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**IMPACT OF INCOME DIVERSIFICATION ON BANK PERFORMANCE: SPECIAL REFERENCES
TO LICENSED COMMERCIAL BANKS IN SRI LANKA**

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Abstract

Banks have diversified their income sources by performing new activities such as underwriting and trading securities, brokerage and investment banking and other activities which generate non-interest income to the bank. Non-interest income considered as an important source of income diversification for the bank. The main objective of this study is to find the impact of income diversification on bank performance special references to commercial banks in Sri Lanka by considering 11 year period from 2006-2016. Ten licensed commercial banks were selected based on highest market capitalization. Study was done using quantitative research methods with deductive approach and the secondary data was gathered from final financial statements of each bank. The performance measures are return on equity and return on assets while income diversification measured by the diversification index. Additionally four control variables (bank size, financial leverage, growth rate and lending strategy) were used. Panel data regression used as main analytical tool as the data set contain cross sections and time series nature of the data. According to the findings of this study it can be concluded that there is a significant positive impact of income diversification and bank performance in Sri Lanka (Both Return on Assets and Return on Equity). As well as, bank size has a significant positive impact on bank performance in both Return on Assets and Return on Equity models. Financial leverage has a significant positive impact on Return on Assets and it insignificantly related with Return on Equity. However, growth rate and lending strategy has insignificant impact on bank performance. Finally, it is concluded that income diversification has significant positive impact on bank performance. Therefore, this study can be refer to banking industry to improve overall goals, objectives, and ultimately to enhance their bank performance.

Key words: Bank Performance, Diversification Index, Income Diversification

Background of the study

Commercial banks in Sri Lanka plays an important role in the financial system because it account for a significant percentage of the total assets of the financial system in Sri Lanka. According to Central Bank annual report as at end of 2016 it accounted to 51% of total assets of the financial system. Increasing share of net trading profits, fees and other non-interest sources among the net operating income of a bank can be define as income diversification. According to the finance theory, diversification of income sources in a bank should lead to a lower risk level and a higher risk-adjusted performance (Gurbuz, Yanik, Ayturk, 2013).

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Over the last three decades, the financial industry in developed as well as in developing countries has experienced major changes. Changes in the trends in economy, increased competition, regulatory requirement and volatility of interest based income in banking are some examples of such changes. Therefore, these trends in economy and customer's expectations are leading to banks to search the new ways of income generation rather than traditional banking activities. It includes several sources of income. Underwriting, brokerage, wealth management, remittance, corporate advisory, portfolio management, off- balance sheet activities and syndications are examples of such activities (Allen & Santomero, 2001).

Non-interest income is considered as an important source of diversification for the banks. Banks which are operating in a competitive environment are more stable as they diversify their portfolios, because ultimately it leads to increase the performance of banks. Most of the banks trust that increasing the ratio of non-interest income to operating income not only increase the performance of the banks, but also it will lead to reduce overall risk of the banks (Huang & Chen, 2006). According to the Sri Lanka Banking Sector Report 2016, it shows that banks with diversified income sources where income generation is done through different sources have greater ability to maintain stable profitability. As well as banks can reduce their risk by engaging with non-traditional banking activities rather than traditional banking activities.

A key motivation of this research derives from the lack of researchers regarding this topic under Sri Lankan banks and it is important to investigating the strategies to face the high competition within commercial banks in Sri Lankan context.

Problem Statement

In Sri Lanka, banks are mainly depend on loans that they grant. In addition to that banks pay greater attention to lending rates that they charge to maximize their profit. According to the previous literature, banks may able to achieve higher profitability through the diversification of income sources. According to the Central Bank of Sri Lanka annual report, profitability of the banking sector recorded an increase mainly arising from higher net interest income. This implies that lack of non-interest income in banking sector in Sri Lanka and Central bank reported non- interest income 1.2% while net interest income reported 3.6% as a percentage of average assets as at 2016. This raises the question on whether banks should diversify income sources to stabilize their income or focus on the traditional banking activity. Therefore, it is important to explore the impact of income diversification on performance of commercial banks in Sri Lanka.

Objectives of the study

The major objective of the study is to investigate impact of income diversification on commercial bank performance in Sri Lanka. Four other factors i.e. bank size, financial leverage, growth rate and lending strategy were also considered as controlling variables for the above relationship.

Hypothesis Development

Bank performance is considered as the dependent variable whereas income diversification considered as an independent variable. With the support of existing literature it has been developed the following hypothesis.

H₀: There is no any significant impact of income diversification on the performance of commercial banks in Sri Lanka.

H₁: There is a significant impact of income diversification on the performance of commercial banks in Sri Lanka.

Significance of the study

Banks can increase shareholders' wealth by shifting their focus from traditional income sources to non-interest income sources. According to finance theory, diversification of income sources in a bank should lead to a lower risk level and a higher risk-adjusted performance. In order to sustain and to achieve such benefits, it is important to banks to pay greater attention to income diversification. This research is significant, because by using its finding it tries to deliver some important contributions to the banking industry in Sri Lanka.

There are few number of studies have been done regarding impact of income diversification on commercial bank performance with variety of context. Other than that, future researchers will be supported with the findings of this study. Finally, this study is focused on fill the above gap in Sri Lanka it will help to banking industry to improve overall goals, objectives, and ultimately to enhance their bank performance.

Literature Review

The existing economics and finance literature provides a several theories explaining the impact of income diversification on bank performance. Some of these theories are portfolio theory and income diversification theory. Portfolio theory is complicated and mathematically sophisticated theory that attempts to maximize the return of investment in a given level of risk. Income diversification can be define as an increase of different number of income generating activities or the balance among number of sources (Wan, Li, Wang, Liu, & Chen, 2016).

The relationship between income diversification and performance has been empirically explored in many countries. Mixed results have been reported, particularly for developed countries such as United States, Australia and Germany (De Young & Rice, 2004; Delpachitra & Lester, 2013 and Busch & Kick, 2009). These studies are different in terms of their objectives and methodology they have used. Some of studies found that there is a positive impact between income diversification and bank performance (Amidu & Wolfe, 2013; Chiorazzo, et al., 2008 and Gurbuz et al., 2013). As well as some studies found negative relationship between income diversification and bank performance (De Young & Rice, 2004 and Delpachitra & Lester, 2013).

Data Collection

For the current study secondary data has been obtained from the published annual reports of the commercial banks within the period of 2006-2016.

Analysis using Panel Regression Method

Panel data analysis is a statistical method which used to analyze two dimensional panel data. Panel data are also called cross-sectional time-series data. These data have observations on the same units in different time periods. Panel data can have entity effect, time effect, or both which can be analyzed by using fixed effect model, random effect model or pooled ordinary least squares (OLS) regression model. From these three models, to find the right model researcher applied F test, Breusch and Pega's Lagrange Multiplier (LM) test and Hausman test. These models have been applied for ten licensed commercial banks and each bank has data for one independent variables such as income diversification and two dependent variables of Return on Asset and Return on Equity with four other control variables such as bank size, financial leverage, growth rate and lending strategy for period of ten years from 2006 to 2016.

Model Selection for ROA

According to the regression results it can be concluded that there is a significant relationship between the dependent and independent variables therefore it has the ability to predict the impact of income diversification on bank performance. There are some techniques to analyze panel data, such as OLS, fixed effect model and random effect model. Firstly researcher focuses on OLS and fixed model. To compare OLS and fixed effect model, Fisher test had been used. After that, researcher conducted LM

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test to compare OLS and random effect model. Finally, to select most appropriate model from fixed effect model and random effect model, Hausman test has been used.

Table 01: Summary of Regression Results of OLS, Fixed Effect and Random Effect Model- ROA

| ROA | Pooled OLS | Fixed effect model | Random effect model |
|---------------------------|-----------------------|---------------------------|----------------------------|
| DIV | 0.01054 (0.00100) | 0.00906 (0.01600) | 0.00839 (0.01300) |
| SIZE | 0.00268 (0.00000) | 0.00141 (0.01900) | 0.00198 (0.00000) |
| FL | 0.12890 (0.00000) | 0.14798 (0.00000) | 0.13050 (0.00000) |
| GR | 0.00006 (0.03800) | 0.00005 (0.10400) | 0.00005 (0.07200) |
| LS | -0.01209 (0.00900) | 0.00196 (0.67700) | -0.00300 (0.49500) |
| Adj. R² | 0.52610 | 0.53720 | 0.63440 |
| F test | | 13.18000 (0.00000) | |
| LM test | | | 28.19000 (0.00000) |
| Hausman test | | 37.43000 (0.00000) | |

Source: (Stata output)

F-Test

F-test is one of the statistic test which is define as under the null hypothesis F distribution is with the test statistic. The test is used often when statistical model have been fitted to a data set which are comparing the fixed effect model with OLS, with the purpose of identifying the model which is the best fitted to the population where the sample is taken. The null hypothesis of F-test has expressed as the pooled OLS model is appropriate while the alternative hypothesis has expressed as fixed effect model is appropriate. The F-tests of the first model which is the dependent variable is ROA is shown as 0.0000 (p-value = 0.0000<0.05), hence it rejects the null hypothesis and accept alternative hypothesis. Therefore results is going to conclude that the better model is fixed effect model not the pooled OLS model.

LM Test

LM test applied to select most appropriate model from the random effect model and a pooled OLS regression model. It represents the null hypothesis as the random effect model is not appropriate and the alternative hypothesis as random effect model is appropriate. The rule for selecting fitted model among pooled OLS and random effect model in LM test is, if p- value is less than 0.05 select random effect model otherwise select pooled OLS. Since the probability (0.0000) obtained from LM test is less than 0.05, it is rejected the null hypothesis of random effect model is not appropriate while accepting the alternative hypothesis of random effect model is appropriate.

Hausman Test

If this probability < 0.05 (i.e. significant) use fixed effect model. Null hypothesis of Hausman test was random effect model is appropriate vs. alternative hypothesis of fixed effect model is appropriate. According to the results of Hausman test, among the fixed effect and random effect model, fixed effect model is most appropriate model since p value is less than 0.05. According to the results of fixed effect model, it implies that there is a significant positive impact with coefficient of 0.0091 between income diversification and ROA at 95% significance level, which means higher the income diversification higher the bank performance. Bank size shows 0.0014 coefficient values, which denotes that when bank size increase in 1 unit ROA increase by 0.0014 units. And also there is a significant positive impact of financial leverage to ROA. It is one of the influential variable in determining bank performance.

P value of the growth rate is 0.1040 which indicates that growth rate does not impact on ROA of licensed commercial banks in Sri Lanka because the P value is greater than 0.05. And also P value of lending strategy is 0.6770 which is higher than 0.05 alpha level. Results of the analysis does not support to denote that it has a significant impact on ROA and can be conclude as lending strategy does not significantly impact on bank performance under the measurement of ROA.

Model Selection for ROE

Table 02: Summary of Regression Results of OLS, Fixed Effect and Random Effect Model-ROE

| ROE | Pooled OLS | Fixed Effect Model | Random Effect Model |
|---------------------------|-----------------------|----------------------|-----------------------|
| DIV | 0.05635 (0.27700) | 0.12624 (0.01900) | 0.10682 (0.03700) |
| SIZE | 0.03064 (0.00000) | 0.02646 (0.00200) | 0.02987 (0.00000) |
| FL | -0.89399 (0.00000) | 0.26893 (0.35200) | -0.01199 (0.96300) |
| GR | 0.00054 (0.24700) | 0.00065 (0.10900) | 0.00065 (0.10000) |
| LS | -0.04553 (0.54900) | 0.00590 (0.93000) | -0.02031 (0.75500) |
| Adj. R² | 0.44260 | 0.18250 | 0.50480 |
| F test | | 3.99000 (0.00250) | |
| LM test | | | 88.68000 (0.00000) |
| Hausman test | | | 5.28000 (0.38260) |

(Source: Stata output)

F-Test

Fixed effect model is better than the pooled OLS model since the Probability value of F is 0.0025. Therefore, researcher selected fixed effect model as the better model than the OLS for return on equity variable.

Fixed Effect explores the relationship between predictor and outcome variables within an entity (Bank). Each entity has its own individual characteristics that may or may not influence the predictor variables. When we use fixed effect, we assume that something within the individual may impact or

bias the predictor or outcome variables and we need to control for this. This is the rationale behind the assumption of the correlation between entity’s error term and predictor variables. Fixed effect removes the effect of those time-invariant characteristics, so we can assess the net effect of the predictors on the outcome variable. Based on that information, fixed effect model is better than the OLS.

LM Test

After conducting a Frisher (F)-test researcher conducts a Breusch and Pagan’s Lagrange Multiplier (LM) test to select the most appropriate model among OLS and random effect model. Null hypothesis of the LM test is the Pooled OLS model is not appropriate and alternative hypothesis is random effect model is appropriate. Since the probability of Chi value (0.0000) obtained from LM test which is less than 0.05 rejected the null hypothesis of random effect model is not appropriate while accepting the alternative hypothesis of random effect model is appropriate.

Hausman Test

If this probability is lower than 0.05 of Hausman test, (i.e. significant) it is used fixed effect model. Null hypothesis of Hausman test is random effect model is appropriate vs. alternative hypothesis of fixed effect model is appropriate. According to the results, it can be conclude that the appropriate model is random effect model since the p value of the test is more than 0.05.

This study proves that income diversification significantly impact on bank performance with 0.1068 coefficient. This results support to conclude that, income diversification has significant positive impact on bank performance under the measurement of ROE. Bank size is an influential variable when determining bank performance in the model of ROE and has a positive impact with bank performance. The p- value is 0.0000 which also less than recommended level of 0.05, hence it can be able to express that the bank size has an impact on bank performance under the measurement of ROE.

P value of the financial leverage is 0.9630 which indicates that financial leverage has not an impact on ROE of licensed commercial banks in Sri Lanka because the P value is greater than 0.05. There is an insignificant impact of growth rate also can be seen, since the p-value of growth rate is higher than 0.05. And also P value of lending strategy is 0.7550 which is higher than 0.05. Results of the analysis does not support to denote it has a significant impact on ROE and can be conclude as lending strategy does not significantly impact on bank performance under the measurement of ROE.

Table 03 Specification Test

| ROA | | | | |
|---------------------|-------------------|----------------|--------------|------------------|
| Test | Statistics | P-value | Test | Selection |
| F test | 13.18000 | 0.00000 | OLS/Fixed | Fixed |
| LM test | 28.19000 | 0.00000 | OLS/Random | Random |
| Hausman test | 37.43000 | 0.00000 | Fixed/Random | Fixed |
| ROE | | | | |
| F test | 3.99000 | 0.00250 | OLS/Fixed | Fixed |
| LM test | 88.68000 | 0.00000 | OLS/Random | Random |

| | | | | |
|---------------------|---------|---------|--------------|--------|
| Hausman test | 5.28000 | 0.38260 | Fixed/Random | Random |
|---------------------|---------|---------|--------------|--------|

Source: (Stata output)

According to the F test, LM test and Hausman test, fixed effect model was the best fitted model to the ROA variable and random effect model to the ROE variable. Those findings are shown in the table 01 and 02 above. And also table 03 represents the results outcomes of these three tests.

The equation for the fixed effects model becomes:

$$Y_{it} = \beta_1 X_{it} + \alpha_i + u_{it}$$

$$ROA_{it} = \alpha_i + \beta_1 (DIV)_{it} + \beta_2 (SIZE)_{it} + \beta_3 (FL)_{it} + u_{it}$$

The equation for the random effects model becomes:

$$Y_{it} = \beta_1 X_{it} + \alpha_i + u_{it} + \varepsilon_{it}$$

$$ROE_{it} = \alpha_i + \beta_1 (DIV)_{it} + \beta_2 (SIZE)_{it} + u_{it} + \varepsilon_{it}$$

The results of panel data regression analysis implies that there is a significant positive relationship between income diversification and profitability of banks. This means that the higher the ratio of income diversification, higher the profitability position in the bank. The parameter value indicate that 100% increase in income diversification increase the ROA by 0.9% and ROE by 11%. And also according to the results of the panel data regression, bank size shows significant positive impact to the both ROA and ROE models. The parameter value indicate that 100% increase in bank size, increase the ROA 0.14% and ROE by 3%. As the findings of this study, financial leverage shows significant positive impact with ROE.

Conclusion

The main purpose of this study is to investigate the impact of income diversification on bank performance special references to licensed commercial banks in Sri Lanka during the period of 2006-2016. Panel data regression approach is applied to this study as it contains a cross sectional plus time series data set. In addition to that, gathered data was analyzed by descriptive statistics and correlation analysis.

According to the findings of specification tests (Hausman test, LM test and F test) fixed effect model select as best fitted model for ROA and random effect model was selected as best fitted model for ROE among the three models of Pooled OLS, Fixed effect model and Random effect model.

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