THE IMPACT OF ENTERPRISE RISK MANAGEMENT (ERM) ON FIRM PERFORMANCE: EVIDENCE FROM LISTED BANKS IN COLOMBO STOCK EXCHANGE

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ABSTRACT

There is considerably higher pressure and specialize in regulation towards Enterprise Risk Management (ERM) to decrease the brutal consequences of a future crisis. However, there is no regulatory framework representing ERM practices and also though some companies have such frameworks it is not mandatory for all the businesses in Sri Lanka. Thus, this study examines the impact of ERM on Performance of listed banks by using secondary data collected from annual reports over the 10 years from 2009 to 2018 in 16 listed banks in the CSE. The study used panel data regression analysis to examine the effect of ERM based on managing financial risk, managing liquidity risk, managing market risk and managing credit risk on the performance. The results of the fixed firm effect model show that the Financial Leverage, Loan to deposit ratio (LDR), and Loan Loss Provision Ratio (LLP) had positive significant impacts on ROE while Net interest margin (NIM) had a negative impact on ROE. Further, the firm size and current ratio could not show any statistically significant impact on firm performance. Financial leverage and NIM had negative significant impacts on ROA while LDR had a positive significant impact on ROA. Whereas, firm size, current ratio, non-performing loan ratio (NPL), and LLP are not statistically significant. These findings signal corporate managers to focus on cost-benefit considerations when designing and implementing ERM practices. Decision-makers, future and potential investors, econometricians, academics and other stakeholders can refer this study for strategic planning, cost controlling, related academic studies, taking decisions on managerial implications of the economy and banking sector.

Keywords: *enterprise risk management, firm performance, loan loss provision ratio, net interest margin*

1. INTRODUCTION

Companies always have to deal with various risks which could have a great impact not only on business success but also on the organizational processes. Effective ERM practices support managers to increase firm value and assure firm stability as well as growth in the long term. As Lajili and Zeghal (2005) the key objective of the ERM is to increase shareholder value. The attention for ERM has been boosted, since there are some challenges and threats raised in the business world such as financial crises, corporate scandals and frauds, along with the failure of major corporate entities. In the global economy, this ERM concept has been prompted by governments, regulators, law-making bodies, and other stakeholders to discover more awareness and consideration of current and emerging risks facing by the organizations (Sobel & Reding, 2004; Lajili et al., 2005).

There is considerably higher pressure and specialize in regulation towards ERM with the intention of decreasing the results of a future crisis, because the last financial crisis for listed companies in Sri Lanka had done a negative impact for the firm performances (Hemachandra, 2012). The Banking sector in Sri Lanka has been playing a critical role within the Sri Lankan economic system, as they are engaged in the provision of liquidity to the whole economy while transforming the dangerous characteristics of assets. As a result of poor risk management several statuses, high profile companies collapse within the global context like Enron, WorldCom, HealthSouth, Arthur Anderson, Barings Bank then on, due to those crises and company scandals (Lakshan & Wijekoon, 2012). In Sri Lankan context also several status companies were collapsed like Pramuka Bank, Mercantile Credit Limited, Union Trust and Investment Ltd, House and Property Traders Ltd, Translanka Investments Ltd and Home Finance Ltd, Seylan bank crisis and also pyramid scheme system followed by the Sakvithi group fraudulent (Sirimanna, 2011). As a result of the collapse of status companies in Sri Lanka ERM is being a significant area among corporate businesses.

There is no regulatory framework representing ERM practices and also though some companies have such frameworks it is not mandatory for all the companies in Sri Lanka. Hence, there is a drag up to what extent companies should apply ERM practices. However, so far there is no translucent agreement towards the implementation of ERM which leads to better firm performance. Therefore, research is required to point out the impact of ERM adoption and firm performance.

Whether numerous studies conducted on ERM and firm performance in various countries, those findings directly cannot be replicated to other countries as their risk levels vary from one another. Simultaneously all the industries perform different industry-specific risk levels (Rakauskaite, 2016). Furthermore, the

prevailing literature still does not provide a transparent answer to the present subject. Hence, this study focuses on the Banks listed in CSE as there are fewer research articles for analyzing ERM on firm performance. Hence the research problem to be analyzed in this study is: "What is the impact of ERM on Firm Performance in listed Banks in Colombo stock market, Sri Lanka?"

2. LITERATURE REVIEW

The risk management concept first appeared around 2100 BC to give an assurance in some hazardous occurrences when ships and cargo of those ships faced some losses at sea (Sadgrove, 2015). Various organizations and persons have given many definitions to the ERM. Among them, one of the well accepted definitions is given by Committee of Sponsoring Organizations of the Tread way Commission (COSO) in 2004. The Committee of Sponsoring Organizations of the Tread way Commission (COSO) (2004) has defined the ERM as 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. Furthermore, it mentions that ERM is one of the vital things that should be applied to all levels of an organization and functions in strategy implementation to convince the accomplishment of organizational objectives. ERM is an integrated approach which practices managing the firm risks. Even though, whether there is a wide adoption of ERM in organizational processes, there are neither any clear standard for ERM nor ground-based theories about the outcome of it (Kopia, Just, Geldmacher & Bubian, 2017). ERM is implied as an integrated framework that can be applied for handling credit risk, market risk, operational risk, economic risk, political and social risk to enhance the value of the firms (Lam, 2014).

ERM in the banking industry is considered as a rare subject matter in academic research, despite the fact that implementation of ERM is considered as a new regulation in the banking regulators (Liem, 2018). Pagach and Warr (2010) examined the impact of ERM practices on changers of firm performers. It discussed that risk has to be lower while ERM implementation.

In the crisis period, most of the companies were able to run through certain radical shifts to protect the financial and operational performance. Accordingly, the study by Quon, Zeghal and Maingota (2012) found that there was a statistically insignificant impact since higher reported risks are predictive low firm performance. The study by Machini (2016) established that the strength of the key risk indicators in banks was the most essential thing in ERM in commercial banks in Kenya. Furthermore, it said that ERM answers are too costly and with the integration of Information Technology with ERM network could be beneficial for banks. The investigation by Soliman and Adam (2017)

observed a strong positive relationship can be found in between implementation of ERM and firm performance in the banking sector

The available literature on ERM of banks in the local context has certain limitations. Therefore, there is an opportunity for another research covering more important aspects. By going through the past studies arguments, it makes a sense to do this study to investigate the impact of ERM on firm performance in listed banks in CSE.

3. METHODOLOGY

3.1. Population & Sample of the Study

The target population of the study was all 16 banks listed in CSE. The data were collected from secondary sources, annual reports, of the selected banks for the ten years period of 2009 to 2018.

3.2. Research Hypotheses

The finance risk has done a huge impact on the performance in banks. Previous studies (Eg: Al-Tamimi et al, 2007; Abu Hussain et al, 2012; Ishtiaq, 2015) consider on managing financial risk because of the importance. In this context, researcher develops the firsthypothesis as below,

> *H1: Managing finance risk has a significant impact on firm performance of listed banks in CSE*

The liquidity risk of a bank is the risk of not being able to lend or fulfill its obligations in a timely manner. If firms manage the liquidity risk within the business environment, then they have the possibility of performing well (Al-Tamimi et al., 2007; Abu Hussain et al., 2012; Yousfi, 2015; Ishtiaq, 2015). In this context, researcher develops the second hypothesis as below,

> *H2: Managing liquidity risk has a significant impact on firm performance of listed banks in CSE*

Market risk in banks is the potential for a bank or market to lose. If there is no consideration and procedure for managing that market risk, banks have to suffer from many difficulties (Pfetsch, & Poppensieker, 2012; Ayoub, 2013; Yousfi, 2015; Ishtiaq, 2015). In this context, researcher develops the third hypothesis as below,

> *H3: Managing market risk has a significant impact on firm performance of listed banks in CSE*

The previous studies (Eg: Al-Tamimi et al., 2007; Abu-Hussain et al., 2012; Musyoki & Kadubo, 2012; Rengasamy, 2014) indicate that credit risk can be identified as one of the most significant factors that affect the health of banks. In this context, researcher develops the fourth hypothesis as below,

H4: Managing credit risk has a significant impact on firm performance of listed banks in CSE

3.3. Research Model

Panel data, cross-sectional time series data or longitudinal data regression procedure is used to investigate ERM and firm performance. There are three significant models of panel data analysis as pooled OLS regression, fixed effects model and random effects model. The pooled OLS model is run by neglecting the cross sections and time series nature of data assuming that all companies are same at all the time. Heterogeneity or individuality does not exist in pool OLS model while it allows for fixed effect model. In the fixed effects model, the parameters of the model are fixed. They have their-own intercept values, but intercepts do not vary over the time. Random effect model has a common mean value for the intercept. Therefore, panel data regression approach is used in two models (ROE and ROA) for the study. It examines individual firm effect, time effect, or both and these effects are either fixed or random. F test is used to check the appropriateness of the fixed effect model. If the p value of F test gives under significant level fixed effect model is appropriate. Breush Pagan Lagrange Multiplier (LM) test is used to check whether the random effect model is appropriate or not. If the p value of LM test gives under significant level random effect model is appropriate. Hausman specification test is used to estimate the most appropriate model among random effect model and fixed effect model. Harris-Tzavalis unit-root test is used to test whether the variables of ERM and firm performance are stationary at the level. Variance Inflation Factor (VIF) is the measurement to test the amount of multicollinearity of the independent variables. If the VIF values are less than 10 the study does not violate the multicollinearity assumption. The two panels of the study are given below.

$$ROE_{it}=\beta_0+\beta 1LEV_{it}+\beta 2FZ_{it}+\beta 3CR_{it}+\beta 4LDR_{it}+\beta 5NIM6_{it}+\beta 6NPL7_{it}+\beta 7LLP8_{it}+\varepsilon_{it} \quad (1)$$

$$ROAit=\beta_0+\beta 1LEV_{it}+\beta 2FZ_{it}+\beta 3CR_{it}+\beta 4LDR_{it}+\beta 5NIM6_{it}+\beta 6NPL7_{it}+\beta 7LLP8_{it}+\varepsilon_{it} \quad (2)$$

Where, LEV is the financial leverage at time period t of i company, FZ is the size of the firm at time period t of i company, CR is the current ratio at time period t of i company, LDR is the loan to deposit ratio at time period t of i company, NIM is the net interest margin at time period t of i company, NPL is the non-performing loan ratio at time period t of i company, LLP is the loan loss provision ratio at time period t of i company. ROA is Return on Asset and ROE is Return on Equity.

4. DATA ANALYSIS & RESULTS

4.1. Diagnostic Tests

The results of Harris- Tzavalis unit-root test found that the above variables of ERM and firm performance are stationary at the level. In the test of VIF value in Table 1, all individual independent variables and all the values of any of the regressions are below 10. Therefore, it proves that there is no space to have multi-collinearity here.

<div align="center">Table 1: Specification Tests</div>

Model	Panel A-ROE				Panel B-ROA			
Specification Test	Statistic	P-value	Tested	Selection	Statistic	P-value	Tested	Selection
Hausman	72.940	0.0000 ***	Fixed / Random	Fixed	116.280	0.0000 ***	Fixed / Random	Fixed
Breusch-Pagen LM	8.660	0.0016 ***	OLS/ Random	Random	7.810	0.0421 **	OLS/ Random	Random
F-test	99.560	0.0000 ***	OLS/ Fixed	Fixed	91.470	0.0000 ***	OLS/ Fixed	Fixed

Note: ***, ** and * indicate significance at 1%, 5% and 10% respectively.
Source: (Surveyed Data, 2020)

4.2. Specification Test Results

The study cannot capture the things which are varying with the time, hence it proves that the models do not have any time fixed effect it has only a company fixed effect. The F- tests of the two regressions reject the null hypothesis that all dummy parameters are jointly equal to zero and it may be concluded that the fixed firm effect model is better than the pooled OLS model. Hence, the fixed effect model is the better choice than the pooled OLS regression model. The p-value of Breusch-Pagen Lagrange Multiplier is 0.0016 (0.0016<0.01) in the ROE model and 0.0421 (0.0412<0.05) in ROA model. Therefore, Breusch-Pagen LM test in Panel-A and Panel-B in table 1 prove that the appropriate suitable model is the random effect model than the pooled OLS model. The p-value of Hausman statistic is 0.0000 (0.0000 < 0.01) in ROA & ROE and it provides enough evidence to accept the alternative hypothesis as the fixed effect model is an appropriate model.

4.3. Testing of Hypotheses

The coefficient of financial leverage in Panel A-ROE is significant at 0.1 significance level and as per the coefficient, it has a positive impact. As well as Panel B-ROA is significant at 0.05 and it has a negative significant impact. Therefore, to both ROA and ROE the first hypothesis (H1) is accepted. As well as there is a positive significant impact between LDR in ROE and ROA at 0.05 significance level. Therefore, H2 can be accepted. The result also causes to accept H3 and can be concluded as NIM significantly affects firm performance. NPL does not significantly affect firm performance. As per the P-value of LLP in panel A, it can be concluded that LLP positively impacts on ROE and hence accept H4. However, it does not significantly effect ROA as the p-value is greater than the significant level.

5. DISCUSSION OF THE FINDINGS

According to the results of Table 1 specification tests, the fixed firm effect model is the best model for panel A and panel B.

As per Table 2 the Financial Leverage, LDR, and LLP had a positive significant impact on ROE (Panel A) and NIM had a negative significant impact on ROE. Financial Leverage and Net interest margin (NIM) had a negative significant impact on ROA (Panel B) while Loan to deposit ratio (LDR) had a positive significant impact on ROA. The firm size, current ratio, and NPL do not have significant impact on ROE and ROA. Further, LLP is insignificant with ROA.

Because of the positive significant impact of managing financial risk on the bank performance, all the banks should pay their attention on managing financial risk in order to provide a worthy framework for risk management. These results are consistent with the findings of some certain studies (Eg: Hassan, 2011; Shafique, Hussain et al., 2013). The results depict that there is a positive significant impact of the managing liquidity risk on banks' performance in the listed banks in CSE. Therefore, the study found that managing liquidity risk is an essential aspect of risk management. These results are consistent with the findings of Yousfi (2015) and Sathyamoorthi, Mapharing, Mphoeng, and Dzimiri (2020). Managing market risk has a significant negative impact on bank performance. Investors may not want to consider investing heavily in banks, as NIM is in negative territory. When considering the current business environment in Sri Lanka, the current findings will support the policy implications of risk management guidelines. Whereas, a significant negative impact denotes that the overall effectiveness of the risk management practices of banks cannot be enhanced by giving more attention and priority to managing market risk. These results are consistent with the findings of Sathyamoorthi et al. (2020). The banks should maintain a balance between managing credit risk and bank performance.

Table 2: Results of the One Way: Fixed firm Effect Model for ROE and ROA

Model	Panel A					Panel B				
Variable	Coefficient	Robust Standard Error	T-statistic	P-value	VIF Value	Coefficient	Robust Standard Error	T-statistic	P-value	VIF Value
Constant	0.0325	0.4845	0.67	0.515		0.0519	0.0113	1.41	0.183	
Financial Leverage	0.0031	0.0021	1.44	0.100*	2.060	0.0177	0.0007	-2.42	0.032**	2.060
Firm Size	0.1499	0.1147	1.30	0.219	1.911	0.0193	0.0192	1.00	0.335	1.911
Current ratio	0.0009	0.0026	0.34	0.736	1.407	0.0008	0.0009	0.95	0.363	1.407
LDR	0.0135	0.0071	1.90	0.082*	1.249	0.0065	0.0032	2.01	0.068*	1.249
NIM	-0.0074	0.0009	-8.07	0.000***	1.002	-0.007	0.0002	-4.12	0.001***	1.002
NPL	-0.0071	0.0023	-0.76	0.461	1.017	0.0009	0.0004	0.23	0.819	1.017
LLP	0.5773	0.2356	2.45	0.031**	1.204	0.0281	0.0259	1.08	0.301	1.204
sigma_u	0.0449					0.0116				
Rho	0.0543					0.0144				
sigma_e	0.4057					0.392				
R2	0.4241					0.2497				

Note: ***, ** and * indicate significance at 1%, 5% and 10% respectively.
Source: (Surveyed Data, 2020)

There is a significant positive impact of managing credit risk on bank performance in listed banks in CSE. Proper loan management in banks increases the quality of loans and consequently increases the cost efficiency of banks. When there are an adequate loan underwriting and control of credit risk, it will be a reason to improve the bank performance in Sri Lanka. The banks should implement a proper credit risk management framework in order to enhance

performance. Therefore, a significant positive impact denotes that the overall effectiveness of the risk management practices of banks can be enhanced by giving more attention and priority to managing credit risk. These findings are similarly compliable with the results of some studies (Capriani & Dana, 2016; Syafi & Rusliati, 2016; Olalekan, Lasisi, Mustapha & Olumide, 2018).

6. CONCLUSION & CONTRIBUTIONS

The study focuses on the listed banks in CSE with the purpose to investigate the impact of ERM and firm performance in listed banks in CSE by using the secondary data collected through annual reports from 2009 to 2018. The adoption of risk management practices in banks direct them towards better trade-off between risks and return. Financial Leverage LDR and LLP create a significant positive impact on bank performance while managing NIM creates a significant negative impact on bank performance. The firm size, current ratio, and NPL do not have a significant impact on ROE and ROA and also LLP is insignificant with ROA. These results are useful for managers, employees, shareholders, potential and existing investors, and also academics. A firm is unable to define its objectives for its future. Hence, managers can come up with new strategies to protect against different risks based on the study. Decision-makers such as future and potential investors who prefer to invest in banks can use this as governance. Further, it can be a vital study for econometricians, policymakers, academics, and other stakeholders for their policy making, decision making and related academic studies. Also, this study is being a veil for many parties for strategic planning, to take decisions on managerial implications. Finally, ERM remains as an unresolved problem in corporate finance and there has no universal agreement for ERM. Therefore, this study implies that ERM is essential for firm performance. As well ERM is not a mandatory requirement for Sri Lankan companies. Here the study suggests that if it becomes a mandatory requirement, it will vital to all companies in Sri Lanka.

ERM is similarly essential and influences on other types of financial institutions such as specialized banks and microfinance banks regardless of their size and nature of banking operations. Hence, a similar study will be useful in determining ERM aspects and its implication towards the firm performance of these firms especially in Sri Lanka as a developing country. Furthermore, further studies should focus on both the quantitative approach and a qualitative approach by concerning more qualitative factors by using different analytical tools.

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