

Effect of Leverage on Income Retention of General Insurers in East Africa

Phocas Nyandwi*, Amos Njuguna and George Achoki

United States International University – Africa

*Corresponding Author's E-mail: phocany@yahoo.fr

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Abstract

The purpose of this research was to determine the effect of leverage on income retention of general insurers in East Africa. The study adopted explanatory sequential mixed methods research design which consists of collecting and analysing secondary data first and subsequently collecting primary data to get deeper insight on the results from secondary data. For secondary data, a census was conducted on the total population of 87 general insurance companies in existence during the period of study from 2015 to 2019 across Kenya, Uganda, Tanzania, Rwanda and Burundi. Data were obtained from insurance regulatory reports, company annual reports and through data collection sheets where reports were not available. The primary data phase consisted of in-depth interviews carried out on a stratified sample of 25 key informants across the five countries. Both descriptive and inferential statistics were used to analyse the data. The regression results indicate that leverage, as measured by debt to equity ratio, has a negative and significant effect on income retention of general insurers in East Africa ($\beta_1 = -0.02337$, $p\text{-value} = 0.001$). According to the details per country, this negative relationship is significant for Kenya and Rwanda while insignificant for Tanzania, Uganda and Burundi. The study recommends that insurance companies should hold adequate equity relative to their liabilities to enhance their income retention.

Key Words: Leverage, Debt to Equity Ratio, Financial Distress, Income Retention

Introduction

By reducing the risk associated with different economic activities, the insurance sector is an important enabler for business ventures (Hasibuan et al., 2020). For insurance companies to fulfil this role, they need to assess their risks and maintain a good financial standing to absorb shocks. Insurance companies need to possess adequate capital to cover the various risks assumed (Mao et al., 2015). However, while capital is the ideal buffer to absorb shocks facing insurance companies, it would be very expensive to hold enough capital to cater for all the risks assumed yet insurance companies use partly risk management mechanisms.

Reinsurance as insurance for insurers is the main risk management tool for underwriting risk and provides important diversification benefits (Porth et al., 2013). Gonzalez and Anderson (2018) documented that reinsurance supplies insurance firms with vital financial resources for growth, expansion and regulatory compliance by increasing underwriting capacity and also allows international capital to participate in the enhancement of the local capacity especially in insurance markets which are undercapitalized. Nonetheless, reinsurance is purchased at a cost and insurance companies need to be mindful of the balance between the expected benefits and the high cost of reinsurance. Zhou et al. (2015) opine that the reinsurance premium paid is

usually higher than the claim recoveries insurance companies can get back from reinsurers. At the same time, high reinsurance cost reduces the income retained with a negative impact on profit (Lei, 2019).

Other downsides of excessive usage of reinsurance and low income retention include counter increased counter party risk (Lo, 2016). This is due to the fact that reinsurers do not have a contractual relationship with the insured and in case they do not pay the share of a claim to the insurance firm, the latter will be completely liable to the insured. Low income retention has also been pointed to be linked to moral hazard behaviour by insurance firms (Wen et al. 2015). With little stake in the risks assumed, insurance companies find indeed less incentive for prudent underwriting and cautious claims management.

Income retention is one of the indicators of financial soundness of an insurance company (OECD, 2016). It is the proportion of the gross written premium of an insurance firm income after deduction of ceded premium to reinsurance (Bahri et al., 2017). With the objective to increase local retention, deter excessive use of reinsurance and reduce the premium income flight outside the country, measures with regard to domestication of reinsurance business have been taken in East African countries in recent years. The Circular Letter No 055/2017 the Tanzania Insurance Regulatory Authority (TIRA, 2017) and its subsequent amendment in 2018 set a minimum of 5% of shareholders' funds as minimum retention per risk with other stringent conditions for externalization of risk outside the country. The 2017 Circular IRA/CIR/10/17/360 by the Insurance Regulatory Authority in Uganda (IRAU, 2017) and the circular by the Insurance Regulatory Authority in Burundi (ARCA, 2018) also aimed at keeping the maximum volume of insurance premium inside the respective countries. However, while these measures can improve the level of retention at country level, most do not address the root cause of low retention at firm level.

Past studies have sought to find out the effect of leverage on income retention among other firm financial factors. One of the studies indicated that insurance liabilities represent a significant proportion of total liabilities of an insurance firm (Dhaene et al., 2015). Firms with high insurance liabilities relative to their equity are highly leveraged, hence more exposed to financial distress and regulatory pressure to increase capital. They are therefore inclined to purchase more reinsurance to offload part of these liabilities to reinsurers, thereby reducing their income retention (Chang & Jeng, 2016). Other studies have depicted mixed results such that while prior studies found a negative relationship between leverage and income retention (Garven et al., 2014; Cummins & Weiss, 2016), other studies found either a positive association (Chan et al., 2015) or no significant relationship (Jang, 2018), pointing to an empirical gap in addition to the paucity of studies in the African context in general and particularly in East Africa.

Problem Statement

Several empirical studies have provided evidence on the negative effect of low income retention on profitability. Among others, Lei (2019) found that low income retention negatively affects the risk adjusted return on assets and return on equity. Wasike (2017) also found that low income retention is significantly related to low profitability of Kenyan insurers. The cost of reinsurance for Kenyan general insurers averaged 28.37% with a retention ratio of 71.63% for the period of study from 2015 to 2019 (IRA, 2020). As the third largest African insurance market, this retention level is significantly low compared to peer African markets such as

Morocco at 92.33% (ACAPS, 2021) or South Africa at 88.2% (OECD, 2022) and to the average of 84.3% for OECD countries (OECD, 2022). Statistics from other countries in East Africa do not reflect a better picture. According to country respective statistics from Insurance Regulatory Authority of Uganda (IRAU, 2020), Tanzania Insurance Regulatory Authority (TIRA, 2017; TIRA, 2019) and Insurance Regulation and Control Agency of Burundi (ARCA, 2020), the average income retention for the same period from 2015 to 2019 was 55.25% for Uganda, 49.92% for Tanzania and 65.10% for Burundi. Furthermore, studies also indicated other risks associated with overreliance on reinsurance such as credit and liquidity risk (Lo, 2016) and insolvency risk which may force insurers to inject more capital (Mao et al., 2015; Caporale et al., 2017).

It is important to investigate why firms retain less despite the adverse implications. The financial distress hypothesis of risk management predicts that financial distress factors such as leverage push reinsurance firms to apply risk management mechanisms such as reinsurance to mitigate the risk of financial distress, even at a higher cost than the actual risk (Gupta, 2017). However, there is still lack of conclusive evidence due to contradicting findings with different methodological approaches in different contexts. For instance, Cummins and Weiss (2016) found significant influence of leverage on income retention while Park (2020) failed to find a significant relationship between the two variables. Additionally, there is a paucity of studies in Kenya and other East African countries related to the issue of income retention and its determinants. This study therefore sought to address the inefficiencies by determining the effect of leverage on income retention.

Research Objective

The objective of this study was to determine the effect of leverage on income retention of general insurers in East Africa, leading to the following hypothesis:

H₀1: Leverage has no significant effect on income retention of General insurers in East Africa

Literature Review

Theoretical Review

This study was anchored on the financial distress hypothesis of risk management. Mayers and Smith (1982) and Mayers and Smith (1990) provide the framework for the relationship between corporate hedging and financial distress. According to Mayers and Smith (1982), the probability of incurring financial distress and its costs is lowered by shifting the risk to insurers even if the price for it is actuarially unfair. More specifically in respect of reinsurance usage, Mayers and Smith (1990) posit that insurance firms with greater risk of financial distress will purchase more reinsurance to mitigate the risk.

Leverage is one of the prime indicators of financial distress risk as used in the various financial distress models such as the Multiple Discriminant Analysis model of Altman (1968), the logit model of Ohlson (1980) or the probit model of Zmijewski (1984). Research has also shown that leverage is significantly related to financial distress (Ikpesu, 2019). Leverage reflects the level of indebtedness of the firm and higher levels of debt could lead to the inability of the firm to honour its obligations. For the case of insurance companies, liabilities to policy holders account for the major part of their obligations. Firms with high leverage therefore have incentive to purchase more reinsurance so that reinsurers can help them to pay part of the liabilities.

Empirical Literature Review

Firms with higher financial distress probability are expected to hedge more risk (Jang, 2018). For insurance companies, the main mechanism to hedge the core risk is the purchase of reinsurance. Higher leverage means higher levels of debt which could lead to insolvency (Seng & Thaker, 2018). Highly leveraged firms are therefore expected to have lower income retention due to more reinsurance purchase. Consistent with the findings on the relationship between leverage and corporate hedging in general, several empirical studies have found a negative relationship between leverage and income retention.

Cummins and Weiss (2016) conducted a study on optimal capital structure of U.S. Property-Casualty insurance industry. Data was collected for the period from 2005 to 2014. The study tested the relationship between leverage and the demand for reinsurance with the test distinguishing internal reinsurance, arranged within insurance groups, and external reinsurance. The findings of the study indicated significant negative relationship between leverage and income retention for external reinsurance at a level of 5% significance. However, the relationship was only significant at 10% for internal reinsurance. Garven et al. (2014) carried out a study on adverse selection in the U.S. Property- casualty industry. The study used panel data for the period of 1993 to 2012. In accordance with the financial distress hypothesis of risk management, the study's panel data regression results indicated a negative significant relationship between leverage and income retention by Property and Liability insurance firms. These findings are in line with majority of the findings such as Altuntas et al. (2018) and Curak et al. (2014).

However, some studies were either in contrast or found no significant relationship. For instance, Chan et al. (2015) found a significant positive relationship between leverage, as measured by debt to equity ratio, and income retention. On the other hand, Jang (2018) also failed to find a significant relationship between leverage and income retention. Park (2020) did not find a significant relationship between leverage and reinsurance demand in Korea. There is an empirical gap to be filled coupled with the contextual gap due to the fact no similar study has been conducted in East Africa.

Research Methodology

The study aimed at analysing the effect of leverage on income of general insurers in East Africa. The study utilized explanatory sequential mixed methods research design premised on positivism research philosophy. Explanatory sequential mixed methods research design consists of collecting and analysing secondary data first and subsequently collecting primary data to get deeper insight on the results from secondary data. For secondary data, a census was conducted on the total population of 87 general insurance companies in existence during the period of study from 2015 to 2019 across Kenya, Uganda, Tanzania, Rwanda and Burundi. Data were obtained from insurance regulatory reports, company annual reports and through data collection sheets where reports were not available. The primary data phase consisted of in-depth interviews carried out on a stratified sample of 25 key informants across the 5 countries. The insight from key informant interviews is presented in the discussion section. Descriptive statistics were used to summarize statistics and make trend analysis, while inferential statistics were used to test hypotheses and make inferences. Prior to panel data regression analysis, diagnosis tests, namely linearity, normality, multicollinearity, heteroscedasticity and stationarity were conducted to ensure that data are fit for the envisaged model. The respective tests to this effect were Pearson correlation test, Jarque-Bera test in

addition to skewness and kurtosis assessment, VIF and Tolerance values, Modified Wald Test and Fisher type Augmented Dickey Fuller (ADF) test. Hausman test and Woodridge post estimation tests were also conducted to determine which model between random and fixed model is fit and to assess the existence of serial correlation.

Findings

Trend Analysis

This section provides the description of the data for the variables of interest for this study. Tables 1 to 3 are related to retention ratio while Tables 4 to 6 are in relation to leverage. For each variable, the analysis consists of the trend analysis from 2015 to 2019, the One-way ANOVA test for the significance of the differences among countries in East Africa and the Tukey's post hoc test for pairwise differences among the countries.

Table 1: Retention Ratio Trend from 2015 to 2019

Retention Ratio	2015	2016	2017	2018	2019	Overall
Kenya	0.73	0.73	0.70	0.71	0.71	0.72
Tanzania	0.50	0.45	0.50	0.53	0.53	0.50
Uganda	0.54	0.60	0.54	0.54	0.55	0.55
Rwanda	0.76	0.79	0.80	0.80	0.81	0.79
Burundi	0.61	0.62	0.68	0.67	0.67	0.65

As shown in Table 1, retention ratios show different trends across the countries of East Africa. Rwanda had the highest retention ratio with an average of 0.79, followed by Kenya at 0.72. Tanzania has the lowest average retention ratio at 0.50. The levels of retention are more or less consistent during the period of study. One-way ANOVA was conducted to assess whether there means of retention ratios of different countries are significantly different. The results are as reported in Table 2.

Table 2: One-way ANOVA Test for Differences in Means – Retention Ratio

	Sum of Squares	Df	Mean Square	F	Prob. > F
Between Groups	2.76520054	4	.691300134	24.18	0.0000
Within Groups	11.1515655	390	.028593758		
Total	13.9167661	394	.035321741		

The null hypothesis shows that means of different groups are not significantly different. The results of Table 2 above provide evidence that the means of retention ratios of countries in East Africa are significantly different, with a p-value of F-statistic of 0.000 which is less than 0.05. This implies that among the five countries of East Africa, there are some countries that have significantly different levels of income retention. However, One-way ANOVA test does not enable to depict which specific countries have differences. Having established the significance of the differences in means of retention ratios of countries in East Africa, a Tukey's post hoc test was carried out to further find out which countries have significant differences. The results are presented in Table 3.

Table 3: Tukey's Test for Pairwise Differences in Means – Retention Ratio

Country A vs B	Mean diff. (A-B)	Std. Error	t	P> t	[95% conf. interval]	
					Lower bound	Upper Bound
Uganda vs Kenya	-.0893904	.0225764	-3.96	0.001	-.1512628	-.0275179
Tanzania vs Kenya	-.1993977	.0230373	-8.66	0.000	-.2625334	-.1362621
Rwanda vs Kenya	.0492987	.0314684	1.57	0.520	-.0369431	.1355405
Burundi vs Kenya	.0073939	.0335622	0.22	0.999	-.084586	.0993739
Tanzania vs Uganda	-.1100074	.0263404	-4.18	0.000	-.1821955	-.0378192
Rwanda vs Uganda	.1386891	.0339612	4.08	0.001	.0456156	.2317625
Burundi vs Uganda	.0967843	.0359099	2.70	0.056	-.0016298	.1951984
Rwanda vs Tanzania	.2486964	.0342693	7.26	0.000	.1547785	.3426144
Burundi vs Tanzania	.2067917	.0362015	5.71	0.000	.1075785	.3060048
Burundi vs Rwanda	-.0419048	.0420724	-1.00	0.857	-.1572078	.0733983

The results of Tukey's test in Table 3 above indicate which countries have significant differences in means of retention ratios and those without significant differences. Based on the p-value of 0.001 which is less than 0.05 and the negative sign of the mean difference, Kenya has significantly higher retention ratios than Uganda and Tanzania (p-value = 0.000). However, retention ratios in Kenya are not significantly different from those in Rwanda (p-value = 0.520) and Burundi (p-value = 0.999). Uganda has significantly higher retention ratios than Tanzania based on the p-value of 0.000 and the negative sign of the mean difference. Retention ratios in Uganda are statistically lower than those in Rwanda (p-value = 0.001). The difference in retention ratios between Uganda and Burundi is not statistically different at 0.05 level of significance (p-value = 0.056). The difference is only significant at 0.10 level of significance with Burundi having higher retention ratios. Tanzania has significantly lower retention ratios than Rwanda (p-value = 0.000) and Burundi (p-value = 0.000). Difference in means of retention ratios between Rwanda and Burundi are not significantly different (p-value = 0.857). To be at least at the same level with other countries in East Africa, insurance firms in Tanzania and Uganda need to increase their income retention ratios.

Table 4: Debt to Equity Ratio Trend from 2015 to 2019

Debt to Equity	2015	2016	2017	2018	2019	Overall
Kenya	1.90	2.07	2.04	1.40	2.88	2.06
Tanzania	3.25	3.02	2.74	5.01	3.20	3.44
Uganda	1.77	1.64	1.61	1.59	1.51	1.62
Rwanda	7.95	6.75	2.33	2.20	2.30	4.31
Burundi	3.23	3.82	1.46	1.76	2.97	2.65

As shown in Table 4, there are varying trends of debt to equity ratio for most of East African countries insurance industries. Burundi insurance industry exhibits a debt to equity ratio which is declining and lowest in 2017 and 2019 respectively. Similarly, Rwanda insurance industry debt to equity ratio is also on a declining trend while Uganda insurance industry has almost constant values of debt to equity ratio. Kenya insurance industry showed that debt to equity ratio was almost the same in 2015, 2016 and 2017, declined in 2018 but increased again in

2019. One-way ANOVA was conducted to assess whether the means of debt to equity ratios of different countries are significantly different. The results are as reported in Table 5.

Table 5: One-way ANOVA Test for Differences in Means – Debt to Equity Ratio

Debt to Equity Ratio	Sum of Squares	Df	Mean Square	F	Prob. > F
Between Groups	282.760892	4	70.6902229	3.75	0.0052
Within Groups	7343.77257	390	18.8301861		
Total	7626.53346	394	19.3566839		

The results of Table 5 above provide evidence that the means of debt to equity ratios of countries in East Africa are significantly different, with a p-value of F-statistic of 0.005 which is less than 0.05. This implies that among the five countries of East Africa, there are some countries that have significantly different levels of debt to equity ratio. However, One-way ANOVA test does not enable to depict which specific countries have differences. A Tukey's post hoc test was therefore carried out to further find out which countries have significant differences. The results are presented in Table 6.

Table 6: Tukey's Test for Pairwise Difference in Means – Debt to Assets Ratio

Country A vs B	Mean diff. (A-B)	Std. Error	T	P> t	[95% conf. interval]	
					Lower Bound	Upper Bound
Uganda vs Kenya	-.0406916	.0216765	-1.88	0.331	-.1000978	.0187146
Tanzania vs Kenya	.1017348	.022119	4.60	0.000	.0411158	.1623539
Rwanda vs Kenya	.0867706	.0302141	2.87	0.035	.0039664	.1695747
Burundi vs Kenya	.0548182	.0322244	1.70	0.434	-.0334954	.1431318
Tanzania vs Uganda	.1424265	.0252905	5.63	0.000	.0731157	.2117372
Rwanda vs Uganda	.1274622	.0326075	3.91	0.001	.0380987	.2168257
Burundi vs Uganda	.0955098	.0344785	2.77	0.046	.0010185	.1900011
Rwanda vs Tanzania	-.0149643	.0329033	-0.45	0.991	-.1051386	.07521
Burundi vs Tanzania	-.0469167	.0347585	-1.35	0.660	-.1421752	.0483418
Burundi vs Rwanda	-.0319524	.0403954	-0.79	0.933	-.1426594	.0787546

On the basis of the results of Tukey's test in Table 6, there is no significant difference between the mean values of debt to equity ratio for Kenya and Uganda (p-value = 0.331). Conversely, there is evidence of differences in mean values of debt to equity ratios between Tanzania and Kenya (p-value = 0.000). Based on the sign of mean value difference, Tanzanian insurance firms have on average significantly higher leverage than Kenyan firms. There are also significant differences in means of debt to equity ratios between Kenya and Rwanda (p-value = 0.035). Rwandan insurance firms have on average higher leverage than Kenyan insurance firms. The mean values of debt to equity ratios for Kenya and Burundi are not statistically different (p-value = 0.434). Based on the p-value (0.000) and the sign of the mean value difference, Tanzania has debt to equity ratios that are significantly higher than those of Uganda. Rwanda and Burundi also have higher leverage ratios than Uganda based on the respective p-values of 0.001 and 0.046 and the positive sign of the mean differences. The mean differences between Rwanda and Tanzania (p-value = 0.991), Burundi and Tanzania (p-value = 0.660) and Burundi and Rwanda (p-value = 0.933) are not statistically different. Overall, Tanzania and

Tanzania have the highest leverage ratios in East Africa. This implies that they may need to either increase equity or apply risk management mechanisms to reduce their liabilities.

Diagnostic Tests

The study carried out diagnostic tests to ascertain whether the data had the attributes required for linear panel model which is parametric in nature. When these assumptions are violated, alternative methods exist for some of them while others would require the usage of non-parametric tests. Tests that were conducted include linearity, normality, homoscedasticity, stationarity and autocorrelation. A Hausman test was also carried out to find out which model between random and fixed effects model is fit for the regression analysis.

Linearity Test

Correlation analysis was conducted to establish the linear association between leverage, measured by debt to equity ratio, and income retention measured by retention ratio. Table 7 shows the summary of correlation analysis.

Table 7: Correlation Results

Retention ratio Vs	Coefficient (r)	P-value
Debt to equity ratio	-0.3233	0.000

The results from Table 7 above show that debt to equity ratio has a negative and significant relationship with retention ratio ($r = -0.3233$, $p\text{-value} = 0.000$). The results imply that an increase in debt-to-equity ratio leads to a reduction in income retention.

Normality Test

Normality test was conducted using skewness, kurtosis and JarqueBera test. The results are presented in Table 8.

Table 8: Other Diagnosis Tests

Variable	Skewness	Kurtosis	JarqueBera Test	
			Chi2	P-value
Retention ratio	-0.09214	-0.4206	3.47	0.176
Debt to equity ratio	0.12451	0.45215	4.39	0.116

As per the results in Table 8 above, the values for skewness and skewness for both variables are within the normal range of -1 and +1 for skewness and -3 and 3 for kurtosis. Additionally, the p-values of 0.176 and 0.116 for retention ratio and debt to equity ratio respectively from the JarqueBera test indicate that we fail to reject the null hypothesis and conclude that data are normal.

Other Diagnosis Tests

Other diagnosis tests were conducted to confirm that assumptions for linear regression are not violated. These were homoscedasticity test, stationarity test and the test for serial correlation. As the analysis involves only one independent variable, no multi-collinearity test was necessary. The results are shown in Table 9.

Table 9: Other Diagnosis Tests

Diagnosis Test	Test Type	Statistic	P-value	Decision
Heteroscedasticity	Mod. Wald test	Chi2 = 572.84	0.000	Heteroscedasticity
Stationarity	ADF test	Inverse Chi2 = 399.96	0.000	Data are stationary
Autocorrelation	Woodridge test	F-stat = 1.999	0.1614	No serial correlation

As per the results in Table 9, the p-value for ADF test is 0.000 and therefore no issues of stationarity were found. Additionally, no serial correlation was found (p-value = 0.1614). The null hypothesis of the Woodridge test is that there is no serial correlation and in this case there is no sufficient evidence to reject the null hypothesis. Data were found heteroscedastic (p-value = 0.000) and the model was run using robust standard errors. According to Woodridge (2010) robust standard errors is appropriate for heteroscedastic data.

Model Specification Test

In order to assess which model is fit for the analysis, a Hausman specification test was conducted and the results are as presented in Table 10.

Table 10: Hausman Test

Retention ratio Vs	Fixed	Random	Difference	Chi2(1)
Debt to equity ratio	-0.02168	-0.02337	0.00168	3.04

The null hypothesis is that the default model is random effects model. Since the p-value is greater than 0.05, we fail to reject the null hypothesis and therefore the random effects model is appropriate for data analysis, otherwise the fixed effects model would have been used.

Regression Analysis

Overall Random Effects Model Regression Results

Table 11 presents the results of the regression analysis performed with the random effects panel data model. The independent variable is leverage, measured by debt to equity ratio. The dependent variable is income retention, measured by the ratio of net written premium to gross written premium.

Table 11: Overall Random Effects Panel Model Regression Results

Number of obs	=	395	Wald chi2(2)	11.54	
Number of groups	=	79	Prob > chi2	0.001	
Obs Per Group: Min	=	5	R ² Between	0.1172	
Max	=	5	R ² Overall	0.1045	
Retention ratio	Coef.	Robust Std. Err.	Z	P> z	[95% Conf. Interval]
Debt to equity ratio	-0.02337	0.00688	-3.40	0.001	-0.03685 -0.010
_cons	0.71028	0.02243	31.66	0.000	0.6663 0.7542

From the results of Table 11 above, leverage has a significant negative effect on retention ratio at 95% significance level, with a p-value for Wald Chi² statistic of 0.001 which is less than 0.05. The R² of 0.1045 suggests that debt to leverage explains 10.45% of the variation in

income retention of general insurers in East Africa. The coefficient of -0.02337 implies that a unit increase in debt to equity ratio would result to a decrease in retention ratio by 0.02337. The results suggest that for firms to increase their income retention, general insurance firms in East Africa need to reduce their leverage. This could be done by reducing their liabilities relative to their equity or otherwise increase their equity. The optimal regression model is expressed as follows:

$$Y_{it} = 0.71028 - 0.02337 \text{ Debt to equity ratio} + \varepsilon$$

Regression Analysis per Country

In order to assess how leverage affects income retention of general insurers across the various countries of East Africa, a regression was run per country. The results are reported in Table 12.

Table 12: Effect of Leverage on Income Retention – Results per Country

	Item	Kenya	Uganda	Tanzania	Rwanda	Burundi
Debt to equity ratio	Coefficient	-0.03006	-.04919	-0.00797	-0.05276	-.01401
	Z statistic	-1.99**	-1.30	-1.46	-4.64***	-1.62
	P-value	0.047	0.177	0.271	0.000	0.106
Observations		165	85	80	35	30
R-squared		0.1122	0.1577	0.0185	0.1455	0.1028
Number of Firms		33	17	16	7	6

The results per country as illustrated in Table 12 above indicate a significant negative relationship between debt to equity ratio and income retention of general insurance companies in Kenya, as illustrated by the p-value of 0.047. Similarly, there is a significant negative relationship between debt to equity ratio and income retention of general insurers in Rwanda, with a p-value of 0.000. The relationship for Uganda, Tanzania and Burundi is negative but insignificant, with p-values of 0.177, 0.271 and 0.106 respectively. This implies that general insurance firms in Kenya and Rwanda that are faced with high debt to equity ratios try to bring down their leverage ratios by taking more reinsurance to have part of their liabilities covered by reinsurance assets. As a result, their income retention is reduced.

Discussion

The study results revealed that leverage has a significant influence on income retention of general insurance companies in East Africa. Insurance firms with high leverage retain less income. The analysis per country further established that this relationship is significant for Kenya and Rwanda while insignificant for Uganda, Tanzania and Burundi. The findings for Kenya and Rwanda are consistent with the financial distress hypothesis of risk management which predicts a negative relationship between leverage and income retention. The findings are also in congruence with most prior empirical studies. For instance, Cummins and Weiss (2016) found a negative relationship between leverage and income retention of general insurance firms in U.S. These findings were also relayed by Curak et al. (2014) in Croatia. However, similar to the results obtained for Uganda, Tanzania and Burundi, a few other studies failed to find a significant relationship between leverage and income retention. Jang (2018) could not find a significant relationship between leverage and income retention.

In-depth interviews conducted with key informants in the five counties enabled to gain deeper insight on the results of secondary data analysis. The responses from the interview sessions were organized and analyzed thematically. Insurance industry experts confirmed the overall findings that insurance firms with high leverage are expected to have less income retention. Liabilities of insurance companies are mainly made up of unpaid claims to policyholders and unexpired policies for which insurance premium has already been collected. When an insurance company transfers part of the risk related to insurance policies, it also transfers the corresponding premium income. The proportion of liabilities payable by counterparties is recognized on the asset side. Insurance companies with high leverage are therefore expected to transfer more risk to reduce the net liability unless they choose to cover the risk by more capital. With regard to the differences in findings across countries, the most recurring factors from the discussions were differences in risk based capital regime implementation and recognition of reinsurance assets by different regulations.

Conclusion

The objective of the study was to determine the effect of leverage on income retention of general insurers in East Africa. Leverage was measured by debt to equity ratio while income retention was measured by the ratio of net written premium to gross written premium. The results from random effects panel regression model provide evidence to reject the null hypothesis of no significant relationship and indicate a significant negative relationship between leverage and income retention ($\beta_1 = -0.02337$, $p\text{-value} = 0.001$). The R^2 value of 0.1045 further suggests that leverage explains 10.45% of the variation in income retention ratio. The study therefore concludes that leverage has a significant negative effect on income retention. The study also established that the negative effect of leverage on income retention is significant for Kenya ($p\text{-value} = 0.047$) and Rwanda ($p\text{-value} = 0.000$), but insignificant for Uganda ($p\text{-value} = 0.177$), Tanzania ($p\text{-value} = 0.271$) and Burundi ($p\text{-value} = 0.106$).

Recommendations and Areas for Further Research

With the use of random effects panel data regression model, the study established that leverage negatively and significantly predicts income retention of general insurers in East Africa. In order to increase their level of income retention levels, insurance firms should therefore seek to maintain their proportion of liabilities relative to their equity at reasonable levels. This can be achieved by practicing prudent underwriting to avoid loss making portfolios and holding enough equity to shoulder any potential liabilities arising from the risks assumed. The relatively low value of the variance explained implies that there are other factors, both financial and non-financial, that need to be studied in relation to the effect on income retention. The different findings in various countries of East Africa also suggest that there are contextual country differences that need to be explored by further studies.

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