The Relationship between Money Supply and Interest Rates: An Empirical Investigation in Sri Lanka

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Introduction

Monetary policy in Sri Lanka, targets maintenance of monetary growth that is consistent with economic and price stability and stability in the financial system. The primary tools of policy instruments are Central Bank policy interest rates. Economic theory offers two seemingly contradictory views on money and interest rate relationship (Monnet and Weber 2001). The liquidity effect view states that money and interest rates are negatively related (Christiano et al., 1999). Money is a decreasing function of the nominal interest rate because the interest rate is the opportunity cost of holding liquidity. In the Fisher equation tradition, money and interest rates are positively related. Increasing interest rates requires an increase in the rate of money growth. The Fisher equation states that the nominal interest rate equals the real interest rate plus the expected rate of inflation. This paper mainly focuses on the liquidity effect view and the Fisher effect view.

Most empirical studies have found a relationship between money and interest rates (Monnet and Weber 2001). Nevertheless there are not many studies done previously on Sri Lanka. The available studies have not used modern econometric methods for estimation, latestdata and coverage is narrow (Wijewardena, 1985; Silva, 1977). This scenario motivates us to analyze the relationship between money supply and interest rates in Sri Lanka using current data and up to date methods.

Objectives

The objective of this study is to examine the impact of money supply on interest rates. Furthermore this paper also investigates the implication of money supply and interest rates relationships on effective implementation of monetary policy.

Methodology

The empirical equation for testing the relationship between money supply and interest rates is derived from Fisher effect and liquidity effect views (Monnet and Weber, 2001). Based on this theory, the following empirical equation is developed.

$$r_t = \beta_1 + \beta_2 GREMS_t + \beta_3 IR_t + \beta_4 GRRGDP_t + U_t$$

where

r_t	- Nominal Interest Rate in period t,
$GREMS_t$	- Growth rate of excess money supply in period t,
IR_t	- Inflation Rate in period t,
$GRRGDP_t$	- The Growth rate of GDP in period t,
U_t	- Disturbance term in period t,

This study used quarterly data for the period 1977(1) to 2007(1V) obtained from Central Bank Annual Reports in Sri Lanka for estimation. Quarterly data for narrow money (M_1) and broad money (M_2) is deflated using the GDP deflator to obtain the real RM_1 (real M_1) and RM_2 (real M_2), excess money supply (RM_2 - RM_1). The Colombo Consumers Price Index (CCPI) is used to derive inflation rate (IR). Six alternative interest rates are utilized in the estimation. The GDP deflator is calculated using the GDP at constant factor prices (1996) and GDP current factor prices series published by the Central Bank. Since quarterly published data for GDP and GDP deflator are not available, the study will transform annual time series data into quarterly series using six disaggregation techniques. There are the NAIVE procedure, the LS procedure, the BFL-FD procedure, the BFL-SD procedure, the WS procedure and Chow-Lin procedure. For estimations, Augmented Dickey Fuller (ADF), the Phillips-Perron (PP) Test, Autoregressive Distributed Lag (ARDL) (Pesaran et al., 1997) and error correction model were used.

Results

The results of the unit root test shows that some GREMS (growth rate of excess money supply), GRRGDP (growth rate of real gross domestic product), IBCLR (interbank call loan rates) and IR (inflation rates) are stationary in level form. SR (saving rates), FDR_3, FDR_6, FDR_{12} (3 month, 6 month, 12 month fixed deposit rates), TBR (Treasury bill rates), BR (Banking rates) and WLR (loan rates with securities) variables were stationary in the 1st difference.

In the ARDL bound test results, this paper concluded that there is a long-run cointegration relationship between the variables of money supply and interest rates. The ARDL test results saggest that there is a negative relationship between the fixed deposit rates and real excess money supply. But, there are positive long run relationships between the saving interest rates and inflation rates. The results indicate that this analysis satisfies the implication of both the Fisher and liquidity effects views.

The results of the short run dynamic coefficients (ECM) show that interest rates are not statistically significant impact on real money supply in the short term and fairly high speed of adjustment to equilibrium after a shock. In the bound test results, there are joint long-run causality cointegration relationship among the variables of money supply and interest rates in Sri Lanka. According to ARDL based causality test, there are negative long run relationships among the fixed deposit rates, saving interest rates, interbank call loan rate and real excess money supply.

Conclusion and Policy Recommendations

This study examined the relationship between money supply and interest rates. Findings revealed that there is negative relationship between excess money supply and saving interest rates and positive relationship between excess money supply and fixed deposits interest rates in the long run. Furthermore, the conclusion of this research verifies the meaning of both Fisher and liquidity effect views. It is clear that there is a long term reciprocal relationship between money supply and saving interest rates and positive relationship between fixed deposit rates and money supply. The Fisher effect view suggested that there are positive relationships between money and interest rates. Increasing interest rates requires an increase in the rate of money growth. The Fisher equation states that the nominal interest rate equals the real interest rate plus the expected rate of

inflation. The increase of money supply leads to increase in expected rate of inflation. According to Fisher's, the view when the expected rate of inflation increases, the fixed deposit interest rates increase. Therefore fixed deposit interest rates are very sensitive to money supply and expected rate of inflation. The increase of excess money supply leads to increase in commercial banks liquidity power. The increased liquidity power can be controlled by the Central Bank statutory reserve requirement (SRR). When Central Bank increases their SRR, commercial banks will decrease their saving rates. We conclude that there is a negative relationship between excess money supply and saving rates in Sri Lanka.

References

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