

The Causal Relationship between Interest Rates and Exchange Rate in Sri Lanka

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Introduction

The exchange rate has (the Sri Lankan rupees against US dollar) depreciated from 1986 to 2013 in Sri Lanka (CBSL, 2013). It means the loss of value of Sri Lankan currency with respect to US dollar. The exchange rate is affected by many components including interest rate as one of those macroeconomic variables. According to the exchange rate channel indicated in Monetary Transmission Mechanism, it can work through either net exports or import prices. Increased money supply tends to lower the interest rate leading to a depreciation of the exchange rate. The depreciation of the exchange rate also raises import prices, which directly affect the several price levels, thus creating inflation (Amarasekara, 2005).

The theoretical as well as empirical relationship between interest rates and exchange rates has been a debatable issue in economics literature. Dash (2004) found that call money rate has negatively and significantly influenced the exchange rate in India. In other words, declines in the value of the exchange rate have prompted monetary authorities to raise domestic interest rates. Another study by Wilson & Sheefeni (2014) found that for Namibia, there is no relationship between interest rates and exchange rates. Kisaka (2014) found that exists a long-run relationship between the foreign exchange rates and interest rates and

there is unidirectional causality running from interest rates to foreign exchange rates in Kenya. Since the causation runs from interest rates to foreign exchange rates then authorities in the Kenyan financial markets use interest rates to stabilize the foreign exchange rates in Kenya. Tafa (2015) found that in the case of Albania, an increase in interest rates of deposits in ALL, caused the exchange rate of ALL/USD to increase, with USD becoming more expensive. While in the case of EUR/ALL exchange rate, it was found that when interest rate in ALL deposits increase, ALL was appreciating against Euro. Therefore, Lek (currency of Albania) was becoming more expensive. Kayhan (2013) interest rate affects exchange rate in only China and this effect exist only in the long run. On the other hand, exchange rate shocks induce changes in interest rate in the shorter period. In Sri Lanka, although the causal relationship between inflation and exchange rate for instance, Perera (1997) found that even though Exchange Rate effect on Consumer price index, does not effect on wholesale price index in Sri Lanka. And also a dynamic relationship between activities of share market and short run interest rates has been attracted by previous researchers, there is lack of studies about the relationship between interest rate and exchange rates in Sri Lanka.

On the other hand, previous researchers used only one interest rate for their research even though there are various different interest rates pertaining to diverse financial assets which are expected to have different relation with exchange rates. This study attempts to fill this void by examining the causal relationship between different interest rates and exchange rate in Sri Lanka.

Objective

The objective of this study is to examine the causal relationship between different interest rates and exchange rate in Sri Lanka.

Methodology

This study used data from Sri Lanka over the period of 1986-2013. The data was extracted from the annual reports of Central Bank of Sri Lanka. Nominal Exchange Rate (NER) represented by the Sri Lankan rupees against US dollar and the interest rate represented by the central Bank Rate (BR), Average Weighted Prime Lending Rate (AWPLR), Commercial Bank Savings Deposit Rate (CBSDR), Commercial Bank 12 months Fixed Deposit Rate (CBFDR) and 91 days Treasury Bill Yield Rate (TBYR) were used. Since there are various different interest rates pertaining to diverse financial assets. ADF test and PP test was used to test the stationary property of time series data and Granger Causality test was adapted to identify the direction of causality between variables. Engle-Granger co-integration is used to investigate the long run relationship between variables.

Results and Discussion

The results of unit root tests confirmed that all variables except exchange rate are stationary at their first difference suggesting that they are integrated in order one. Since all interest rate are represented by percentage value and they are stationary at their first difference, we also transform the exchange rate in percentage value by taking first difference of logarithm in order to get the same order of integration. This form of exchange rate is stationary at its first difference. Therefore, all the series that are considered under this study is stationary at their first difference.

In order to determine the causal relationship between the variables, Granger Causality test was used. The results are presented in Table 1. As shown in Table 1, in all cases null hypothesis is accepted since probability value is greater than the significance level of 1 % or 5 % or 10 % suggesting that each interest rate does not granger causes exchange rate. And also exchange rate does not granger causes each interest rate respectively.

Table 1: Results of Granger causality test

Null Hypothesis (H_0)	Obs.	F- statistic	Prob.
BR does not granger causes NER	25	1.863	0.1860
NER does not granger causes BR		0.055	0.8163
AWPLR does not granger causes NER	25	2.593	0.1215
NER does not granger causes AWPLR		0.272	0.6068
CBFDR does not granger causes NER	25	0.018	0.8941
NER does not granger causes CBFDR		0.157	0.6952
CBSDR does not granger causes NER	25	0.352	0.5585
NER does not granger causes CBSDR		1.072	0.3117
TBYR does not granger causes NER	25	1.565	0.2240
NER does not granger causes TBYR		2.9e-07	0.9996

Note: *, **, *** represents significance at 10 %, 5 %, 1% level of significance respectively

It revealed that there is no causal relationship between interest rate and exchange rate of Sri Lanka. Both variables are I (1) and error term is I (0) required the co-integration test on order to identify the long run relationship. The result of Engel Granger cointegration for NER and BR is given below:

$$NER_t = 46.51881 + 1.879962BR_t$$

The results reveal that there is a positive but insignificant relationship between NER and BR in the long run. Next the result of Engel Granger cointegration for NER and CBFDR is given below:

$$NER_t = 150.4456 - 6.176078CBFDR_t$$

The results reveal that there is a negative and significant relationship between NER and CBFDR in the long run. Next the result of Engel Granger cointegration for NER and CBSDR is given by:

$$NER_t = 164.3168 - 11.65930CBSDR_t$$

The results reveal that there is a negative and significant relationship between NER and CBSDR in the long-run. Next the result of Engel Granger cointegration for NER and AWPLR is given by:

$$NER_t = 168.4426 - 5.964090AWPLR_t$$

The results illustrate that there is a negative and significant relationship between NER and AWPLR in the long-run. Finally, the result of Engel Granger cointegration for NER and TBYS is given below:

$$NER_t = 127.9410 - 3.877113TBYS_t$$

The results reveal that there is a negative and significant relationship between NER and TBYS in the long-run.

In the long-run, higher interest rates make it more attractive to save in the markets relevant to each interest rates, therefore more investors will switch to that markets to invest, then exchange rate decrease (Sri Lankan rupees seems to appreciate against US dollar) therefore the value of the rupees will increase in Sri Lanka.

Conclusion

The study mainly focuses on investigating the causal relationship between interest rates and exchange rates in Sri Lanka for the period of 1986-2013. The results reveal that there is no causality relationship between interest rates and exchange rate. But there are long-run relationship between nominal exchange rate and each interest rate except bank rate. Thus, in the long-term, higher interest rates make it more attractive to save as saving deposit and fixed deposit in the Sri Lanka, therefore more investors will switch to the Commercial bank. Therefore the value of the rupees will increase. When a central bank raises Treasury bill yield rates (yields rise, and bond prices fall), the currency appreciates as it becomes more attractive to hold. Therefore, interest rates fluctuations are important for the financial market actors, speculators and traders in international market. They should take into account interest rate changes in order to avoid probable losses causing

from exchange rate shocks. Authorities in the Sri Lankan financial market can use interest rates to stabilize the foreign exchange rates in Sri Lanka.

References

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