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Determinants of Insurance Business Activities in an Oil Dependent Economy: the Case Study of Saudi Arabia

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Abstract
Similar to other businesses, deterioration in macroeconomic outlook subsequent to a dip in oil price could be a cause of concern for the insurance sector. We investigate the impact of macroeconomic variables on the insurance business of an oil dependent economy such as Saudi Arabia. Interestingly, and contrary to expectations, oil prices play no direct role in insurance written premiums as well as retention. We recorded the indirect effect of oil prices and conclude that rising inflation and government debt negatively impact net written premium, while population size and GDP per capita do the opposite. This is true of life, health and general insurance sub-businesses. Inflation also has a negative impact on retention rates for overall insurance activity as well as general and health insurance. Interestingly, health insurance retention rates are positively impacted by rising population levels. Subsequently, we looked at more disaggregated level insurance activities and concluded that GDP per capital had a positive impact on property related written premiums and a negative effect on motor retention rates. Inflation has a negative impact on net written premiums of energy, engineering, marine, accidents, motor and property/fire. Similarly, an increase in government spending positively impacts net written premiums of the above insurance sectors except marine. Inflation reduces retention rates of energy and property sector but helps motor sector. Government spending and debt also help retention rates in engineering sector insurance but reduces property/fire related retention rates.
Keywords: Insurance companies; Retention ratio; Net written premium; Saudi Arabia; Macroeconomic; Oil prices

1. Introduction

The significance of insurance in trade and development was recognized in the first conference of UNCTAD (1964), where a very crucial aspect was highlighted that for an economic growth, a sound national insurance and reinsurance market are the essential characteristics. It is a well-established fact that insurance sector is a barometer for an economic activity in a country. The development of insurance industry therefore is a reflection of the economic growth and prosperity. Insurance also has a real effect on the global economy; of course, through the sheer number of people that the sector employs, as well as maintaining employment level by compensating for the huge commercial losses which in the absence of insurance, would have not been able to finance itself and could have caused significant employees be laid off in an economy. Insurance also acts in a complementary fashion with the banking sector, offering easier access to credit, channelling savings into long-term investments and providing greater transparency and liquidity to the markets, thus providing further support and growth to the economy (Geneva, 2012). The Insurance sector provides risk financing and liability protection to the entrepreneur, corporations and individual's real and personal property. Especially, the life insurance creates a habit of thrift in the societies that generates substantial long term funds for social and economic infrastructure to the government and ultimately increases the GDP growth of a country.

The insurance mechanism works by pooling funds for risk financing and liability protection that ensures the constant inflow of funds in economy. The insurance business itself is however, influenced by the economic conditions of the country. There is a close linkage and interdependence between macroeconomic variables and insurance activities. The relationship between the insurance sector and factors such as the GDP growth rate, level of per capita GDP, exchange rate, inflation, population, government expenditure, government debt and oil prices in an oil dependent economy is well documented in the empirical and theoretical literature. Following this evidence, the recent slowdown in the Saudi economy due to a drastic fall in the price of oil is likely to have a significant impact on the macro economy as well as insurance sector. Saudi Arabia has persuaded long term plan termed as 'Vision 2030', to improve prevailing economic conditions in the country through market reform and generating diversified income which would lead to the competition and will create opportunities for the growth of insurance businesses.

The headway of the insurance sector in an economy can be judged not only by evaluating the net written premium but also by studying the retention ratio of insurance companies in the economy over a relatively longer time period. The net written premium and retention ratio are considered the main indicators to check the 'financial health' of insurance sector. A decline in net written premiums is an indicator of a lower level of customer's participation leading to a decrease in the profitability of underwritten insurance. This may show a failure to compete in the market or simply a market which has become overly price competitive. Retention ratio on the other hand, is the amount of business an insurance company has retained over the year. The insurance

retention ratio is the percentage of invoiced, or written, premiums compared to the number of premiums that are actually paid, called gross premiums.

In this paper an attempt has been made to evaluate the role of some key factors on the insurance sector in the context of macroeconomic changes in an oil dependent economy. The study evaluates the influence of macroeconomic indicators on net written premium and retention ratio in insurance sector in the post insurance reforms period spreading over 10 years in Saudi Arabia. The empirical results of the study found very strong linkages between net written premium and variables such as GDP per capita (GDPPC), implied PPP conversion rate (IPPPC), population (POP) size, general government net debt (GGNDBEBT), inflation (INF), and general government total expenditure (GGTEXP). Interestingly and contrary to the expectations, oil prices do not appear to have statistically significant direct impact on retention ratio and net written premium of insurance business in Saudi Arabia. Hence, the results of empirical analysis show that oil prices do not play any direct role in the insurance business. But rather perhaps that oil prices indirectly influence the insurance sector through other macroeconomic variables. The finding of this study has significant implications for GCC as well as other OPEC countries and their insurance sectors.

The rest of the paper is structured as follows. The next section provides a background of the Saudi Arabia insurance industry. Section 3 comprises of review of literature. While the next section (Section) 4 is dedicated for methodology and data requirements and sources. The last two sections are comprised of empirical findings and conclusions.

2. Saudi Insurance Industry

Saudi Arabian insurance industry has witnessed an influx of new firms since 2003 after the sector was regularized subsequent to the promulgation of law on supervision of cooperative insurance companies. A significant number of new firms had entered since then. The entry of a significant number of firms within a short time span has resulted in a 'fragmented market' with intense competition. The profitability margins have been under severe pressure due to rising competition levels resulting in capital erosion and lower retention of the customers. One of the positive elements of new government policies however, is the making of health and motor insurance for local as well as expatriate population compulsory. This has resulted in higher numbers of customers and net written premiums but has not translated into higher profit. In an effort to compel insurers to adopt risk based pricing mechanisms, in particularly for motor and health insurance by aligning pricing with independent actuaries' assessments, SAMA (Saudi Arabian Monetary Authority) has introduced a number of new guidelines. It is expected that once implemented fully, this will help in limiting price competition leading to more options and better quality of service for policyholders. This mechanism however could place pressure on some of the insurers whose business models are not aligned with risk based pricing.

One of the expectations of insurance reforms in 2013 was that it would also spur merger and acquisition activity in the sector. There has been some success in this regard since then, but below expectations due to a number of reasons. Some of these include valuations issues, poor quality portfolios and hesitancy in letting the control of ownership, in particular by family owned insurers. The imposition of limits on the foreign ownership is not helping the situation either. The regulatory bodies have been active in the last few years in enhancing the regulatory standards such as underwriting rules to address these issues. In terms of the business volume of the insurance industry and share of different segments, the industry recorded a gross written premium of SAR 36.5 billion in 2015. The health insurance in particular witnessed a growth of more than 20% in 2015 and this segment has accounted more than 50% of total business. General insurance recorded a growth of 19% and its share was 45%. Protection and saving insurance experienced more than 15% growth and its share accounted for 3%. The retention ratio of the insurance sector was 83% in 2015 rising from 79.8% in 2014. In summary, Saudi Arabia is expected to be one of the fastest growing insurance markets in the world in the years to come. The industry is at the early stages of its development with uncertain profitability outlook but an overall outlook of the sector is still attractive and positive for those who could control cost by introducing risk based pricing as well as consolidation to achieve economies of scale.

Despite a number of positives mentioned above, empirical studies on the Saudi insurance industry particularly and GCC countries in general are non-existent. This study hopes to fill this gap by investigating the factors that are most likely to have an impact on net written premiums and retention ratios in particular.

3. Literature Review

A study by the committee of European insurance contribution to economic development and growth, pointed that the contribution of insurance sector in economic growth and development is very significant due to offering of risk hedging services to the firm and to make financial stability through the risk financing and liability protection that creates the sense of social security in the minds of stakeholder's organizations. Further, the study concludes that the insurance industry creates a conducive environment of greater certainty to promote investment, entrepreneurial innovative attitudes in business community as well as thrift of saving in society by offering

insurance products. The importance of insurance in the process of economic growth of a country has also been fully recognized in UNCTAD conferences in year 1964, contributing in its form of employment in insurance sector that would led to the GDP growth of the nation. Since then, several empirical studies have looked at the linkage between financial intermediaries and economic growth (Ross and Levine, 2005). Although the possible contribution of insurance markets on the economic growth has been recognized, the analysis of possible casual links between the insurance business and economic growth has not been conducted as much as that of overall financial system and banks (Arena, 2006) in particular. Generally speaking, two strands of literature have emerged so far. One is which looks at the impact of insurance on economic growth, employment and risk pricing and secondly one which analyzed the impact of economic environment on insurance activities. In the following, we review some studies of these strands of literature.

Francois (1990) examined the link between insurance growth and economic development in developing countries. The study showed that the insurance in both life and non-life businesses generated economic growth. The insurance not only made economic transactions easy by risk financing and providing benefits when risks exist, but it also accelerated the growth of economy and increased the financial intermediation (Ward and Zurbruegg, 2000). Jan et al. (2001) conducted a comparative study of several countries and concluded that growth of insurance sector increases the total productivity of the production factors by facilitating the efficient allocations of capital and financial intermediation.

Haiss and KjellSümegi (2006) performed an empirical analysis by analyzing the various channels of influence of the insurance sector vis-à-vis economic growth: risk transfer (bearing risk for other economic agents which might stabilize their income streams, dampen volatility and enhance economic activity), substitute savings (broadening the investment range might make intermediation more efficient and thus aid in economic growth), investment (e.g. increasing over-all investment volumes and deepening capital markets), institutional spheres of influence (e.g. Bancassurance- selling insurance product through banks) and possible sources of contagion and repercussions to the economy. The empirical analysis of a panel data set of 29 European countries for the period from 1992 to 2004 is used to estimate the coefficients and the significance of each input factor. The results showed no evidence of a correlation between aggregate insurance premium and GDP growth. The empirical findings pointed to future possibilities in investigating the nexus by using different indicators for insurance engagement and longer time periods. The study suggested that given the huge body of research on the relationship between bank/capital market-finance and economic growth, there is definitely a need for more empirical work on the insurance-growth-nexus, both solely on insurance and by including insurance in broader investigations.

The insurance sector may have an effect on financial stability, mobilizing savings, and facilitating trade and industry. It is a mechanism for the risks to be managed efficiently and effectively, helping mitigate the losses and it can also be a substitute or complement for government social security programs (Skipper, 2001). Zurbruegg (2000) in a study for OECD countries found no statistically relationship between insurance activity and economic growth for the U.S, the U.K, Austria and Switzerland. For Japan, Canada, France, Italy and Australia the null hypothesis of no statistically relationship was however rejected. The outcome of the empirical study showed that insurance growth did cause economic growth for Japan, Italy and Canada. Similarly, Musalem et al (2000) found causal link between economic growth and the upswing insurance market in many OECD Countries. On the other hand, insurance is most often regarded as an item of expenditure which is not required by potential buyers, particularly if they are not informed. Economists noticed it as a top need that becomes fully available only after various other needs are satisfied, which is totally wrong (Liedtcke, 2007). Haiss and Sümegi (2008), by applying the Cobb-Douglas modified production function, concluded that there are dissimilarities in impact of insurance on GDP growth between the new member states of the European Union and the nations with mature financial markets that deserve to be observed, and that may indicate further investigation into future potential through the use of various insurance indicators and setting up a model for longer time periods.

Arena (2006) has examined the insurance market activity, both as a financial intermediary and a provider of risk financing and indemnification, leading to economic growth to hedge domestic savings from the risks efficiently and effectively. The study concluded that economic growth has a closed link with development of the insurance sector. Cristeaaet.et al (2014) highlighted that the insurance sector became a major component in certain economies, consequently the weight of insurance to the GDP of every country being over 10% in some European countries (such as the Netherlands, the United Kingdom and Finland), and it even got higher as the further economic development was achieved The outcomes of correlation analysis revealed that population growth, GDP growth, and per capita GDP growth exhibit a positive relationship (pull factors) with insurance growth indicators while inflation and unemployment rate exhibit a negative relationship (restrictive forces) with insurance growth indicators, Bhatia and Jain, (2013). Lenka, (2014) study provided a strong evidence that macroeconomic variables influence insurance business growth. Moreover, Parvathi (2013) suggests that the insurance sector has not only played an unparalleled role by spreading the message of life insurance throughout the country, but also plays a significant role in the economic development of the nation. Insurance helps the

society by creating both direct and indirect employment opportunities for the economic development of the nation.

In the context of Middle Eastern and African countries insurance industries, as far as we are aware, there are not many empirical published studies available. Mohammad (1998) concluded that a one per cent increase in per capita income helps the insurance sector grow 2.9 percent. Akinlo and Apanisile (2014) concluded that insurance premium has positive and significant impacts on economic growth in sub-Saharan Africa. Broadly speaking, with the exception of few studies mentioned above, it is clear from the above review of literature that the majority of studies looking at economy and insurance sector interaction looked at the causality from insurance to economy rather than other way round. This study hopes to contribute in this regard by taking into account the often less investigated area, and tries to explore causality from economic conditions to insurance sectors in an oil dependent country.

4. Methodology and Data

As discussed above, the main objective of the present study is to evaluate the impact of macroeconomic variables on the insurance sector activity in Saudi Arabia. We have conducted regression analysis on a list of macroeconomics variables (independent variables) and two main indicators of insurance activity (dependent variables), net written premium and retention ratio respectively. The study uses secondary data using the period 2005-14 which is collected from various sources i.e. annual reports of SAMA, insurance companies, SIGMA, World Investment Reports, and various research papers and books etc.

5. Empirical Findings

5.1 Aggregated analysis

Due to the fact that we have only 10 observations for the entire sample period covering 10 years of aggregated industry data, we ran regression for each single explanatory variable one by one to save degrees of freedom. This could introduce misspecification bias but as discussed above, the nature of our study is more of an exploratory rather than a comprehensive one. To conserve space however, we report regression coefficients in a single table. Following this strategy, we do not report regression intercept either. Full set of regression results are available upon request. The regression coefficients of total insurance as well as general and health insurance reported in table 1, show that the gross domestic product per capita (GDPPC) has a significant positive influence on the level of net written premium and retention ratio. Interestingly, GDPPC does not significantly influence protection and saving insurance. This could be due to the non-mandatory nature as per Saudi Arabian law, resulting in low share in total insurance business volume. Consequently, these regression results indicate that higher the gross domestic product per capita (disposable income in this case due to Saudi Arabia being a country with no income tax), greater would be the prospect for various total insurances in Saudi Arabian insurance sector. Further, the estimate confirms that inflation (INF) inversely affects the total business of insurance measured by net written premiums and retention ratio except life protection and saving insurance. This could be perhaps due to the fact that higher prices would erode the purchasing power and insurance in some cases being a non-essential expenditure would get affected significantly. Hence, taken together, the above findings confirm that two important macroeconomic variables in terms of better outlook such as low inflation and rising GDPPC would help the insurance activity greatly.

The size of the population has a direct and positive relationship with insurance activity due to the fact that a rising population would increase the demand for insurance in particular due to the mandatory nature of the health and motor insurance policy in Saudi Arabia. The demand for health insurance in particular has been gradually increasing for the last many years due to the emerging private sector in Saudi Arabia and strict laws of state for Saudis' and expatriates' labor health protection. This has significantly increased the volume of health insurance sales in particular. As expected, the regression coefficients of total, general and health insurances show that population (POP) size has a positive and statistically significant influence on the level of net written premiums. In the case of retention, the positive statistically significant relation is only observed for health insurance. This could be perhaps due to the fact that rising population would increase the demand for health insurance, pushing the policy premiums high and encouraging the customer to stay with their existing insurer and thus help maintain/increase the retention levels.

Table 1 Determinants of Saudi insurance sector activity (aggregate level)

	(1) (Total insurance)	(2) (General insurance)	(3) (Health insurance)	(4) (Protection/saving insurance)
		Net written premiums		
GDPPC	1.3411*	0.5023*	0.8482*	-0.0094
INF	-5,975.3371***	-1,987.7521***	-3,865.4621***	-122.1217
POP	1,958.1323*	704.4037*	1,248.3032*	5.4249
GGNDEBT	-428.9850*	-128.9716	-284.6528**	-15.3606**
OILP	28.2770	-0.2276	25.0013	3.5033
		Retention ratio		
GDPPC	1.3411*	0.5023*	0.8482*	-0.0094
INF	-4.6637***	-2.9760**	-4.9499***	-0.7932
POP	1.3382	0.8863	2.1385***	-1.1142
GGNDEBT	-0.3852**	-0.2177	-0.2840	-0.1804
OILP	0.0686	0.0142	0.0066	0.1332
Observations	10	10	10	10

Notes: *** p<0.01, ** p<0.05, * p<0.1

The rising net debt of government could increase the budget deficit which directly affects economic growth and total public sector spending, leading to loss of jobs and other benefits as well as reducing purchasing power of the local population in particular. As expected, the regression outcomes of various insurance businesses with respect to general government net debt (GGNDEBT) has a negative influence on the level of net written premium and retention ratio. For net premium, relation is statistically significant for total insurance as well as for the health and life protection/saving insurance. For retention however, the negative relation is only significant for total insurance business.

Lastly and more importantly, we observe the impact of one of the very important variable 'oil prices' on the insurance business. After 46 years, Saudi Arabia is facing a high budget deficit due to a continuous fall in oil prices. Oil prices have fluctuated in the last few years due to a number of reasons. These include weak economic outlook, political uncertainty, the increasing level of efficiencies due to technological advancements and substitution from traditional sources such as oil to newer options such as solar and wind energy. American oil production has been on the rise and this has reduced the demand significantly due to the fact that the USA has been one of the largest importers of oil (one-fifth of the total worldwide oil import) alongside China. Furthermore, Saudi's and their allies have not reduced their supply in response to price drop against the normal practice for the last many years. All this has created an environment of economic slowdown in the country because historically, Saudi economy has been heavily dependent on the income from exports of oil. Hence, in theory, the impact of oil prices on insurance activity is expected to be large and statistically significant. The regression coefficient of oil prices however does not appear to be statistically significant irrespective of different types of insurances for both written premium and retention ratio dependent variables. Hence, the regression results in fact show that oil prices do not play any direct significant role in insurance business activity in an oil rich country such as Saudi Arabia, but perhaps they influence other macroeconomic variables such as disposable income, inflation and government expenditure/debt levels which affects directly effects of insurance business activity in Saudi Arabia.

5.2 Disaggregated analysis

In our effort to further understand the impact of above mentioned variables on net written premium and retention, we ran a second set of regressions by further disaggregating insurance businesses into further seven categories such as aviation, energy, engineering, marine, accidents, motor and property/fire insurance and results of this exercise are reported in table 2. Similar to aggregated case, we report regression coefficients in a single table but regressions were run on a single explanatory variable one by one to conserve the degrees of freedom.

The regression coefficients show that similar to above aggregated analysis, gross domestic product per capita (GDPPC) has a positive influence on the level of net written premiums. These relations are statistically significant for written premiums related to engineering, accident, motor, and property/fire insurance. Therefore, the volume of net written premium would be very high in accident, motor, engineering and property & fire insurance when GDP per capita goes up. Consequently, the above regression outcome indicates that, greater the gross domestic product per capita, higher is the prospect for insurance business in Saudi insurance sector. This is perhaps related to the fact that the increase in disposable income would increase the demand for transport and

housing/real estates. In terms of retention ratio, GDPPC has both positive and negative effects, but mostly these effects are statistically insignificant. In particular, we observe a statistically significant negative relation for motor insurance retention ratios. Therefore, an increase in GDP per capita would lead to a reduction in retention ratio for this category of business perhaps because people will buy more motor vehicles leading to the change of insurer.

Broadly speaking, the implied PPP conversion rate (IPPPCR) does not have a significant influence on the level of net written premium. The marine insurance only shows a positive and statistically significant relation for net written premium. The retention ratio does not appear to have a statistically significant relationship irrespective of different insurance components. The export and import are the key factors of marine insurance in Saudi Arabia. Consequently, the above regression relation can be explained in the sense that higher the IPPPRC, the higher would be the prospect for marine insurance business in Saudi insurance sector.

Table 2 Determinants of Saudi insurance sector activity (disaggregated level)

	(1) (Aviation insurance)	(2) (Energy insurance)	(3) (Engineering insurance)	(4) (Marine insurance)	(5) (Accidents insurance)	(6) (Motor insurance)	(7) (Property/fire insurance)
				Net written premiums			
GDPPC	0.0000	0.0003	0.0073*	0.0049	0.0230**	0.4486*	0.0182**
IPPPCR	-0.6117	6.7187	86.9920	121.3416*	138.5188	2,203.2053	171.8120
INF	0.5207	-2.6034***	-29.0316**	-19.7687*	-87.9326***	-1,780.8682***	-68.0646***
POP	-0.0283	0.5654	9.4190	4.3120	34.3084**	630.4704*	25.3523*
GGTEXP	-0.1171	0.5241**	6.3866**	3.4268	21.8697***	427.9878**	15.4153**
GGNDEBT	0.0194	-0.1800*	-2.6177**	-2.4711**	-5.7007	-112.7006	-5.3187**
OILP	0.0045	0.0257	0.4510	0.9474	0.1684	-2.4871	0.6613
				Retention ratio			
GDPPC	0.0001	-0.0000	-0.0000	-0.0003	0.0001	-0.0003**	0.0004
IPPPCR	0.2614	1.7427	-4.9270	-1.4558	5.4520	0.2417	5.5094
INF	0.3100	-0.4511**	0.7754	-0.0248	-2.8455*	0.8503**	-1.5742**
POP	0.0182	0.0360	-0.3526	-0.2948	0.7371	-0.3464*	0.5270
GGTEXP	-0.1085	0.0811	-0.1799	0.0443	0.6344	-0.1622	0.3164*
GGNDEBT	0.0163	-0.0375*	0.1150**	-0.0268	-0.2188	-0.0017	-0.1467**
GGNDEBT	0.0163	-0.0375*	0.1150**	-0.0268	-0.2188	-0.0017	-0.1467**
OILP	0.0055	0.0107	-0.0248	-0.0008	0.0118	0.0215	0.0308
Observations	10	10	10	10	10	10	10

Notes: *** p<0.01, ** p<0.05, * p<0.1

Next, we observe the relationship between the net written premium and inflation. Generally speaking, and similar to aggregated results, the coefficients contained in table 2 show that inflation (INF) has a negative influence on the level of net written premiums and retention ratios. More specifically, except for aviation, the outcome of a simple regression analysis shows a negative and statistically significant relation between INF and net written premiums. The retention ratios for energy, property and accidents are negatively related to INF, while, the outcome of motor insurance show a statistically significant positive relation. Therefore, the above findings confirm that higher the inflation, lesser is the prospect for insurance business. However, increase in inflation is found to be positively related to the retention ratio of motor insurance. This is perhaps due to the fact that rising prices would push people to stay with their existing insurer.

Similar to findings for aggregated insurance premiums and retention ratios, the size of the population (POP) has a positive relationship with written premium. The increasing population level would push the demand for insurance products higher. In particularly, the outcome of accident insurance regression shows a statistically significant positive relation between population size and net written premium. The same is true for motor and property insurance but the relation is relatively weakly significant in a statistical context. The motor insurance retention shows a significant negative relation while for other insurances, coefficients are statistically insignificant. Therefore, the above analysis led to suggest that the higher the population size, higher the prospect for net written premiums of different insurance policies in Saudi insurance sector.

The rising expenditure of the government creates the environment of social security in the form of social and economic infrastructure development of the country. It is interesting to note that general government total expenditure (GGTEXP) has a positive influence on the level of net written premiums and retention ratios in multiple insurances as indicated by regression coefficients. The outcome of accident, motor ,property/fire,

energy and engineering insurance shows a very strong and positive statistically significant relation between general government total expenditure and net written premium respectively, while the regression outcome of property/fire insurance shows a significant positive relation between general government total expenditure and retention ratio. Therefore, the above regression results indicate that the higher the general government total expenditure size, the greater is the prospect for different insurances.

The increase in net debt of government would increase the budget deficit which directly affects economic growth and total public sector spending. The regression results presented in table 2 show that government net debt (GGNDEBT) has a negative influence on the level of net written premiums and the level of retention ratios in different insurance businesses. The regression coefficients of property/fire, energy, engineering and marine insurance confirm a negative and statistically significant relation, while the regression coefficient of engineering insurance business shows a statistically significant positive relation. Interestingly, this relation is negative for energy and property insurance (for energy, relation is though weakly significant).The engineering sector insurance business depends on the size and speed of infrastructure development and other projects. The net debt of general government can create a negative impact on the existing and future projects related engineering insurance. Therefore, the above relation indicates that the greater the government debt, the lesser is the prospect for insurance businesses in Saudi insurance sector.

Interestingly, contrary to expectations and similar to aggregated results discussed above, oil prices do not appear to show a statistically significant relationship for retention ratios and net written premiums of disaggregated insurance businesses too. Similar to total insurances results reported in table 1, the result of regression analysis in fact show that oil prices do not play any direct role in insurance business in Saudi Arabia. Hence, the impact appears to be indirect through GDP per capita (or disposable income), government spending and debt level in particular.

6. Conclusion

Insurance sectors play an important role in a country in terms of risk pricing and employment generation. Similar to other businesses, deterioration in macroeconomic environment as a result of a decrease in oil prices could be an issue for insurance sector. This study investigates the impact of macroeconomic variables on insurance businesses of one of the significant oil producers' country such as Saudi Arabia. After performing a simple regression analysis, we conclude that an increase in general price levels in the economy and government borrowing negatively impact net written premium while an increase in the population of the country and income measured by GDP per capita exert the opposite effect. These findings are true of different components of sub-businesses insurances such as life, health and general insurance. Furthermore, inflation also has a negative impact on retention rates for overall insurance activity as well as general and health insurance. Similarly, health insurance retention rates are positively impacted by rising population levels. More importantly and contrary to expectations, oil price plays no direct role in insurance written premiums as well as retention in Saudi Arabia.

In our subsequent analysis, we looked at more detailed level insurance activities by running regression utilizing similar set of independent variables, and conclude that GDP per capital has a positive impact on property related written premiums and negative on motor retention rates. Furthermore, inflation has a negative impact on net written premiums of energy, engineering, marine, accidents, motor and property/fire. Similarly, an increase in government expenditure positively impacts net written premiums of the above insurance sector except marine sector. Increasing price levels in the economy reduces retention rates of energy and property but helps motor insurance. Finally, an increase in government expenditure and borrowing help retention rates in engineering insurance but reduces property/fire retention rates.

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