

TESTING FOR LONG MEMORY IN THE LKR/USD EXCHANGE RATE: EVIDENCE FROM SRI LANKA

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Abstract

The question of whether exchange rate markets are efficient or not, is directly related to whether or not long memory is present in the exchange rate changes. Therefore, this paper explores the nature of the data generating processes of foreign exchange rate LKR against the US Dollar (USD), (LKR/USD) by examining the long memory properties of the LKR/USD return series based on econophysics models. In this study, autocorrelation function and spectral density function are used as visual test to inspect long memory of exchange rate returns. Further, parametric-ARFIMA model, Semi-parametric test proposed by Geweke and Porter-Hudak, Local Whittle estimator and non-parametric (R/S) test are employed as inferential tests to examine the long memory properties of the LKR/USD using daily data for the period from 2005-01-03 to 2016-12-30. Kernel density of LKR/USD return series show peak and fat tail postures. Visual inspection and inferential results reveal strong evidence of long memory property in the daily LKR/USD exchange rate return. It indicates that pricing by the market participants is not efficient. The results of this study have policy implications for traders and investors in designing and implementing trading strategies. It can also be helpful in predicting expected future return. Thus, the results of this study should be useful to regulators, practitioners and investors.

Keywords: ARFIMA, exchange rate, GPH, Local Whittle Estimator, Long Memory, Hurst Exponent .

1.0 Introduction

In a globalized world, today, exchange rate plays a prominent role in international trade. The behavior of foreign exchange rates is of great importance to international investors. The nature of exchange rate dynamics is important for traders and investors in foreign currency markets. Understanding of long range dependence (long memory) of exchange rate return dynamics can be helpful in estimating

expected return hence in designing, and implementing trading strategies. Hence, the study of the long memory property of exchange rate return is important for market participants. Long memory of exchange rate is a topic that has not received its due attention from academics in Sri Lanka.

The aim of this study is to examine long memory in the LKR/USD exchange rate in two steps. First, we employ traditional unit