 2% of world's total life insurance premium.(IRDA Annual Journal)

The insurance sector influences economic growth and also economic growth influences the insurance sector. The life insurance sector is the most prominent investor in Indian economy. Its contribution has tremendously increased over past few years.
Thus, the present study is an effort to investigate the statistical significance of the life insurance in economic growth of India.

2. Literature Review
In India Insurance sector had shown rapid progress since last decade. The objective of this part of the study is to find out parameters which affect the government and non-government employees' consumption of life or general insurance and also to find out the short term and long term relationship between insurance and economic development of a country. The factors affecting consumption/demand of insurance are taken from the existing theoretical and empirical researches to re-assess their validity.

Ward and Zurbruegg (2000) examined the relationship between GDP and insurance growth. With, the data set of 9-OECD countries, and these countries were Australia, Austria, Canada, France, Italy, Japan, Switzerland, UK and US. It was found that insurance premium was Granger Cause of GDP in some countries but for some countries it was not true. Muthusamy and Meera (2008) demonstrated the important role of Indian life insurance sector in economic development.

Parekh and Banerjee (2010) reviewed that in India insurance sector has had significant impact on the economic development. This sector is gradually increasing and its contribution in GDP is also increasing. Han, et al. (2010) investigated the relationship between insurance development and economic growth, using the data set of 77 countries. It was found that insurance density impact plays very important role in developing countries rather than developed ones.

Ching, et al. (2011) analyzed the existence of causal relationship between total assets of general insurance sector and GDP in Malaysia. It was found that the long-run relationship exists between the total assets of general insurance and GDP. And in the short-run causal relationship was absent (in both directions).

Michael, Ojo (2012) examined the short and long run relationships between GDP and insurance sector growth of Nigeria. It was found that insurance sector growth positively andsignificantly affect the GDP. The long run relationship between the insurance growth and GDP was also confirmed. Hou, et al. (2012) investigated the impact of financial institutions and GDP in 12 Euro-countries. Two major conclusions were found: first it was from cross-country evidences that life insurance penetration and banking development do not have any significant impact on GDP. Secondly, the life insurance and banking development are significant predictors of GDP. Horng, et al. (2012) examined the relationship among the insurance demand, financial development and *The Relationship between Life Insurance and Economic Growth: Evidence* 415GDP of Taiwan. It was found that there was an equilibrium relationship between the insurance demand, financial development and GDP. The study found that in short run, GDP was Granger cause of insurance demand and financial development was Granger cause of GDP. It was finally concluded that financial development promotes GDP and GDP further promotes the insurance demand. Lee.

(2013) analyzed the long term and short term relationship between the GDP and real life insurance premium of 41countries. It was found that in the long term one unit increment in the real life premium will raise the GDP by 0.06 units. The life insurance markets development determines the economic growth in the long-run and in the short term, bidirectional causalities were found between them. Chang, et al. (2013) investigated the causal relationshipbetween the insurance activities and GDP, using a data set of 10 OECD countries. It was found that there was a significant and positive relationship between the overall insurance growth and economic growth for 5 countries out of 10 OECD countries.

3. Objective of the Study
To examine the significant relationship between the total life insurance premium and GDP Value in India.

4. Hypothesis
*Hypothesis:*There is no significant relationship between the life insurance and GDP in India.

*The data:*This study is empirical by nature as is based on secondary data. That has been compiled from the Handbook of IRDA annual reports and data from World Bank website.

*Variables Definition:*the variable GDP as proxy for economic growth is taken as dependent variable. The independent variables of the study are total life insurance premium (TLIP), total life insurance investment (TLII), covering the time period from 2006 to 2015.

*Model:*The Two Stage Least Square regression analysis has been taken as statistical tool for data analysis. In order to check the efficiency and unbiasedness of the estimatedcoefficients of the TSLS regression analysis has been applied.

5. Findings
GDP (In USD Billion)

Year	Amount (Xi)	$(Xi-Mean)^2$	Amount in INR billion
2006	949.1	458744.7722	42153.02
2007	1238.7	150316.7178	51794.59
2008	1224.1	161850.9222	53725.75
2009	1365.4	68124.65405	65040.83
2010	1708.5	6739.260649	77796.55
2011	1835.81	43849.61641	89798.65
2012	1831.78	42178.06913	96946.96
2013	1861.78	55400.44913	108057.71
2014	2066.9	194034.083	129077.91
2015	2182	308683.5816	140422.61
Total	16264.07	1489922.13	
Mean	1626.41	148992.21	

Life Insurance Premium

Year	Amount in Rs. Crore	Amount in Billion	$(Xi-Mean)^2$
2005-06	105875.76	1058.76	1959929
2006-07	156075.84	1560.76	806356.9
2007-08	201351.41	2013.51	198219.1
2008-09	221785.47	2217.85	58021.96
2009-10	265447.25	2654.47	38314.28
2010-11	291638.64	2916.39	209447.4

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2011-12	287072.11	2870.72	**169734.9**
2012-13	287202.49	2872.02	**170810.9**
2013-14	314283.2	3142.83	**467992.6**
2014-15	328000	3280.00	**674480.8**
Total		24587.32	**4753308**
Mean		**2458.73**	**475330.8**

Total Insurance Investment

Year	Amount in Rs. Crore	Amount in INR Billion
2005-06	487151	**4872**
2006-07	604180	**6042**
2007-08	765969	**7660**
2008-09	916365	**9164**
2009-10	1212458	**12125**
2010-11	1430118	**14301**
2011-12	1678918	**16789**
2012-13	1744894	**17449**
2013-14	1957466	**19575**
2014-15	**2154896**	**21549**

The below data is the results of the above data.

Model Description

		Type of Variable
Equation 1	GDP	Dependent
	TLIP	predictor & instrumental
	TLII	predictor & instrumental

Model Summary Table 1

Equation 1	Multiple R	.926
	R Square	.858
	Adjusted R Square	.818
	Std. Error of the Estimate	14285.023

Table 2.

ANOVA

		Sum of Squares	Df	Mean Square	F	Sig.
Equation 1	Regression	8647991099.831	2	4323995549.915	21.190	.001
	Residual	1428433260.192	7	204061894.313		
	Total	10076424360.023	9			

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Coefficients

		Unstandardized Coefficients		Beta	t	Sig.
		B	Std. Error			
Equation 1	(Constant)	-10443.133	17837.796		-.585	.577
	TLIP	37.387	7.628	.812	4.902	.002
	TLII	.084	.072	.194	1.171	.280

Coefficient Correlations

			TLIP	TLII
Equation 1	Correlations	TLIP	1.000	-.512
		TLII	-.512	1.000

6. Results Interpretation

Model Description

		Type of Variable
Equation 1	GDP	Dependent
	TLIP	predictor & instrumental
	TLII	predictor & instrumental

Table 1. Presents the OLS regression results and these results are substantially similar as what was expected. A significant impact of life insurance on economic growth is observed in India. It is found that if the life insurance investment increases by one unit holding the other things constant then on the average GDP increases by (0.084), and it is statistically significant at 5% level. The life insurance premium increases by one unit then on the average GDP increases by (3.387) holding other things constant. It influences significantly to the GDP at 1% level.

Coefficients

		Unstandardized Coefficients		Beta	t	Sig.
		B	Std. Error			
Equation 1	(Constant)	-10443.133	17837.796		-.585	.577
	TLIP	3.739	7.628	.812	4.902	.002
	TLII	.084	.072	.194	1.171	.280

Table 1

Table 2 presents result of ANOVA method where we can see that Numerator degree of freedom is 2 and denominator degree of freedom is 7 and its value from table is 4.26 where F value obtained is 21.90 hence Null hypothesis H_0 is rejected. Alternate hypothesis H_1 is accepted which says there is relation between GDP growth and Total Insurance premium and Total Insurance Investment.

ANOVA

		Sum of Squares	Df	Mean Square	F	Sig.
Equation 1	Regression	8647991099.83	2	4323995549.91	21.190	.001
	Residual	1428433260.19	7	204061894.31		
	Total	10076424360.02	9			

R-squared is a statistical measure of how close the data are to the fitted regression line. It is also known as the coefficient of determination, or the coefficient of multiple determination for multiple regression.

R-squared is always between 0 and 100%:

- 0% indicates that the model explains none of the variability of the response data around its mean.
- 100% indicates that the model explains all the variability of the response data around its mean.

Model Summary		
Equation 1	Multiple R	.926
	R Square	.858
	Adjusted R Square	.818
	Std. Error of the Estimate	14285.023

7.Conclusion
These results provide empirical evidence that life insurance has both positive as well as significant impact on the economic growth in India i.e. GDP. The null hypothesis has been rejected and alternate hypothesis is accepted. In current scenario, India has huge insurable population, is good hope for life insurance sector. Scope for further studies: Further research work need to be done in the same direction by applying different time period and different methodologies such as simultaneous equation model, Vector auto-regression, Granger causality and co-integration. The results may be more interesting than current study.

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