



## The Effect of Risk Management on the Financial Performance of Insurance Companies in Ethiopia

Wandosen Negese<sup>1</sup> Demis Hailegebreal<sup>2</sup> Yoseph Worku<sup>3</sup>

### ABSTRACT

*This study examined the effect of risk management on financial performance of insurance companies in Ethiopia using the data of 16 insurance companies during the period of 2014-2019. We employed the two step systems GMM to handle the possible existence of endogeneity, heteroskedasticity, and autocorrelation problems. The results revealed that liquidity and solvency risks have adverse effects on both the short-run and long-run financial performance of Ethiopian insurance companies. However, while technical reserve risk and underwriting risk have a negative effect on the short-run performance, they have a positive effects on the long-run financial performance of insurance companies. The study also confirms a positive effects of reinsurance on both the short-run and long-run financial performance of Ethiopian insurance companies. This study finally recommends that Ethiopian insurance companies should pay greater attention to liquidity risk, solvency risk, technical reserve risk, underwriting risk and reinsurance risk.*

### KEY WORDS

*Insurance, reinsurance, risk, solvency, underwriting*

<sup>1</sup> Lecturer, Banking and Finance department, Jimma University, [wnegese12@gmail.com](mailto:wnegese12@gmail.com)

<sup>2</sup> Assistant professor, Jimma University, St. Mary's University, [dhgebreal@gmail.com](mailto:dhgebreal@gmail.com)

<sup>3</sup> Lecturer, Banking and Finance department, Jimma University, [jossywor@gmail.com](mailto:jossywor@gmail.com)

## 1. Introduction

Financial institutions are growing rapidly and gaining importance in the global financial development. According to Mishkin and Eakins (2006), financial institutions are playing a great role in the economic well-being of countries by enhancing flows of funds, business, and production of goods & services. Particularly, Insurance companies facilitate an efficient and effective financial system by mobilizing savings and transferring risks from one economic unit to another (Das, Davies, & Podpiera, 2003). They also generate financial resources, medical support, and enhance the industrial development of a given country. It has been argued that insurance development is positively correlated with economic growth and is stronger in their developing countries than their developed counterparts (Han, Li, Moshirian, & Tian, 2010).

Risk management involves the identification, analysis, and response to risk factors in the life of a business. Rejda (2011) stated that risk management is a process of identifying loss exposures faced by an organization and selecting the most appropriate techniques for treating such exposures effectively. So, it empowers the financial industry particularly the insurance industry with the necessary tools that help adequately identify and deal with potential risks. Similarly, Wanjohi, Wanjohi, and Ndambiri (2017) asserted that an efficient risk management system is essential to manage the considerable increase in risks in organizations. According to Omasete (2014), poor risk management by insurance companies increases claim payments that reduce their financial performance. On the other hand a robust risk management framework can help organizations reduce their exposure to risks, and enhance their financial performance (Iqbal & Mirakhor, 2011). Similarly, Pagano (2001) confirms that risk management is a useful function of insurance industries in creating value for their financial performance.

Prior studies investigate the risk management and the financial performance nexus of insurance companies. For instance, Olalekan, Olumide, and Irom (2018) investigated the effects of risk management on financial performance using the dataset of Nigerian Insurance companies and confirmed the adverse effects of leverage and

claim ratio and favourable effect of premium growth on the financial performance of listed Nigerian Insurance companies. Similarly, previous studies investigated the association between risk management and the financial performance of Ethiopian insurance companies. For example, Ameshewa (2019b), Sisay (2017), W/Michael (2017), Desalegn (2019b), and Wolde (2019) conducted research in the area.

However, these studies employed panel data analysis methods such as OLS, fixed effect, and random Effect models. We, however, argued that the previous year insurances' financial performance has a strong effect on their current financial performance. This situation cannot be handled by the widely used aforementioned panel data models. Moreover, endogeneity and heteroskedasticity problems commonly exist in finance studies like ours. Endogeneity problem happens when there is a cause-effect relationship between dependent and independent variables. In this regard, we suspect that insurance companies' financial performance might influence their risk management. Heteroskedasticity problem happens due to the existence of outliers in the data values. Small data values like return on assets (ROA) as measured by the ratio of net income and total asset and large data values such as firm size measured by the total assets create outliers that leads to heteroskedasticity problem. Again, these problems cannot be handled by OLS, Fixed and Random effect models. Statisticians suggest the dynamic panel data analysis technique to handle these problems and the effects of the prior performance on the current performance (Roodman, 2009). Accordingly, we employed the dynamic panel data analysis model following the statisticians' suggestion for our dataset. Precisely, we employed a two-step system GMM model.

## 2. Theories and Hypothesis Development

### 2.1 Theories

There are different theoretical perspectives that are used in explaining the effects of risk management on the financial performance of a business firm. Among these theories, contingency theory and enterprise risk management theory are the major theoretical perspectives that are used to explain the effect of risk management on financial performance of firms.

### 2.1.1 Contingency theory

According to Hinson and Kowalski (2008), contingency planning also known as business continuity planning is a very important part of risk management. The basic basis of Contingency Planning is that, since it is impossible to avoid the overall risk, residual risks always exist. Despite the organization's very best efforts to avoid, and prevent them, incidents will still occur. Riley (2012) also defines contingency planning as a planning process, in a state of uncertainty, in which scenarios and objectives are agreed upon, managerial and technical actions defined, and potential response systems put in place in order to prevent, or better respond to, an emergency or critical situation. A contingency plan is meant to help network and coordinate individuals, agencies and organizations to effect a rapid and effective response. In this sense, contingency planning involves preparing for the unexpected and planning for the unknown. The basic purpose of contingency planning is to minimize the adverse consequences or impacts of incidents and disasters.

Therefore, as insurance companies operations are full of probability, their business transactions and policy contracts are also on contingency basis. If in the policy period no damage/loss happens, the insurer earns the whole premium which is a rare case, yet if the claim is reported within the policy contract period the compensation should be paid. Both the magnitude of the compensation and the time are not known certainly. The context of this theory reflects that contingency planning reduces risks thereby boosts firm performance.

### 2.1.2 Enterprise risk management theory

Enterprise risk management theory is one of the most common frameworks that was introduced by the Committee of Sponsoring Organizations (COSO) of the treadway Commission in 2004, which defines ERM as (PricewaterhouseCoopers & Commission, 2004) it is a process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives. It also

emphasizes that the organizational benefits of risk management can create value for firms (Nocco & Stulz, 2006). Enterprise Risk Management (ERM) is a framework that focuses on adopting a systematic and consistent approach to managing all of the risks confronting an organization Tseng (2007). Most empirical studies conclude that ERM generally has a significant positive impact on firm value and performance. As opposed to Traditional Risk Management (TRM), where individual risk categories are managed separately in risk silos, ERM allows firms to manage a wide array of risks in an integrated, enterprise-wide fashion (Hoyt & Liebenberg, 2008). According to this theory, the efforts made by the enterprises to reduce risk improves their financial performance.

## 2.2 Hypotheses development

### 2.2.1 Liquidity and financial performance

Liquidity shows firms' ability to convert an asset to cash and manage working capital when kept at normal levels. It measures managers' ability to fulfil their immediate commitments to policyholders and other creditors without having to increase profits on underwriting and investment activities and/or liquidate financial assets (Adams & Buckle, 2003). Higher liquidity would help a firm to deal with unexpected contingencies and to cope with its obligations during periods of low earnings (Liargovas & Skandalis, 2008) which boosts financial performance. According to Barney (1997), the test of an insurer's ability to meet financial obligations is the acid test. It tests whether a firm has enough short-term assets to cover its immediate liabilities and absorb opportunities that enhance performance. If this is not the situation in the company, it shows liquidity risk. Liquidity risk is the shortage of liquid assets that leaves the firm unable to pay its short-term liabilities and absorb opportunities that hinders financial performance. Studies of Sisay (2017), W/Michael (2017), and Susan Kerubo Onsongo et al (2020) confirmed this situation. Based on these arguments, we develop the following hypothesis.

**Hypothesis 1:** *Liquidity risk has a negative effect on Ethiopian insurers' financial performance*

### 2.2.2 Technical reserve and financial performance

The insurers collect premiums in advance and keep them in reserve accounts for future claim settlements. For example, most premiums collected by insurance companies are kept in outstanding claims and unearned premiums reserves which are two main accounts in the liability side of the balance sheet. Outstanding claims reserve is considered riskier than ordinary long term corporate debt since neither the magnitude nor the timing of the cash outflows is known (Shiu, 2004). Its risk is both holding insufficient technical provisions and holding unjustifiably excessive provisions. Where reserves are set at a lower level than actually required then this could present the company's financial position in a better light than it actually is. It makes the insurers in inappropriate underwriting decisions being made. the negative relationship between technical reserve and performance has also been found in the studies Ruf, Muralidhar, Brown, Janney, and Paul (2001) and Desalegn (2019a). Accordingly, we develop the following hypothesis.

**Hypothesis 2:** *Technical reserve risk has a negative effect on Ethiopian insurers' financial performance*

### 2.2.3 Solvency and financial performance

Solvency is an ability of an insurer to meet its obligations (liabilities) under all contracts at any time. Cummins, Phillips, and Smith (2001) suggest that insurers with greater ratings are perceived as safer which results in higher returns. The study conducted by Almajali et al. (2012) on factors affecting the financial performance of Jordanian insurance companies revealed that solvency risk has a negative and significant effect on the financial performance of insurance companies. Relying on these empirical evidence, we develop the following hypothesis.

**Hypothesis 3:** *Solvency risk has a negative effect on Ethiopian Insurers' financial performance*

### 2.2.4 Claim settlement and financial performance

The insurer's attitude to claims settlement has in the past provoked a lot of public criticism and even attracted the attention of governments (Harry, 2012). Claims are the most critical contact the insuring public has with the industry and thus, critical moment of truth that shapes a customer's overall perception of their insurer (Crawford, 2007). Pervan, Curak, and Mariajnovic (2012), Mwangi and Iraya (2014), and Yusuf, Adeleke, and Ojikutu (2014) confirmed the negative association of claim and insurers' financial performance. Hence, we develop the following hypothesis.

**Hypothesis 4:** *Claim settlement risk has a negative effect on Ethiopian insurers' financial performance*

### 2.2.5 Reinsurance and financial performance

According to Garven and Lamm-Tennant (2003), reinsurance is both a risk management and a financial structure decision. From a risk management prospective, it allows the reinsured leverage with skills of analysis and proper and modern way of management of risk portfolios including assessment of underwriting risks, and handling of claims properly and efficiently. Cummins and Xie (2008) analyzed the costs and the benefits of reinsurance for a sample of US property-liability insurers. The results show that reinsurance significantly increases the insurer's costs but significantly reduces the volatility of loss ratio. By purchasing reinsurance, insurance companies accept to pay higher costs of insurance production to reduce their underwriting risk. Therefore, a positive connection between the retention ratio and the insurers' financial performance is expected. That is, if insurers retain more premiums, they can increase their income and then intensify their ROA. Thus, we hypothesize the following.

**Hypothesis 5:** *Reinsurance risk has a positive effect on Ethiopian insurers' financial performance*

### 2.2.6 Underwriting risk and financial performance

Underwriting is the process of selecting certain types of risks that have historically produced a profit and rejecting those risks that do not fit the underwriting criteria of the insurance company. Healthier underwriting guidelines are pivotal to an insurance company's financial performance. Underwriting risk is the risk that the premiums collected will not be sufficient to cover settled claims. It comprises a high proportion of an insurer's overall risk. High fluctuations in net premiums written show a lack of stability in the underwriting operation of an insurance company. Barth and Eckles (2009) found a negative relationship between premium growth and changes in loss ratios, suggesting that premium growth alone does not necessarily result in higher underwriting risk. The institution that engage in risky activities are likely to have more volatile cash flows than entities whose management is more averse to risk-taking (Fama & Jensen, 1983). An excessive underwriting risk can affect the company's stability through higher expenses. Furthermore, insurance companies with high annual insurance losses will tend to increase their level of corporate management expenses example, claims investigation and loss adjustment costs that could further worsen a decline in their financial performance. Excessive risk-taking could adversely affect the performance of insurers. Therefore, a negative association between the underwriting risk and the insurance company's financial performance is expected.

**Hypothesis 6:** *Underwriting risk has a negative effect on Ethiopian insurers' financial performance*

## 3. Methodology

### 3.1 The data and analysis

This study used secondary data which was obtained from the National Bank of Ethiopia. The study period covers from 2014 to 2019 based on the availability of data. The data from 2014 to 2019 was used for the purpose of increasing the sample size of the insurance companies. Based on this criteria, sixteen insurance companies are included as a sample in this study.

This study employed a dynamic panel data analysis (a two-step system GMM) for three reasons. First, the prior period financial performance of insurers might influence their current period performance. We handle this situation by incorporating a one year lag dependent variable in our model. Second, we suspect the causality from financial performance to risk management leading to endogeneity problem. This problem is common in finance studies like ours where there is a cause-effect relationship between the dependent to independent variables. Third, we also suspect outliers in our dataset as there are small data values like ROA and large data values like firm size. Such data value discrepancies will lead to a common problem called heterogeneity problem. The effects of prior period performance and the existence of endogeneity and heterogeneity problems cannot be estimated via OLS, fixed, and random effect models. Instead, statisticians suggest the most efficient estimator for the data with the above situation. Accordingly, Roodman (2009) asserted that a two-step system GMM can efficiently handle the above situations. Consequently, we employed a two-step system GMM in this study.

### 3.2 Variables and measurements

The dependent variable of this study is firm performance which is proxied by return on assets (ROA). The independent variable is risk management which is indexed by liquidity, technical reserve, solvency, claim settlement, reinsurance, and underwriting risks. We control companies' size since it might have strong effect on their financial performance. The following Table presents the measurement of these variables.

Table 1. Variables and Measurement

Variable	Measurement
Return on asset (ROA)	$ROA = \frac{\text{net income}}{\text{total asset}}$
Liquidity	$liquidity = \frac{\text{current asset}}{\text{current liability}}$
Technical reserve risk	$safty\ ratio = \frac{\text{outstanding claim reserve}}{\text{equity}}$
Solvency risk	$solvency\ ratio = \frac{\text{total liability}}{\text{total asset}}$
Claim settlement risk	$claim\ ratio = \frac{\text{net claim incurred}}{\text{net earned premium}}$
Reinsurance risk	$retention\ ratio = \frac{\text{net written prremium}}{\text{gross written premium}}$
Underwriting risk	$CNWP = \frac{GNWP_{(t)} - GNWP_{(t-1)}}{GNWP_{(t-1)}}$
Company size	Natural log of total asset

### 3.3 Model Specification

We develop the following dynamic panel data model that can capture the lag dependent variable. We used a one year lag financial performance to capture the effects of prior period financial performance on the current period financial performance of insurance companies.

$$ROA_{it} = \beta_0 + \beta_1 L.ROA_{it} + \beta_2 LQ_{it} + \beta_3 SR_{it} + \beta_4 TR_{it} + \beta_5 CS_{it} + \beta_6 RE_{it} + \beta_7 UR_{it} + \beta_8 FS_{it} + \varepsilon$$

Where; ROA = Return on asset; L.ROA= one year lagged dependent variable (ROA); LQ =Liquidity risk; SR= solvency risk; TR = Technical reserve risk; FS = Firm size; CS = Claim settlement risk; RE = Reinsurance risk; UR = Underwriting risk;  $\varepsilon$  =is the error term;  $\beta_0$ = Intercept,  $\beta_1$  to  $\beta_7$  are coefficients,  $i$  = Insurance company  $i$ ; and  $t$  = the time periods

Table 2. Descriptive statistics

	ROA	SR	TR	UR	RE	LQ	FS	CS
Mean	0.088	0.676	0.844	0.287	0.701	0.909	8.829	1.408
Max	0.458	0.922	1.523	1.346	0.925	1.632	9.975	3.268
Min	0.021	0.255	0.202	-0.451	0.332	0.263	7.355	0.398
Std. Dev.	0.064	0.098	0.300	0.264	0.126	0.225	0.479	0.712

### 4.2 Correlation analysis

## 4 Result and Discussion

### 4.1 Descriptive statistics

Table 2 presents the descriptive statistics. Ethiopian Sample Insurance companies reported an average return on asset (ROA) of 0.088 during the study period. The companies also reported an average current ratio, claim settlement ratio, net written to gross premium ratio, net written premium, total liabilities to total assets ratio of 0.91, 1.41, 0.7, 0.29, and 0.68, respectively. For more, see Table 2.

Table 3 presents the correlation analysis. According to Cooper & Schindler (2009), a correlation between independent variables above 0.7 is considered as a problem of multicollinearity. As it can be seen from Table 3, *Table 3. Correlation analysis*

	SR	TR	UR	RE	LQ	CS
SR	1.000					
TR	0.499	1.000				
UR	0.065	-0.025	1.00			
RE	-0.213	-0.120	-0.050	1.000		
LQ	-0.262	-0.434	0.070	0.057	1.000	
CS	-0.193	0.002	-0.1907	-0.017	-0.036	1.000

the highest correlation coefficient of 0.49 is between TR and SR which is below the threshold value. Hence, there is no multicollinearity problem in this study.

### 4.3 Regression result

Table 4 presents the result of a two-step system GMM. For the diagnostic tests: Arellano-Bond test for serial correlation (AR(1) and AR(2)) and the Sargan and Hansen tests of the validity of over-identification restriction, p-values are reported. The null hypothesis of the Arellano-Bond test for serial correlation is no autocorrelation. The null hypothesis of the Sargan test is over-identifying restrictions are valid. The null hypothesis of the Hansen test is that instruments as a group are exogenous. If the p-values of the Arellano-Bond, the Sargan, and the Hansen tests are above 0.05, the null hypotheses are accepted (Roodman, 2009). As can be seen from this Table, the p-values of the Arellano-Bond, Sargan, and the Hansen tests are not less than 0.05. We thus can conclude that there is no first-order and second-order serial correlation. The Sargan test of over-identification gives higher p-values for all models, suggesting that there is no problem of over-identification. Similarly, the Hansen test offers high p-values in all models, *Table 4. A two-step GMM result*

ROA	Coeff.	Std. Err.	T-stat	P> t
L.ROA	1.031	.521	-1.97	0.049**
LQ	-1.028	.178	-5.77	0.000*
SR	-.789	.335	-2.36	0.018**
TR	-.575	.185	3.1	0.002*
CS	.014	.031	-0.46	0.643
RE	.772	.336	2.30	0.021**
UR	-.094	.0320	2.95	0.003*
Cons.	.574	.257	2.24	0.025**
AR(1)	0.340			
AR(2)	0.274			
Sargan	0.944			

implying that instruments as a group are exogenous.

A two-step system GMM result confirmed a positive and significant effect of prior period financial performance on current period financial performance Ethiopian Insurance companies. Similarly, the result evidenced a positive and strong effects of reinsurance and claim settlement on the financial performance of Ethiopian Insurance companies. However, this study confirmed a negative effect of liquidity ratio, solvency ratio, technical provision, and underwriting risk on financial performance of Ethiopian Insurance Industry.

Hansen	0.894
Prob> F	0.000

*ROA= return on asset, L.ROA= one year lagged return on asset, LQ= liquidity risk, SR=solvency risk, TR= technical reserve risk, CS= claim settlement risk, RE= reinsurance risk, UR= underwriting risk, \*\*, \* indicates significant at 5% and 1% respectively*

#### 4.4 Discussion

This study evidenced the negative linkage between liquidity ratio and financial performance of Ethiopian Insurance companies. This result implies that liquidity risk has unfavourable effect on financial performance of Ethiopian insurance companies. It further indicates that the higher the liquidity in the firm, the lower their financial performance. This result might be attributed to the management inefficiency and agency problem associated with the accumulation of higher current assets in the firm (Jensen & Meckling, 1976). The result is consistent with previous studies of Almajali, Alamro, and Al-Soub (2012); Ameneshewa (2019a); W/mikael (2017); Muriithi (2016). This result is as expected and hypothesis 1 is supported.

The negative linkage between technical provision and financial performance of Ethiopian Insurance companies is confirmed by this study. This typical result implied a rise in claims forced companies pay more against those claims. Such payments harm companies' financial performance. Moreover, it indicates that when companies hold high reserves for outstanding claims, it hinders their financial performance by hindering their main operation. The result is consistent with Shiu (2004) and is as hypothesized (hypothesis 2 is confirmed).

Solvency risk (SR) has a negative relationship with Ethiopian Insurance Companies financial performance (ROA). This implied that a rise in total liability as compared to the total assets has unfavourable effect on financial performance of Ethiopian Insurance companies. This because companies more asset needs to be allocated to pay the total liability of the companies which hinders their major operation. This situation ultimately hinders their financial performance. The result is consistent with the previous studies of Almajali et

al. (2012). This result is as hypothesized and hypothesis 3 is supported.

Similarly, this study found a negative effect of underwriting risk (change in net written premium) on the financial performance of insurance companies. The result demonstrates that the change in net written premiums may not always be favourable to the financial performance of insurance companies. Unfavourable change in premium (underwritten risk) has an adverse effect on financial performance. This finding is consistent with previous study of Burca and Batrinca (2014) and Hailegebreal (2016). This result confirmed hypothesis 6.

However, this study found a positive effect of reinsurance on the financial performance of the Ethiopian insurance industry. This result implied that net written premium in proportion to the gross written premium (the index of reinsurance) has a favourable influence on financial performance of insurers. This particular result indicated that reinsuring some potential risks which is beyond the primary insurers' capacity has some economic value to the primary insurance companies. Such value ultimately produces good financial performance in the insurance industry. This result supported hypothesis 5.

## 5 Conclusion and Recommendations

### 5.1 Conclusion

This study examines the effect of risk management on the financial performance of Ethiopian insurance companies. We used 6 years (2014 to 2019) data of sixteen Ethiopian insurance companies. We employed a two-step system GMM to evaluate the effect of prior period's financial performance on current year's performance. We also prefer this method to handle endogeneity and heteroskedasticity problems.



This study revealed that liquidity risk (liquidity ratio), technical reserve (safety ratio), solvency risk and underwriting risk have negative effect on financial performance of insurance companies. However, this study confirmed a positive effect of reinsurance on the financial performance of Ethiopian insurance companies. This study contributes to the management of the Ethiopian insurance companies by providing insightful recommendation the liquidity management and solvency. The study further contributes to the literature by suggesting the appropriate method for finance studies which are usually subjected to endogeneity problem.

## 5.2 Recommendation

The negative effect of liquidity ratio on the financial performance of Ethiopian insurance industry is imperative. The result implied that accumulating too much current assets harms company's performance. Hence, the managers of Ethiopian insurance companies should maintain or keep optimum current assets. The result also confirmed a negative effect of solvency (total liability to total assets) on financial performance of Ethiopian insurance companies. This result thus suggested that insurers' have to manage their total liabilities as compared to their total assets. This study further suggested executives of insurance companies need to maintain long term solvency to produce a good financial performance. The adverse effect of underwriting risk (change in net written premium) has also something to tell to managers. This result suggested that insurers have to work hard in maintaining a favourable change in net written premium so that they can boost firm performance. This study finally suggest fellow researchers apply different methods and other metrics of financial performance of the insurance companies.

### Conflict-of-interest statement

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