URBANIZATION: IMPLICATION FOR INSURANCE IN INDIA

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Abstract:-The paper intends to give two way analyses on the implication of urbanization on the demand for life insurance and non-life insurance in India. Firstly, we try out to give the theoretical background to the effect of urbanization in general on society then related it to insurance opportunities. Then we conducted an empirical investigation on the impact of urbanization on demand for life insurance and non-life insurance, i.e. Penetration and density by conducting OLS Regression, and Granger Causality. The results are similar in both grounds, suggesting inevitable urbanization opportunities can provide a positive impact for insurance products. Further, OLS Regression analysis suggests that urbanization is the major variable which is having a positive impact on the demand for life insurance. The result suggests that if the urbanization rate is increased by 1%, life insurance penetration is increased by 0.44 %. Similarly, the coefficient of urbanization rate is +0.2311, which suggest that the rise in urbanization rate of 1% will lead to rise in non-life insurance penetration by 0.23 %. The Granger Causality result concludes that urbanization is causing demand for life insurance at one leg.

Keywords: Urbanization, Life Insurance, Non-Life Insurance, OLS Regression, Granger Causality

INTRODUCTION

Urbanization includes rising population density, infrastructural access, and employment in the non-farm sector. The word, urbanization describes the percentage of the total population living in urban areas, as defined by the country. By 2030, the world's urban population will reach five billion, with China and India leading the way in the growth of rapid Growth in Urbanization and urban populations in the coming decades, according to Swiss Re's latest sigma study, "urbanization in emerging markets: boon and bane for insurers". India will account for 16% of the increases in global urban population. There will be a surge in the number of megacities as well. Apart from megacities, industrial clusters, linking rural and urban sectors also accounts for urbanization i.e. Delhi- Mumbai industrial corridors, Golden corridor between various cities. According to the 2011 census, there are 53 cities in India with a population of a million or more; by 2031, that number will rise to 87. These paradigms will bring massive opportunities for the insurance sector, both lives as well as non-life sectors. Urbanization will bring multilateral changes in the form higher population density and risk concentration. Further, there is growing rise in the importance of environmental issues in this regard. Rising incomes and levels of asset ownership will favor the development of non-life personal lines, in particular motor insurance. Commercial fleets will also see growth, supported by expanding public transport and logistics sectors i.e. metro in Delhi, Bangalore, and Mumbai. Urbanization will also bring industrialization causing construction sector, insurance to rise. Liability insurance will also see a boom, if the urbanization is tied with literacy and consumer awareness which will lead to more litigation. Urbanization will bring opportunism in life and healthcare insurance products due to high

population density, changing lifestyle and changes in the composition of populations. Further, higher catastrophe risk will be present in a high population density location, which presents major challenges for insurance and risk insurer.

TREND IN URBANIZATION

There is increasing trend in urbanization across all nations and market from 1950 to 2010. The overall urbanization rate in developed market has been just less than 80%, whereas in emerging market, it is at 46% in 2010. It is forecasted to increase to 56% in emerging markets, especially from India and china. In India urbanization has risen from 25% to 31% from 1990 to 2012. The pace of urbanization is steady in India. According to the 2011 census, there are 53 cities in India with a population of a million or more; by 2031, that number will rise to 87. There are 3 mega cities which are expected to rise to 16 by 2013. There has been an increasing tendency for cities, whether large or small, to merge to form urban clusters which are more economical and functionally dependent due rise in connectivity.

CONSEQUENCES OF URBANIZATION

Increases infrastructure access and facilities will bring more economic growth and consumer demand. The speed of urbanization in emerging markets sometimes outpaces the establishment of essential infrastructure. In Indian context, rapid rise in urban population, is leading to many problems like increasing slums, decrease in standard of living, also causing environmental damage sanitation problems, illegal buildings, rise in slum dwelling, overcrowded areas urban unemployment. Urban poverty is strongly linked to poor human capital, social unrest, crime, violence and outbreaks of diseases. This problem is severe, when urbanization is not well managed. Here we will say that urbanization is inevitable, the only thing in hand is how we managed it. The management of urbanization involved investment in transport, power generation and construction activities meet the diverse demand of urban sector. Urbanization brings social impact such as smaller families, high consumerism and changing lifestyle. This lifestyle will cause more disease pertaining to life style. Further massive migration brings severe pressure on the urban infrastructure, environmental degradation. The below figure shows, that there is rising trend of urbanization in the context of every continent. However, emerging market, on an average have a lower degree of urbanization
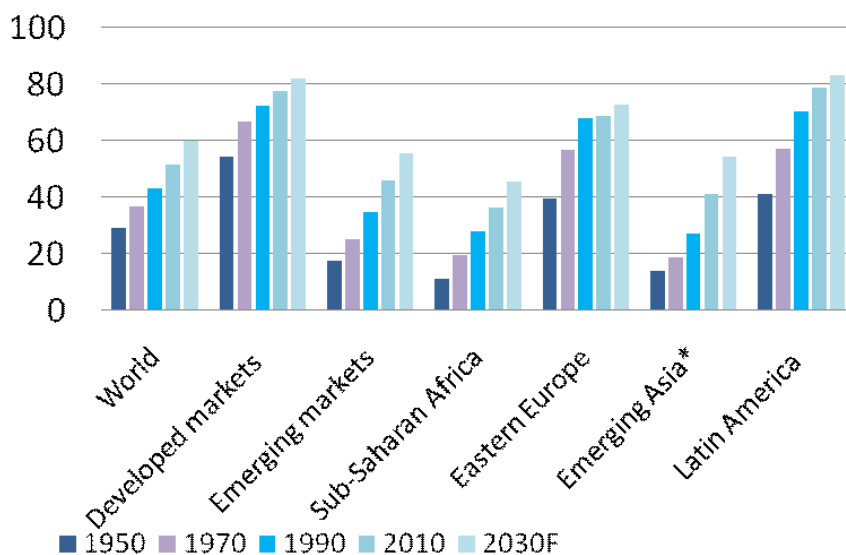
URBANIZATION AND INSURANCE

The paradigms, of risk and insurance changes when we move from rural to urban sector. High population density will make the price of insurance products fairer. High asset concentration and technological innovation will increase the risk accumulation of different type such as cyber crime and terrorism. Economic asset concentration further adds to vulnerability to natural catastrophe. Megacities like Delhi are more prone to the risk of earthquake. Although, It is unclear, if, urbanization causes an increase in demand for insurance. It is certainly coincidental with increased insurance demand as income is affecting both. In developed countries, urbanization has appeared to stimulate growth for insurance products, generating higher insurance density (total insurance premiums per capita). In emerging markets, urbanization and insurance spending grow together also. Insurance opportunities are likely to be substantial as emerging markets become increasingly urban. Urbanization will bring economic growth and commercial activities which will lead to rise in demand for commercial insurance. In overall, urbanization will lead to following implications for the insurance sector;

1.Rise in personal insurance - Personal motor and third-party liability insurance will benefit from the rapid increase of car ownership in emerging markets due to rise in urbanization. There is a strong correlation between urbanization and rising vehicle ownership. The value of motor vehicles (per 1,000 people) in India was 18.35 as of 2009. As the graph below shows, over the past 6 years, this indicator reached a maximum value of 18.35 in 2009 from 12.00 in 2003. The rapid growth of motor vehicle ownership due to rise in the middle class. The compound annual growth rate in motor insurance is 19%, whereas growth in motor ownership is more 10%.
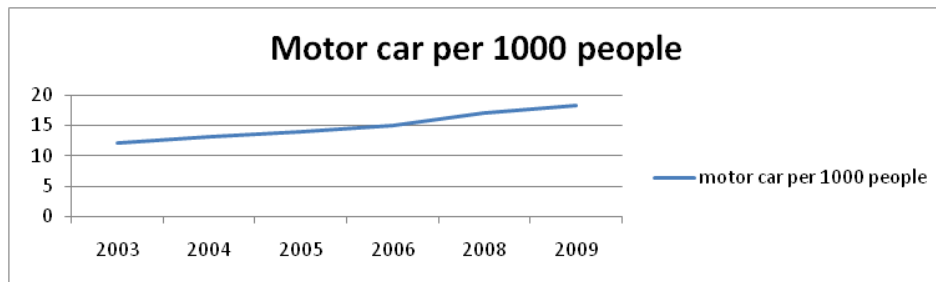
The share of motor insurance is much higher as compare to other non-life insurance. It means that this aspect of urbanization will bring rapid growth for non-life insurance segment
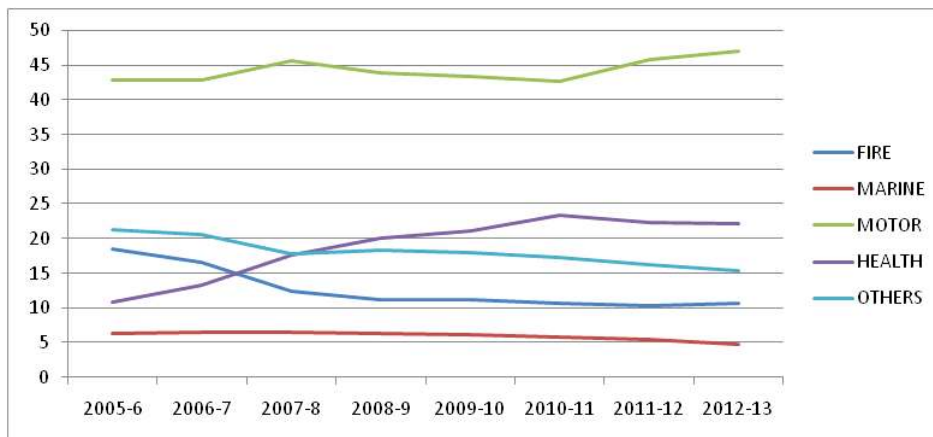
2.Commercial property - Industrialization and growth of commercial insurable assets, rising risk

awareness and exposure to catastrophes (natural and man-made), huge infrastructure assets: ports, airports, metro etc. Will lead to rise in the commercial sector insurance. All these valuable assets have a high risk density due to rapid urbanization.

3.Environmental liability - Urbanization will lead to more sanitation problems, pollution and more need for waste management activities. Further Regulatory requirements; pressure from environmental or green insurance groups, society etc. Urban growth around hazardous industrial belts will demand more environmental protection and insurance.

4.Changes in lifestyle - Lifestyle hazards, due to higher mobility present new challenges for underwriting in life and health. Migration pressures create challenges for policymakers. Urban lifestyle will impact health insurance for example, with the emergence of specific communicable diseases for example SARS in 2008. Migration leads to interchange of viral diseases between rural and urban areas. Critical illness insurance products can provide protection from a higher incidence of urban diseases. Medical cost increases tend to be more rapid in urban areas, increasing the health protection gap.

5.Rise in group insurance - In India, for instance, group life and health insurance premiums grew at an annualized rate (inflation adjusted) of 20% between 2001 and 2011, compared with 10% growth in individual premiums in the same period.

6.New type of risk such terrorism and cyber crimes - High Population density and technological innovation will leads to different type of risk concentrations. There is need to focus on that type of insurance product.

7.Construction segment Insurance - Urbanization demands huge investment in the construction activities. Therefore, there will more surge in insurance products for the construction segment.

DATA ANALYSIS AND INTERPRETATION

After getting theoretical background, we conducted our empirical analysis by first conducted OLS Regression between Growth in Urbanization rate and growth in insurance penetration separately for life insurance and non-life insurance. Then we again conducted OLS Regression after taking control factors into account. Then we conducted Granger Causality between urbanization rate and demand for insurance. The data period is from 1990 to 2011. The relationship between insurance and urbanization can be drawn from the following diagram between three variables such as life insurance penetration, non-life insurance penetration and urbanization
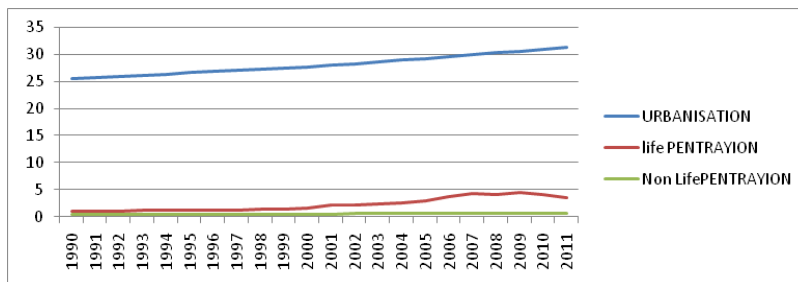
1.Effect of Urbanization on Insurance when control factors are not considered

The word, urbanization describes the percentage of the total population living in urban areas, as defined by the country. The, rate of urbanization, describes the projected average rate of change of the size of the urban population over the given period of time. In order to find out relationship between urbanization, life and non-life insurance, we find out the variable in Growth in Life Insurance, Growth in non-life insurance and Growth in Urbanization that is rate of urbanization. This will also make our variable more stationary rather than if we have taken absolute variables. The correlation between Growth in Life Insurance and Growth in Urbanization is found to be 0.09, where as the correlation between growth in non-life insurance and Growth in Urbanization is 0.55.

Further we make two models

$GIL = a + GIU$ 1
$GINL = b + GIU$ 2
Where GIL is Growth in Life Insurance
GINL is Growth in Non-Life Insurance
GIU Is Growth in Urbanization

RESULT OF MODEL 1 LIFE INSURANCE

Variables	Coefficients	P-value
Intercept	6.192033	0.716241
URBANIZATION	6.902278	0.687084
Significance F		0.687084

RESULT OF MODEL 2 NON-LIFE INSURANCE

Variables	Coefficients	P-value
Intercept	-7.77154	0.18628
URBANIZATION	15.75345	0.012613
Significance F		0.012613

It is more evident from Model 2 results that the Growth in Urbanization is impacting growth in non-life insurance in positive direction which is significant as suggested by both Significance F value and p-value of less than zero in Model 2.Whereas in Model 1 Growth in Urbanization does not have any significant impact on Growth in Life Insurance. Model 1 is not well fit.

2.Effect of Urbanization on Insurance when control factors are considered
In order to find out the effect of urbanization on insurance, while considering control factor. We have followed SUBIR (2008) studies of 12 Asian economics to conform the positive effect of urbanization on demand for insurance. Accordingly we have chosen the following variables

Dependent variable	Independent variable	Implications
1. log² of life insurance penetration, 2. log of non-life insurance penetration, 3. log of life insurance density 4. log of non-life insurance density	1. Real Interest rate 2. Inflation 3. Log of M3/GDP 4. Log of GDS 5. Urbanizati on rate	Expected to have negative relationship with demand for insurance Inflation ceases out demand for insurance Log of M3/GDP proxy for financial development intends to push insurance demand Log of GDS proxy for savings intends to have positive relationship with insurance Urbanization positively linked with insurance

We have used following four models

1. $LPEN = a + b1\,R + b2\,I + b3\,\ln M3/GDP + b4\,\ln GDS + b5\,Urb$

2.NLPEN $= a + b1\,R + b2\,I + b3\;Ln\,M3/GDP + b4\,Ln\,GDS + b5\;Urb$
3.LDEN $= a + b1\,R + b2\,I + b3\;Ln\,M3/GDP + b4\,Ln\,GDS + b5\;Urb$
4.NLDEN $= a + b1\,R + b2\,I + b3\;Ln\,M3/GDP + b4\,Ln\,GDS + b5\;Urb$

Where LPEN stands for log of life insurance penetration, NLPEN stands for log of non-life insurance penetration, LDEN stands for log of life insurance density, N LDEN stands for log of non-life insurance density, R Stands for REAL INTEREST RATE, I stands for inflation, M3/ GDP stands for log of M3/GDP, Stands for log of GDS, Urb stands for urbanization

Model 1. Life Insurance penetration and independent variable

Variables	Coefficients	P-value
Intercept	-9.59049	0.001227
REAL INTEREST RATE	0.019419	0.369624
inflation	-0.01016	0.431708
M3/ GDP	-0.1694	0.531856
GDS	-0.16957	0.644571
URBANIZATION	0.435291	0.030371
Significance F		0.00
Adj R Square =0.93		

In Model 1 only urbanization is having significant and positive impact on life insurance penetration. Other variables are insignificant. It suggests that urbanization is the major variable which is having positive impact on the demand for life insurance. The result suggest that if urbanization rate is increased by 1%, life insurance penetration is increased by 0.44 %

Model 2 Non-Life Insurance penetration and independent variable

Variables	Coefficients	P-value
Intercept	-4.18982	1.09E-05
REAL INTEREST RATE	-0.001	0.863627
inflation	-0.00216	0.537051
M3/ GDP	-0.02048	0.780249
GDS	-0.321	0.004826
URBANIZATION	0.231124	0.000277
Significance F		0.00
Adj R Square =0.86		

In Model 2 the coefficient of urbanization rate is +0.2311, which suggest that rise in urbanization rate by 1% will lead to rise in non-life insurance penetration by 0.23 %. The log of GDS is having coefficient of -0.321, suggesting that 1% increase in saving will lead to fall in non-life insurance penetration by 0.32%. It suggest people more inclined towards saving tends to not purchase non-life insurance products

Model 3.   Life Insurance density and independent variable

Variables	Coefficients	P-value
Intercept	-15.9817	5.51E-06
REAL INTEREST RATE	0.022392	0.293763
inflation	-0.01026	0.418612
M3/ GDP	-0.85149	0.00476
GDS	0.137333	0.702901
URBANIZATION	0.70458	0.001219
Significance F	0.00 Adj R Square =0.98	

In Model 3 the coefficient of urbanization rate is significant at +0.70, which suggest that rise in urbanization rate by 1% will lead to rise in life insurance density by 0.70 %. The log of GDS is having coefficient of 0.137, but it is insignificant. The coefficient of log of M3/GDP is significant and negative, which is surprising , which tell us that financial development without proper urbanization can leads to have negative impact on life insurance density

Model 4. Non Life Insurance density and independent variable

Variables	Coefficients	P-value
Intercept	-10.56	9.42E-13
REAL INTEREST RATE	0.000542	0.906226
inflation	-0.00222	0.425268
M3/ GDP	-0.67856	2.38E-09
GDS	-0.02848	0.71882
URBANIZATION	0.501614	8.97E-10
Significance F = 0.00 Adj R Square =0.99		

In Model 4 The coefficient of urbanization rate is significant at +0.50, which suggest that rise in urbanization rate by 1% will lead to rise in non-life insurance density by 0.70 %. The log of GDS is having coefficient of -0.02, but it is insignificant.

3.Causality between Insurance and Urbanization

Lastly we, conducted Granger Causality test between urbanization rate with life insurance penetration, and then with non-life insurance penetration. The three variables stationary has been tested by using augmented dickey fuller test of unit root. Then we have used lagged of these variables after making it stationary. The result is that urbanization is causing demand for life insurance at one lag. Although, t he results are insignificant for urbanization and non-life insurance penetration.   The result has presented in the appendix.

CONCLUSION AND IMPLICATIONS

India has lower degree of urbanization as compare to Developed and European countries. But Rapid Economic growth has full potential for increasing infrastructure and demand for urbanization. This will open new dimensions for untapped insurance opportunities. We concluded that Growth in Urbanization is impacting growth in non-life insurance in positive direction through OLS Regression. Perhaps, increasing urbanization tends to grow the sector of motor industry, which constitutes major share in non-life insurance sector. Further, Regression analysis suggests that urbanization is the major variable which is having positive impact on the demand for life insurance. The result suggests that if urbanization rate is increased by 1%, life insurance penetration is increased by 0.44 %. Similarly, the coefficient of urbanization rate is +0.2311, which suggest that

rise in urbanization rate by 1% will lead to rise in non-life insurance penetration by 0.23 %. The Granger Causality result concludes that urbanization is causing demand for life insurance at one lag. Our Empirical Analysis and Theoretical background gives similar conclusion that urbanization is posturing favorable opportunities for both. Financial development, in isolation may not provide benchmark for boosting demand for insurance. The combo of financial development plays a critical role. Also, we suggest that supply side measures such as foreign direct investment and competitive efficiency in this segment will provide a comprehensive framework for capturing the opportunities created by urbanization in the rapid growth in demand for insurance segment.

REFERENCE

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Appendics

1.Correlation between various dependent and Independent variables

	Life DENSITY S	Non-life DENSITY S	life PENTRA YION	Non-LifePENTR AYION	infl atio n	M3/ GDP	GD S	REAL INTEREST RATE	URBANI ZATION ³
Life DENSI TY S	1	0.973322	0.952226	0.884592	0.06 585 7	0.840 429	0.97 417 1	-0.56989	0.934522
Non-life DENSITY S		1	0.69006	0.911753	0.05 094 4	0.834 196	0.99 123 7	-0.61918	0.932914
life PENTRAYION			1	0.873404	0.12 714	0.893 89	0.90 509 1	-0.41317	0.948599
Non-LifePENTRAYION				1	-0.06 767	0.814 423	0.89 039 4	-0.53737	0.8878
inflatio n					1	0.289	0.02 677 8	-0.47339	-0.18988
M3/ GDP						1	0.87 060 8	-0.29024	0.965202
GDS							1	-0.58607	0.950545
REAL INTEREST RATE								1	-0.43105
URBANIZATION									1

2.

Pairwise Granger Causality Tests
Date: 12/31/03 Time: 23:59
Sample: 1990 2011
Lags: 1

Null Hypothesis:	Obs	F-Statistic	ProbProb.
DDURB does not Granger Cause DDLP	19	5.55111	0.0316
DDLP does not Granger Cause DDURB		0.16080	0.6937

3.

Pairwise Granger Causality Tests

Date: 01/01/04 Time: 00:01

Sample: 1990 2011

Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
DNLP does not Granger Cause DDURB	19	0.05242	0.8218
DDURB does not Granger Cause DNLP		2.03740	0.1727

4. SHARE OF INSURANCE SEGMENT IN NON-LIFE INSURANCE AND ITS CAGR

	2005-6	2006-7	2007-8	2008-9	2009-10	2010-11	2011-12	2012-13		CAGR
FIRE	18.54	16.59	12.43	11.15	11.18	10.7	10.27		10.57	8.45
MARINE	6.31	6.54	6.47	6.44	6.26	5.92	5.44		4.81	13.04
MOTOR	42.9	42.95	45.59	43.94	43.46	42.7	45.84		47.05	19.07
HEALTH	10.91	13.33	17.59	20.06	21.12	23.36	22.27		22.19	30.05
OTHERS	21.35	20.6	17.92	18.41	17.98	17.33	16.18		15.37	12.12
TOTALS	100	100	100	100	100	100	100		100	
								Non-life less health		15.25
								gdp at current price		15.33

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2. Log of variable is taken to make data more stationary

3. Correlation between Urbanisation and M3/GDP, GDS is quite high. Therefore we have used log of M3/GDP, GDS in our study

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