

The factors influence on Average Weighted Prime Lending Rate (AWPLR) of Commercial Banks

- An empirical perspective in Sri Lankan context

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Abstract: The purpose of this study is to identify the factors affecting Average Weighted Prime Lending Rate (AWPLR) of Commercial Banks in Sri Lanka. It could also ascertain the factors which have significantly contributed to the high level of lending interest rates currently prevailing in the market. Many factors affect the Average Weighted Prime Lending Rate, of which the researcher identified and tested three variables based on operating commercial banks in Sri Lanka. Inflation, Average Weighted Deposit Rate (AWDR) and Statutory Reserve Ratio (SRR) were tested for the purpose this research.

The required data for this study was collected mainly from secondary data sources (Central Bank of Sri Lanka, Department of Census and Statistics - Sri Lanka). The sample data was collected from all 23 commercial banks operating in Sri Lanka on a monthly basis from 2005-2010. It has developed a multiple regression model to explain the behavior of AWPLR. Regression analysis, correlation coefficient analysis and graphical analysis were used to find the relationship between Inflation, Average Weighted Deposit Rate (AWDR) and Statutory Reserve Ratio (SRR) and AWPLR. Further, the collected data was analyzed mainly using the SPSS 16.0 software package and Microsoft Excel. The finding was that there is strong relationship between Inflation, Average Weighted Deposit Rate (AWDR) and Statutory Reserve Ratio (SRR) and Average Prime Lending Rate.

Keywords: Average prime lending rate, inflation, Average weighted deposit rate, statutory reserve ratio, commercial banks,

Introduction

The main source of income of any commercial bank is interest. It is a tradeoff between accept deposits and lending. It may also be defined as the compensation for the service and risk of lending money. Lenders also charge interest to recover their processing cost. Hence, lenders charge interest in order to compensate for inflation and bearing risk, for postponement of consumption, and to recover processing costs. Borrowers are prepared to pay interest because they are able to spend money to afford large purchases presently. Therefore, interest is the cost of borrowing money. Accordingly, interest can be considered as a cost to one party and income to another. Businesses are willing to pay interest to borrow for investments. Similarly, banks are willing to pay interest on deposits because they can lend those at a higher rate. Interest, computed as an interest rate is usually expressed as a percentage per annum and therefore, can be compared. In a competitive market, interest rates vary from day to day; tomorrow's interest rate will be different from today's interest rate.

The purpose of this paper is to identify the factors that determine the Average Weighted Prime Lending Rate of commercial banks in the context of Sri

Lanka. Initially, it explains the theoretical background of the interest rate and determinants of interest rates. In order to confirm the theory, the paper uses data and policies pertaining to the recent history of Sri Lanka.

Several factors determine the Average Weighted Prime Lending Rate of a commercial bank. According to a survey done by Bank of Zambia in 2010, it can be divided into three main categories namely- Cost of fund, economic condition and market condition. It can be classified as follows.

Table 1.1:
Factors affecting the Average Weighted Prime Lending Rate of a Commercial Bank

Factors	Cost Of Funds	Economic Condition	Market Condition
1	Statutory reserve ratio	Inflation	Credit risk premium
2	Liquidity Assets Requirement	Bond rate	Liquidity premium
3	Average weighted deposit rate	Exchange rate	Interbank rate
4	Taxation	Treasury bills	Overnight facility rate
5	Operating Cost		Demand and supply

Source: Survey - Bank of Zambia, 2010

Literature Review

An efficient and vibrant Commercial Banking and financial system is foremost indicator to an economy to perform in a country. Hence, Commercial Banking operations primarily depend on their ability to attract the savings from various deposit products and convert them into lending capacity (Khawja 2002). The difference between the rates at which banks lend money to borrowers and the rate they pay to depositors is generally known as Interest Rate Spread (IRS), which usually indicate as the Commercial Banks retail interest rate. An early work on price rigidities in the banking industry could be found in Hannan and Berger (1991). They focused on the setting of deposit interest rates by banks and addressed the issue of asymmetry between upward and downward price changes using a multinomial log it estimation procedure. IRS is also defined as the difference between average interest rate earned on interest earning assets (loans) and average interest rate paid on deposits (Jayaraman and Sharma, 2003). Weighted

Average Lending Rate (WALR), Weighted Average Deposit Rate (AWDR) is primarily known as the two rates within IRS. Average Weighted Prime Lending Rate (AWPLR) is compiled weekly by the CBSL based on information provided by Commercial Banks regarding lending rate offered to their prime customers during the week. These loans are granted by Commercial Banks usually on a short term basis. Monthly averages of weekly AWPLR are taken to form this series. The CBSL compiles Average Weighted Deposit rates (AWDR) on a monthly basis based on the weighted average of all outstanding interest bearing deposit details provided by Commercial Banks with the corresponding interest rate.

Inflation is a rise in the general level of price of goods and service in an economy over a period of time (Economic review, 2009). It also can be described as a decline in the value of money. One way inflation might affect economic growth through the banking sector is by reducing the overall amount of credit that is available to businesses. Higher inflation can decrease the real rate of return on assets. Lower real rates of return discourage savings but encourage borrowing. At this point, new borrowers entering the market are likely to be of lesser quantity and are more likely to default on between good and bad borrowers, they may refuse to make loans, or they may at least restrict the quantity of loans made their loans. Banks may react to the combined effects of lower real returns on their loans and the influx of riskier borrowers by rationing credit. Inflation has positive relationship with bank lending rate (CBSL Annual report, 2010) and it is been measured by CCPI (Colombo Consumers Price Index) in Sri Lanka (CBSL Annual report 2010).

Several economists have found that countries with high inflation rates have shown the inefficient banking sectors and equity markets. This effect suggests that inflation reduces bank lending to the private sector, which is consistent with the view that a sufficiently high rate of inflation induces banks to ration credit. (John and Bruce, 2006)

An early work on price rigidities in the banking industry could be found in Hannan and (Berger, 1991). They focused on the setting of deposit interest rates by

banks and addressed the issue of asymmetry between upward and downward price changes using a multinomial log it estimation procedure. Their primary findings were that price rigidity is significantly greater in markets characterized by higher levels of concentration and that deposit rates are significantly more rigid when the stimulus for a change is upward rather than downward Lowe and Rohling (1992).

Statutory Reserve ratio (SRR) is the proportion of the deposit liabilities that Commercial Banks are required to keep as a cash deposit with Central Bank, also has been widely used to influence money supply in the past. However, the reliance on SRR as a day to day monetary management measure has been gradually reduced with a view to enhancing market orientation of monetary policy and also reducing the implicit cost of funds which the SRR would entail on Commercial Bank. (Monetary Policy –CBSL).SRR has direct credit controls and moral suasion for effective results of AWPLR. (W M Hemachandra- CBSL, 2010)

In summary, studies researching the relationship between factors such as cost of fund, economic condition and market condition affect the Average Prime Lending Rate of commercial banks. However, they don't clearly indicate which dimension under each of this category of factors is most significant in determining the Average Prime Lending Rate. This is the area that this research intends to explore.

In short, there are many empirical evidence which demonstrate the influence of deposit rate (AWDR), inflation and Policy rate (SRR) on lending rate (AWPLR).

Methodology

Statement of problem:

Borio and Fritz (1995) examined the relationship between the monetary policy rate, money market rate and the lending rate for a group of OECD countries. In 1999, Moazzami examined the short-run and long-run impacts of changes in money market rates on lending in Canada and the United States using an

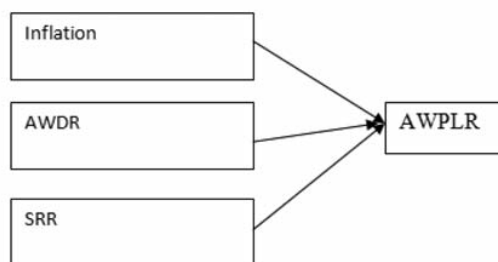
error-correction modeling framework, which distinguishes short term impacts from long-run or full equilibrium effects. Weth (2002) analyzed the relationships between German bank lending rates and both money market and capital market rates in the 1990s Very few studies have been done before connecting Statutory Reserve Ratio, Average weighted Deposit Rate and inflation. Hence, the researchers were attracted to do this research based on Sri Lankan context.

The following questions were raised by researcher based on the critical argument of the above literature

- To find the factors which affect the Average Weighted Prime Lending Rate (AWPLR) of Commercial Banks in Sri Lanka?
- To assess to what extent the interbank market influenced the cost of funds in the interest rate determination process?
- To ascertain which factors have significantly contributed to the high level of lending interest rates currently prevailing in the market?

Conceptual frame work and Operationalization:

In the process of operationalisation the concept which could be visualized by the researcher is as follows.



Based on the above framework Inflation, AWDR and SRR are independent variables which determine the lending rate (AWPLR).

Data Collection

The required data for this study is collected mainly from secondary sources such as Central bank annual report and so forth. Inflation data was collected using the point to point increase of CCPI (Base 2002=100). The Average Weighted Deposit Rate (AWDR) is calculated by the Central Bank Based on the weighted average of all outstanding interest bearing deposits of commercial banks. The data was collected from the website of Central Bank of Sri Lanka. The Statutory Reserve Requirement Rate (SRR) is the proportion of rupee deposit liabilities that Commercial Banks are required to maintain as a deposit with the Central Bank. The AWPLR is calculated by the Central Bank and monthly data was analyzed from January 2005 to December 2010.

Data Analysis

The regression analysis, correlation coefficient analysis and graphical analysis were done to find out the factors affecting the AWPLR. In statistics, Regression analysis is a technique that examines the relationship of a dependent variable (response variable) to specify independent variable (Explanatory variable).

Research Model

Researcher identify the following multiple regression model to express the relationship between Inflation, Average Weighted Deposit Rate (AWDR) and Statutory Reserve Ratio (SRR) and Average Prime Lending Rate of commercial banks in Sri Lanka.

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_K X_{Ki} + e_i$$

Where

- β_0 = Regression constant
- β_1 = Regression coefficient for variable X_1
- β_K = Regression coefficient for variable X_K
- K = Number of independent variables
- e_i = Residual (Error)

In the study researcher use the following multiple regression equation.

$$AWPLR = \beta_1 + \beta_2 Inflation + \beta_3 AWDR + \beta_4 SRR$$

Statistical Analysis

The obtained data was analyzed using SPSS 16.0. Using regression analysis and correlation analysis the results were listed below.

Model	Un standardized Coefficients		Standardized Coefficients	t	Sig.
	B	St. Error	Beta		
1 (Constant)	-7.467	1.237		-6.034	.000
INFLATION	.131	.019	.252	6.939	.000
AWDR	1.618	.074	.966	21.966	.000
SRR	.793	.099	.330	8.028	.000

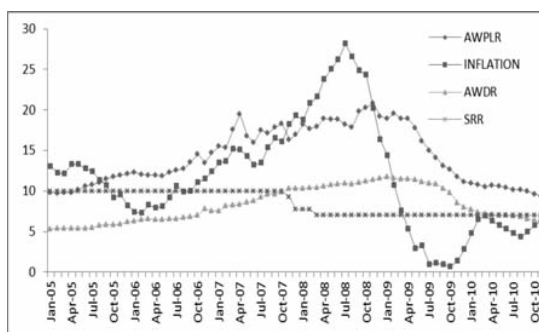
a. Dependent Variable: AWPLR

According to the output of the SPSS the complete statistical model is as follows

$$AWPLR = (-7.467) + 0.131 INFLATION + 1.618 AWDR + 0.793 SRR$$

This means, when inflation increased by one unit the AWPLR will increase by 0.131 units provided that other variable remain constant. If AWDR increased by one unit AWPLR will be increased by 1.618 units provided that other variable remain constant. Also, if SRR increased by one unit AWPLR will be increased by 0.793 units provided that other variable remain constant.

The graphical illustration also used to express the relationship between explanatory variable and dependent variable. The following graph was used to illustrate the dependent and independent variables.



Hypothesis Testing:

Researcher considered the hypothesis testing with a series of OLS (Ordinary Least Squares) estimations there are several tests involve and they are as follows:

t- Value Method

Data Steps	Inflation	AWDR	SRR
Develop hypothesis	$H_0 ; b_1 = 0$ (Null hypothesis , $b_1 = 0$) $H_a ; b_1 \neq 0$ (Alternate Hypothesis , b_1 is not equal to 0)	$H_0 ; b_2 = 0$ (Null hypothesis , $b_2 = 0$) $H_a ; b_2 \neq 0$ (Alternate Hypothesis , b_2 is not equal to 0)	$H_0 ; b_3 = 0$ (Null hypothesis , $b_3 = 0$) $H_a ; b_3 \neq 0$ (Alternate Hypothesis , b_3 is not equal to 0)
Decision	6.939 > 1.96 (Calculated Z value > Table Z value) Therefore, we reject the null hypothesis (H_0).	21.966 > 1.96 (Calculated Z value > Table Z value) Therefore, we reject the null hypothesis (H_0).	8.028 > 1.96 (Calculated Z value > Table Z value) Therefore, we reject the null hypothesis (H_0).
Conclusion	The coefficient of Inflation (b_1) is statistically significant at 5% significance level.	The coefficient of AWDR (b_2) is statistically significant at 5% significance level.	The coefficient of SRR (b_3) is statistically significant at 5% significance level.

Analysis of Coefficient of Correlation (R), Coefficient of Determination (R2)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.965 ^a	.932	.929	.947288

a. Predictors: (Constant), SRR, INFLATION, AWDR

According to the SPSS output the R is 0.965 which is close to 1 and it could determine there is stronger positive linear relationship in the model. R^2 is 0.932 , which means 93.2% of the variation of AWPLR is described by independent variables in the model i.e. INFLATION , AWDR and SRR.

Analysis on statistical significance of the individual regression coefficients

The researcher tested statistical significance of each individual regression coefficients using t- values and p – values. Also it is considered the level of significance $\alpha = 5\%$. The graphical description of dependent variable (AWPLR) is explained with each independent variable (Inflation, ADWR, and SRR) . Here tested statistical significance of individual coefficient of the model is reflected and it proved both coefficients are statistically significant. Further p- value method also proved the same result.

5.2 Analysis on statistical significance of the overall model

The Researcher tested statistical significance of each individual regression coefficients using t- values and p – values. The researcher has also used F test to verify the overall significance of the model and the SPSS output is given below;

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.969 ^a	.939	.936	.903699

a. Predictors: (Constant), AWDR, INFLATION, SRR

Based on the ANOVA table of SPSS, It was calculated that the F value is = 311.429. The results clearly indicate that the overall model is statistically significant even at 1% significance level. Therefore the model satisfy the basic assumptions.

Testing for Multicollinearity

The researcher used the pair –wise correlation to test the Multicollinearity of this model and found the following through SPSS output;

Model	t	Sign	Collinearity Statistics		
	Beta			Tolerance	VIF
(Constant)		-6.034	.000		
INFLATION	.252	6.939	.000	.758	1.320
AWDR	.966	21.966	.000	.515	1.940
SRR	.330	8.028	.000	.592	1.690

According to the output there is no multicollinearity in the model. That means there is no high correlation between independent variables (Inflation, Average Weighted Deposit Rate (AWDR) and Statutory Reserve Ratio (SRR). as a rule of thumb researcher use assumption if the VIF >10 only there exists a multicollinearity problem.

Conclusion

The study was done to identify the factors that affecting the Average Weighted Prime Lending Rate (AWPLR) of Commercial Banks in Sri Lanka. Inflation, AWDR and SRR were considered as the factors which affect AWPLR. The monthly data of AWPLR, Inflation, AWDR and SRR was obtained for the period from 2005 January to 2010 December and SPSS 16.00, Microsoft Excel were used to the analysis.

According to the SPSS output 93.2% of the variation of AWPLR is described by independent variables Inflation, AWDR and SRR. Also the adjusted R^2 is very close to R^2 which shows additional variable has not distort the explanatory power of the model. Further at 5% level of significance, over all model was statistically significant (tested using F test) and as well as the Individual coefficient too were statistically significant at 5% level of significance. (tested using t-test and p- value methods)

The research was limited with only three independent variables such Average Deposit Rate, Inflation and Statuary Reserve Ratio. Further study can be done in Sri Lankan context using other factors, as available in the table-1.1, which affect the Average Weighted Prime Lending Rate of a commercial bank.

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