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# The Importance of Interest Rate in Determining Stock Returns of Banks Finance and Insurance Companies in Sri Lanka

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***Abstract:*** **Objectives of this study are to examine the relationship between Interest Rate and the Stock Prices of Banks Finance and Insurance Sector Companies and to find the effect of changes in Interest Rate on Stock Returns of Banks Finance and Insurance Sector Companies. Capital markets are sensitive to number of macroeconomic factors, out of which Interest Rate is identified as a major factor by many researchers (Alam & Uddin , 2009). Colombo Stock Exchange provides secondary evidence of Banks Finance and Insurance Sector Index, which represents the dependent variable and Central Bank of Sri Lanka provides evidence of Interest Rate, which constitutes the independent variable. Researcher collected monthly data for 12 years from 2002 to 2014 for the study. Data set is proven to be normally distributed. Correlation and Linear Regression Model was used to examine relationships. Results of the study disclose a negative Correlation between Interest Rate and Banks Finance and Insurance Company Stock Prices. Further, based on coefficient of determination, 8.8% of the Banks Finance and Insurance Company Stock Returns are determined by Interest Rate. In par with original relationship between Interest Rate and Banks Finance and Insurance Index, change in Interest Rate is negatively correlated to Banks Finance and Insurance Company Stock Returns. This study would extend the literature on capital markets and provides valuable information to investors who are interested in Banks Finance and Insurance Sector.**

***Keywords:*** **Interest Rate, Banks Finance and Insurance Sector Index, Colombo Stock Exchange, Stock Returns.**

## I. INTRODUCTION

Interest Rate is an important macroeconomic factor that affects Stock Prices of Listed Companies in Sri Lanka (Manike, 2006). Further studies explain the significance of Interest Rate in determining Stock Prices in Sri Lankan context (Amarasinghe, 2015). Financial Institutions have a duel relationship with Interest Rate. On one hand Interest Rates have an impact on Stock Prices due to changes in investor preferences. On the other hand the products of Financial Institutions include an Interest Rate that constitutes their profit margin (Khan & Sattar, 2014). Thus the profitability and Company value both are affected by Interest Rates.

## II. LITERATURE REVIEW

Addo, et al. (2013) found negative relationships but weak predictive power on Stock Market Returns when Interest Rate and Treasury bill rate are considered individually as independent variables, in the study to find joint effect of interest rate and Treasury bill rate on stock market returns in the long run in Ghana markets. Also it concludes that there is a joint effect of interest rate and Treasury bill rate on Stock Returns. Studies in Australian context explain contradictory results to theory, where they have not found a negative relationship between Interest Rates and Stock Returns of banking sector companies (Vaz, et al., 2008). Richard, et al. (2012) found a significant negative relationship between Interest Rate and stock market performance in a case of Nigeria. His study revealed that a 1% change in Interest Rate causes a 44% change in stock indices. The co-movement of subsequent earnings with movements of Interest Rates, which is followed by a negative change in stock market returns in Columbian markets, were found by Nissim & Penman, (2003). Also they disclosed the insignificance of subsequent earnings change to cover changes in required returns.

Thang, (2009) emperically tested the relationship between Interest Rate and Stock Returns in Malaysian markets and argued that investor preference changes from interest bearing investments to capital markets due to changes in Interest Rates. A study conducted in Pakistani market revealed a clear negative relationship between Interest Rate and stock market returns (Ali, 2014). The study explains the ability of Interest Rate in weakening the efficiency of stock markets and influencing investor preferences. In the paper to analyze the effect of Interest Rate changes on relative value of financial institutions, Santoni, (1984) found that Share prices and wealth of financial institutional owners are more sensitive to Interest Rate changes than other industrial firms.

## III. METHODOLOGY

### *A. Data collection and Sample:*

This study is uses secondary data that are collected from publicly available sources. Following the literature, researcher selected Banks Finance and Insurance sector to test the relationship with Interest Rate (Santoni, 1984). Banks Finance and Insurance sector index is selected as the proxy for dependent variable and monthly data from the year 2002 to 2014 are collected using data library of Colombo Stock Exchange. In testing the causality of Interest Rate in determining Stock Returns, Sri Lankan researchers have collected Interest Rate data from Central Bank of Sri Lanka (Amarasinghe, 2015). 3 month Sri Lanka Inter Bank Offering Rate (SLIBOR) constitutes independent variable, where monthly Interest Rate (SLIBOR) data is collected from Central Bank of Sri Lanka for the same period. Data set is statistically proven to be normally distributed based on Shapiro-Wilk test.

### *B. Hypotheses:*

Several studies found a relationship between Interest Rate and sector returns (Ali, 2014), whereas most of them have further investigated a relationship between movements of the same variables (Richard, et al., 2012).

Based on the literature, researcher is encouraged to develop following hypotheses,

$H_1$. There is a relationship between Interest Rate and Banks Finance and Insurance Company Stock Prices (Ali, 2014).

$H_2$. There is a relationship between changes in Interest Rate and Banks Finance and Insurance Sector Returns (Richard, et al., 2012)

### *C. Model Specifications:*

Following the model used by Alam & Uddin (2009), linear regression model was used in explaining the causality of Interest Rate in determining Banks Finance and Insurance Sector Index,

$$Y_{1it} = u_{0i} + u_{1i} X_{1it} + u_{it} \quad \text{Fig. 1}$$

Where $Y_{1it}$ is Banks Finance and Insurance Index and $X_{2it}$ is Interest Rate (3 months SLIBOR).

Effect of changes in Interest Rate on Banks Finance and Insurance Sector Returns was found by regressing percentage changes of variables. Changes in the variables were calculated using below model.

$$Y_2=100 * [ Y_{1(t)} - Y_{1(t-1)} ] / Y_{1(t-1)}$$

$$X_2=100 * [ X_{1(t)} - X_{1(t-1)} ] / X_{1(t-1)} \quad \text{Fig 2}$$

Where, $Y_2$ = changes of share price at period t; $Y_1$ (t) = share price at period t; $Y_1$ (t-) = share price at period t-1; $X_2$ = changes of Interest Rate at period t; $X_1$ (t) = Interest Rate at period t; $X_1$ (t) = Interest Rate at period t-1.

First regression model is modified by including percentage changes as variables, to find the relationship between changes in Interest Rates and Banks Finance and Insurance Company Returns.

$$Y_{2it} = u_{0i} + u_{1i} X_{2it} + u_{it} \quad \text{Fig 3}$$

Where Y2it represents change in Banks Finance and Insurance Index and $X_{2it}$ represents change in Interest Rate (3 months SLIBOR).

## IV. FINDINGS AND DISCUSSION

### *A. Test of Normality of data:*

Collected data set is statistically tested for normality. Kolmogorov-Smirnov test and Shapiro-Wilk test are conducted to find the suitability of data to fit them in to statistical models. For both the variables, significance of both tests gives the value 0. With the outcomes, independent and dependent variable are found to be normally distributed.

**TABLE I: NORMALITY[A]**

| Variables | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|
| | Statistic | df | Sig. | Statistic | df | Sig. |
| Interest Rate | .144 | 144 | .000 | .852 | 144 | .000 |
| Banks Finance and Insurance Index | .244 | 144 | .000 | .843 | 144 | .000 |

a. Lilliefors Significance Correction

***B. Relationship between Interest Rate and Banks Finance and Insurance Index:***

In examining the relationship between Interest Rate and Banks Finance and Insurance sector index, correlation provides a clear negative relationship between the variables, which is in line with recent studies in literature (Ali, 2014). Table II shows the negative and weak relationship

**TABLE II: CORRELATIONS**

| Variables | | Banks Finance and Insurance Index | Interest Rate |
|---|---|---|---|
| Pearson Correlation | Banks Finance and Insurance Index | 1.000 | -.297 |
| | Interest Rate | -.297 | 1.000 |

Table III elucidates the coefficients of the model, and individual significance of variables. Results reveal a coefficient of -420.148 for Interest Rate. Coefficients are highly significant due to the "0" P values for T- test of both constant and Interest Rate variable.

**TABLE III: COEFFICIENTS[A]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | 95.0% Confidence Interval for B | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Lower Bound | Upper Bound |
| 1 | (Constant) | 12230.372 | 1390.775 | | 8.794 | .000 | 9481.073 | 14979.671 |
| | Interest Rate | -420.148 | 113.244 | -.297 | -3.710 | .000 | -644.009 | -196.287 |

a. Dependent Variable: Banks Finance and Insurance Index

According to the coefficient of determination (R square) values of Table IV, it's found that 8.8% of the Banks Finance and Insurance Sector Index is determined by Interest Rate. Balance 91.2% of Stock Returns is explained by other variables that affect Stock Market Returns.

**TABLE IV: MODEL SUMMARY[B]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .297[a] | .088 | .082 | 4793.8179071 | .088 | 13.765 | 1 | 142 | .000 |

a. Predictors: (Constant), Interest Rate
b. Dependent Variable: Banks Finance and Insurance Index

***C. Respond of Banks Finance and Insurance Sector Returns to a change in Interest Rate:***

Table V depicts -0.129 as the correlation between independent and dependent variable. Giving similar results to relationship between Banks Finance and Insurance sector index and Interest Rate, this analysis explains a negative weak correlation between Banks Finance and Insurance Sector Returns and changes in Interest Rate.

**TABLE V: CORRELATIONS**

| Variables | | Banks Finance and Insurance Sector Returns | Interest Rate Change |
|---|---|---|---|
| Pearson Correlation | Banks Finance and Insurance Sector Returns | 1.000 | -.129 |
| | Interest Rate Change | -.129 | 1.000 |

Table VI exhibits coefficients of the second model that includes percentage changes of variables. Coefficients of the model suggest -0.231 as the coefficient of Interest Rate. Distinct to first linear regression model, P value of T-test does not explain an individual significance for Interest Rate, as P value is greater than 0.05. Nonetheless, the constant value is significant as it falls below 0.05.

**TABLE VI: COEFFICIENTS[A]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | .018 | .007 | | 2.475 | .015 | | |
| | Interest Rate Change | -.231 | .149 | -.129 | -1.553 | .123 | 1.000 | 1.000 |

a. Dependent Variable: Banks Finance and Insurance Sector Returns

## V. CONCLUSIONS

This study was conducted with the aim of finding the impact of Interest Rate on Banks Finance and Insurance Sector, which was elaborated with two objectives. Findings are discussed under the set two objectives. Based on findings of the study, it could be concluded that there is a negative relationship between Interest Rate and Stock Prices of Banks Finance and Insurance companies in Sri Lanka. Also the Changes in Interest Rate will negatively affect Stock Returns of Banks Finance and Insurance companies in Sri Lanka. Even though there is a negative relationship, due to lack of strength in relationships, prediction of Stock Prices merely based on Interest Rate becomes challenging. Furthermore a small proportion (8.8%) of Stock Prices is determined by Interest Rate. Correspondingly, it's important for equity investors of Banks Finance and Insurance Companies to carefully analyze the changes in Interest Rates in the country before making investment decisions.

However this study is subject to limitations in data collection due to unavailability of past data. Also Dividend portion has not been considered in calculating return to investors. Further there could be uncaptured variations in data due to unusual events. As future research directions, it's suggested to examine the impact of Interest Rate on Stock Returns in other Sectors in Colombo Stock Exchange.

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