



# Journal for Studies in Management and Planning

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# The LKR/JPY Rate and the UIP

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**Abstract:** *Of the main theories that explore on Interest rates and exchange rates, Uncovered Interest Rate Parity (UIP) states that the interest rate differential is an unbiased predictor of the spot exchange rate changes. The impact on investors is that there would be no short term arbitrage profits. Studies based on the relationship between these two variables are rare for developing countries like Sri Lanka. Therefore in order to bridge that gap identified through search for literature, Autoregressive Distributed Lags method was employed here to test the UIP. Monthly data on exchange rates and three month risk free interest rates with regard to the selected major external trader, Japan for the period from 2001-2014 were used for this purpose. The findings reveal that UIP does not hold in the short run but there is*

*evidence for UIP to hold in the long run for Sri Lanka.*

**Key words:** Autoregressive Distributed Lags (ARDL) Model, Exchange Rates, Interest Rates, Uncovered Interest Rate Parity (UIP), Unit root tests.

**JEL:** F31, F41, P45

## 1. Introduction

In an integrated financial system, global fund transfers are a noticeable feature. Hence it is reasonable to expect efficiency in financial markets and the existence of active investors who respond to the pricing inefficiencies.

The theoretical explanation of the relationship between the exchange rates

and interest rates comprise of Covered Interest Rate parity (CIP) and UIP. CIP Theory suggests that the forward premium associated with a foreign currency would be equal to the interest rate differential between risk free investments denominating the currencies. This assumes that the forward market is used to cover against the foreign exchange rate risk. UIP assumes that the investors are risk neutral and the forward market would not be used simultaneously to cover against the foreign exchange rate risk. Therefore it is an equilibrium market condition where there is no opportunity for arbitrageurs. Investors would be indifferent towards the returns on domestic and foreign assets when denominated in same currency.

In an economic setting where UIP is found to hold, it assumes free capital movement among countries and subsequently no exchange rate risk. Active investors would always seem to move their funds to investments opportunities: even foreign, that yield a higher rate of return. Also the study of the relationship between forward exchange rates and interest rate differential becomes significant in determining the effectiveness of derivatives priced with forward exchange rates as a mode of capital investment.

The direction of foreign exchange rates between major trading partner, Japan and Sri Lanka have been analyzed in this study in order to test whether insights could be drawn from interest rates for forecasting the future foreign exchange rates. The focus is to analyze the ability of interest rates to forecast the currency rates that would be important in trade with the world.

The organization of the paper is as follows. The next section provides a discussion about the existing literature on UIP. Section 3 describes the major theoretical derivation of UIP. Section 4 explains the data used for the estimation. Section 5 presents results and finally section 6 gives the conclusion.

## 2. Review of Literature

Some of the researchers have adapted a macroeconomic approach to analyze exchange rates. The other method used in the analysis of exchange rates is the incorporation of variables that were used in time series analyses in other studies.

Random Walk Model is widely used as a univariate model due to its wide availability and simple predictions. Most of the researchers have concluded that the exchange rate forecasts have shown mixed results with justifying a simple random walk model. (Meese and Rogof, 1983). In contrast, the argument of Savickas, Guo (2005) using quarterly data is that random walk model does not hold for the exchange rates. Multivariate models have been used often by researchers when analyzing the liberalized exchange rate policies and monetary policy actions of Emerging Market Economies (EMEs).

Researchers like Calvo and Reinhart (2001 and 2002) and Eichengreen (2005) have shown that there are differences evident in the analysis of advanced economies and emerging economies. These differences were identified as credibility problems, high rate of exchange rate pass through, liability dollarization, non stationarities in the inflationary process etc. EMEs are

responsible for exchange rate flexibility up to a small degree. Bansal and Dahlquist (2000) have found that the UIP works systematically better for developing countries while for developed countries the UIP hypothesis is generally rejected.

The findings of the researchers reveal that the degree of exchange rate pass through is higher for EMEs than that for the advanced economies. It was also revealed that the trend in exchange rate pass through is recorded to be comparatively lower for Asian countries and to be higher in Eastern and Central Europe and Latin America. Shreshtha, A. (2005) found that UIP could exploit only a smaller variation in exchange rate changes for advanced nations such as Japan and no evidence was found for proving that UIP holds.

Basurto G. and Ghosh A. (2000) have conducted a study on the sharp exchange rate depreciations in the East Asian Crisis. The study revealed that tight monetary policies are associated with the appreciation of exchange rates in the countries under concern. (Indonesia, Korea and Thailand). The finding was that during the Mexican crisis, although the governments tightened the monetary policies, the exchange rates have continued to depreciate. They also unveiled that there is little evidence to say that a higher interest rate contributes to a widening of the risk premium.

Zhang J. and Dou Y. (2010) have revealed that the use of IRP generally works well in forecasting foreign exchange rates and the forecasting ability has been depleted in

recent years when compared to the previous years..

Dharmadasa, C. (2010) has carried out a study regarding the Sri Lankan context covering the period from January 1990 to December 2011 using the Generalized Method of Moment (GMM) estimation. The outcomes revealed that UIP condition does not hold for Sri Lankan context. Nirmalee H. and Rajapakse R P C R(2016(b)), used monthly data on exchange rates and three month risk free interest rates with regard to the United Kingdom for the period from 2001-and found that there is no evidence to prove the existence of UIP for the selected currency compared against the Sri Lankan Rupee.

After a careful study of the literature Nirmalee H. and Rajapakse R P C R(2016(a)), found that there exists a research gap for the Sri Lankan context on the conduct of studies concerning the involvement of exchange rates and economic variables like interest rates particularly for developing countries. Only a limited number of studies are available for analyzing the UIP for Sri Lankan context. (Dharmadasa, C. (2010); Weerasinghe, et al. (2006); Sivarajasingham, et al. (2012); Nirmalee H. and Rajapakse R P C R(2016(b)).

### 3. Method

#### 3.1 Data Collection

Secondary data on foreign exchange rates between LKR/JPY were collected from 2001 to 2014. monthly average of foreign exchange data and three month treasury bills rates to represent interest rates were used.

Foreign exchange rates were collected from the website [www.usforex.com](http://www.usforex.com) and interest rates were collected from International Financial Statistics. The derivation of UIP had been done based on the Covered Interest Parity (CIP) Condition. The derivation is based on the assumptions of unbiasedness, rational expectations of investors and risk neutrality assumptions. The CIP condition could be expressed as below.

$$f_t^n - s_t = i_t^d - i_t^* \quad (1)$$

Where  $f_t^n$  is the natural logarithm of forward exchange rate for maturity in  $n$  number of periods,  $s_t$  being the natural logarithm of spot exchange rate at time  $t$ , and,  $i_t^d$  and  $i_t^*$  are domestic and foreign interest rates respectively. Although the covered interest parity condition is not a reality in practice, it should be assumed to hold regardless of the investor perspective or preference.

If the investors are risk averse, then the forward rate would necessarily contain a risk premium to compensate for the future risks and it is depicted by the following formula

$$E_t s_{t+1} - s_t = i_t^d - i_t^* - \mu_{t+1} \quad (2)$$

Where,  $s_{t+1}$  is the logarithm of future spot exchange rate,  $E_t$  represents expectations of future exchange rate at time  $t$  and  $\mu_{t+1}$  is the future risk premium.

The assumptions upon which the study is based on could be utilized for the formation of the UIP condition. Risk neutrality is one of the assumptions and it could be illustrated as follows.

$$\mu_{t+1} = 0$$

Rational expectations hypothesis could be illustrated as follows.

$$s_{t+1} = E_t s_{t+1} + \varepsilon_{t+1} \quad (3)$$

The derivation of UIP is subsequently arrived by substituting equation (2) to (3).

$$s_{t+1} - s_t = i_t^d - i_t^* + \varepsilon_{t+1} \quad (4)$$

The following equation is then derived for the UIP testing purposes.

$$\Delta s_{t+1} = \alpha + \beta(i_t^d - i_t^*) + \varepsilon_{t+1} \quad (5)$$

$\Delta s_{t+1}$  is used to denote the logarithm of exchange rate yield or the percentage change in exchange rate changes,  $i_t^d$  denotes domestic interest rate and  $i_t^*$  denotes the foreign interest rate. The term  $\alpha$  represents the intercept term and  $\beta$  represents the sensitivity of local interest rate to foreign interest rates.

The procedure of testing is based on the hypothesis testing where the null hypothesis:

$H_0: \alpha = 0$  and  $\beta = 1$ . In order to assure that UIP holds, the slope coefficient should be significantly negative.

The above formulae could be considered as the UIP relationship. Further, UIP is assumed to be a perfect assumption for financial markets with no capital restrictions. In this study, it is assumed that the countries in the sample have minimum capital restrictions. Although the capital account of the country is partially open to the world, Sri Lanka is a South Asian Developing country with minimum barriers to capital flows. Based on this judgment, the UIP condition is tested for Sri Lankan context.



### 3.3 Autoregressive Distributed Lags Model

Stationarity of the data were checked using Augmented Dickey- Fuller (ADF) test and The Philips- Perron (PP)<sup>2</sup> test. The results reveal that the Exchange rate differential for USD are trend stationary I(0) and the interest rate differentials are integrated of order one I(1) and it compelled to choose an ARDL model to explain the relationship between the exchange rate differential and the interest rate differential.

To decide on the number of lags best suited for the model the study conducts models of lags 6 , lags 4 and lags 2 and check the Akaike Information Criterion (AIC) and the Schwarts Criterion (SC) . The best model is the one that gives the least value for the AIC and SC. Test is proceeded to check for the stability of this model (CUSUM test). According to the model, the number of lags appropriate for JPY was 4 lags. The equation generated by the E Views software as shown below.

$$d(\text{lyjp}) \text{ c } d(\text{lyjp}(-1)) \text{ d}(\text{lyjp}(-2)) \text{ d}(\text{lyjp}(-3)) \text{ d}(\text{lyjp}(-4)) \text{ d}(\text{lirdjp}(-1)) \text{ d}(\text{lirdjp}(-2)) \\ \text{d}(\text{lirdjp}(-3)) \text{ d}(\text{lirdjp}(-4)) \text{ lyjp}(-1) \text{ lirdjp}(-1)$$

A Wald test is conducted in order to test the long run relationship of the variable and having the following hypothesis (4 lags) in the case of JPY.

$$H_0: C(10) = C(11) = 0$$

$$H_1: C(10) = C(11) \neq 0$$

This was tested by using the Pesarans Bound Test at 5% significant level. (Lower bound 3.79 and upper bound 4.85). Depending on the outcome we run the long run models in order to understand the long run association of the variables.

$$LYJPY = \alpha + \beta \text{ LIRDJPY}$$

Consequently, residuals of the model would be incorporated in order to decide on the speed at which the variables will come back to long run equilibrium, and subsequently test for the short-run causality between the exchange rate differential and the interest rate differential by applying a

Wald test for the variables as follows for the JPY.

$$H_0: C(6) = C(7) = C(8) = C(9) = 0$$

$$H_1: C(6) = C(7) = C(8) = C(9) \neq 0$$

Finally a CUSUM test would be run in order to check the stability of the model.

## 4. Results and Discussion

### 4.1. Descriptive Statistics - Excess Returns

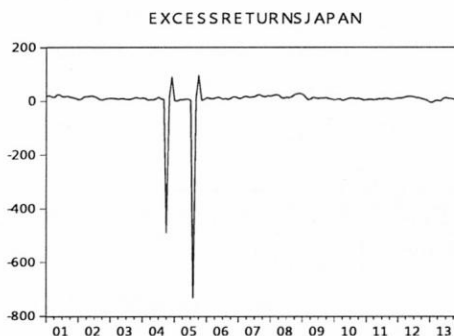
As a part of descriptive statistics, UIP was tested using excess returns which are computed as follows. Ray (2012).

$$\{(i_{t,k}^* - i_{t,k}^d) - \Delta s_{t,t+k}\}$$

The equation shows the interest rate of currency k at time t. it could be observed that the excess returns are stable over time, it could be inferred that UIP holds and if excess returns are not stable over time, it could be inferred that UIP does not hold.

The movement of the excess returns for the JPY is given below.

Figure 1: Monthly Excess Returns for JPY



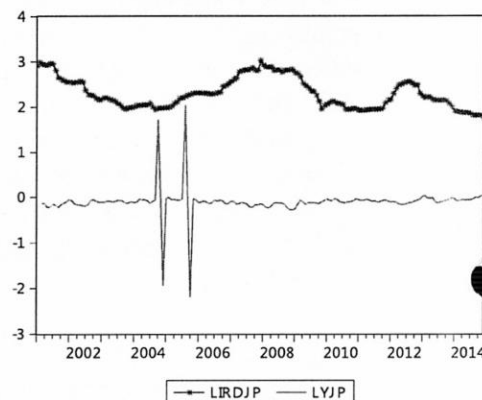
Source: Author's own estimations

The movement of the excess returns over time does not show stable condition relating to JPY and there is high volatility in excess returns throughout the time period considered.

## 4.2 Comparison of Interest rate differentials and exchange rate yields

The interest and exchange rate differentials are compared with using the graphical approach. It could be inferred that UIP holds if the two differentials are inversely related and if they are directly related, it would show that UIP does not hold.

Figure 2: Interest Rate Differentials and Exchange Rate Yields- JPY



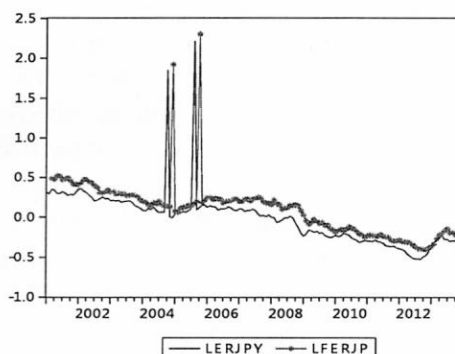
Source: Author's own estimations

This relationship shows the existence of UIP but it could not be significantly identified from the graph if a close look is not given. The relationship had been not been very strong especially between mid 2004 and 2006 where a huge appreciation occurred due to foreign inflows that resulted from inflows of funds for post Tsunami programs.

## 4.3 Comparison of Actual Exchange Rates and UIP Forecasted exchange rates

The forecasted exchange rate had always been higher than the actual exchange rate for the JPY. The movements of the forecasted rate coincide with the movements in the actual rate. This direct relationship is an average condition and it is not clearly distinguishable from the graph. This shows that UIP holds on average but not very strongly for the JPY.

Figure 3: Actual and Forecasted Exchange Rates- LKR/JPY



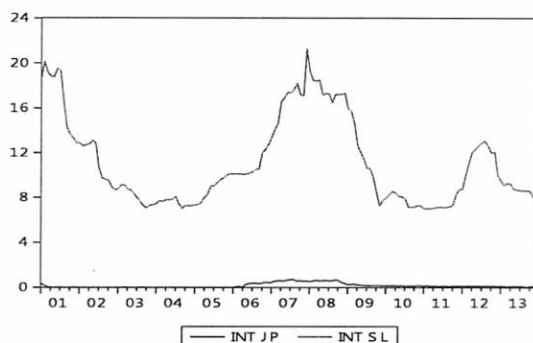
Source: Author's own estimations

#### 4.4 Descriptive Statistics on Interest Rates

When considering the interest rates of the Japan, the mean interest rate had been 0.148393 with a maximum of 0.69 and a minimum of -0.01. This shows the heavy variation caused in interest rates during the period 2001-2014 with a standard deviation of 0.195213.

The maximum interest rate for Sri Lanka was recorded as 21.30000 in December 2007 and the minimum was 5.740000 with an average of 10.79268. The range shows that there had been huge volatility during the period under concern which is also evident from the standard deviation figure of 3.965278. The reason behind the huge fluctuations could be attributed to many reasons such as the economic instability due to the war effects, natural disasters such as Tsunami etc.

Figure 4: Interest Rate Behavior

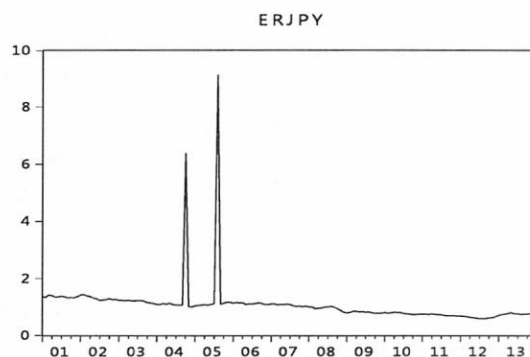


Source: Author's own estimations

#### 4.4.1 Descriptive Statistics on Exchange Rates

The maximum and the minimum exchange rates between Japan and Sri Lanka had been 9.151107 and 0.593669 respectively with a median of 1.001022. The standard deviation is higher at 0.787155 showing low volatility over the sample period. Therefore volatility rate of the exchange rate between Sri Lanka and Japan is high.

Figure 5: Exchange Rate Behavior



Source: Author's own estimations



## 4.5 Correlation Analysis

Pearson correlation coefficient between the exchange rates forecasted and the actual exchange rates (0.098) is weak but positive. This shows that there is a positive relationship between the actual and forecasted exchange rate. But the relationship is weak. Since the significance (.207) is greater than 0.05, it could be concluded that there is no statistically significant correlation between two variables.

When considering the differentials of interest rates and exchange rates, Pearson correlation is weak and negative (-.060). There is a negative relationship. Therefore when the home interest rate increase, home currency depreciates and vice versa. But the relationship is weak. It was also notified that there is no statistically significant correlation between two variables because the significance (.439) is greater than 0.05.

## 4.5 Autoregressive Distributed Lags Model (ARDL Model)

### 4.5.1 Test of Stationarity

The following table examines the stationarity of the variables.

Table 1: Test of stationarity

Interest Rate Differential								
Augmented Dickey Fuller Test					Phillips-Perron Test			
	Level Test	Critical value at 5%	First Difference	Critical value at 5%	Level Test	Critical value at 5%	First Difference	Critical value at 5%
JPY	-1.8338	-2.87882	-9.04389	-2.8788	-1.787	-2.878	-9.4775	-2.8788
Exchange Rate Yields								
Augmented Dickey Fuller Test					Phillips-Perron Test			
	Level Test	Critical value at 5%	First Difference	Critical value at 5%	Level Test	Critical value at 5%	First Difference	Critical value at 5%
YJPY	-5.2710	-2.88008	-9.60134	-1.9428	-5.27	-2.878	-9.6013	-2.8790

Source: Author's own estimations

Augmented Dickey Fuller Test and Phillips-Perron Test (PP)<sup>2</sup> had been employed here. Decisions were made following the null hypothesis (H0) of

presence of the unit root and the alternative hypothesis (H1) of stationarity. It is expected that three variables i.e. domestic interest rates, foreign interest rates and

exchange rates are to be integrated order I(1) and interest rates differentials and exchange rate yields should be at order I(0). The hypotheses are as below.

H0: series has unit root

H1: series has no unit root

According to the statistics, the interest rate differentials are not stationary in the level form and it becomes stationary only when the first difference is tested. The case is different with the exchange rate yields and it becomes stationary in the level form itself as shown in theory. Therefore the alternative hypothesis is being rejected in the level form test done for exchange rate

yields while it is rejected in the first difference case with regard to the interest rate differentials for all of the currencies.

With considering this feature, the most suitable analysis model for the study had been identified as the Autoregressive Distributed Lags (ARDL) Model.

#### 4.5.2 ARDL Analysis- LKR/JPY

The choice of the best number of lags for the ADRL Model for JPY had been justified as shown below.

Table 2: Akaike info criterion and Schwarz criterion for LKR/JPY

Number of Lags	Akaike info criterion	Schwarz criterion
6	0.256213	0.545532
4	0.244240	0.45477

Source: Author's own estimations

The Akaike information criterion shows the minimum value in when four lags are incorporated into the model and the Schwarz criterion shows its minimum value at 2 lags. The results are inconsistent in the two models and being prudent, the

study chooses four lags for the estimation model. The model for estimating the association between the interest rate differential and exchange rate yields could be represented in the linear format as below.

$$\gamma = \alpha + \beta x_n + \varepsilon$$

$$\gamma = 0.371877 + 0.943066x_1 + 0.285119x_2 + 0.306039x_3 - 0.012751x_4 - 0.211596x_5 - 0.23053x_6 - 1.923359x_7 - 0.250838x_8$$

In the equation, the last two variables are aimed at the long run association and the first four variables are aimed at testing the short run association. First, the long run association would be tested.

#### 4.5.2.1 Long run Association

The interest rate differential and the exchange rate yield would be tested using

the method of least squares for long run association.

Wald test is used to test the joint significance of a subset of coefficients, namely, interest rate differentials and exchange rate yields with respect to JPY. These two variables are individually insignificant based on t-tests with very high p values. But being cautious, the study tests the joint significance of them using Wald test.

Pesaran's critical value at 5% level unrestricted intercept and no trend is 3.79 in lower bound and upper bound value is 4.85. Since the F statistic (30.492) is more than the upper bound value, it paves the way to reject the null hypothesis. The two variables depict a long run relationship and thus move together in the long run.

The identified association for the long run is then tested with using an ordinary least squares.

$$LYJP = 0.178165 - 0.123561 (LIRDJP)$$

$$(t = 1.046256) \quad (t = -1.684932)$$

The regression results show that there exists a negative relationship as defined by UIP. Constant is not zero. (Therefore reject null hypothesis that constant equals to zero). Slope is different from one. (Therefore reject the null hypothesis that slope equals to one).

T statistic is greater than 0.05 for the coefficient. Therefore the results are insignificant. T statistic for the slope of the equation is less than the level of significance and hence it is significant. R squared is low indicating that the level of explanation of the changes in dependent variable by the changes in the independent variable is very low. F test measures the overall significance of a multiple regression model or a test of significance

of R squared. Therefore the model is significant. Durbin Watson statistic is used to see whether the variables in the model are co integrated. It suggests about the long run relationship between the variables. According to Durbin Watson statistic, there is evidence for the non-existence of first order serial correlation.

#### 4.5.2.2 Impact of Residuals within the model

Before examining the short run association between the interest rate differentials and exchange rate yields, the significance of the residuals within the model had been identified.

Table 3: Long run model with the impact of residuals- JPY

Method: Least Squares				
Included observations: 160 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.406661	0.162475	2.502915	0.0134
D(LYJP(-1))	1.153849	0.213553	5.403115	0.0000
D(LYJP(-2))	0.424467	0.176801	2.400812	0.0176
D(LYJP(-3))	0.450232	0.120958	3.722205	0.0003
D(LYJP(-4))	-0.016267	0.079865	-0.203675	0.8389
D(LIRDJP(-1))	-0.170792	0.401670	-0.425205	0.6713
D(LIRDJP(-2))	-0.016853	0.416520	-0.040460	0.9678
D(LIRDJP(-3))	0.329924	0.415701	0.793657	0.4287
D(LIRDJP(-4))	0.128806	0.405132	0.317937	0.7510
LYJP(-1)	-2.131770	0.253243	-8.417886	0.0000
LIRDJP(-1)	-0.275771	0.074239	-3.714615	0.0003
ECT(-6)	-0.221884	0.079834	-2.779314	0.0062
R-squared	0.683497	Mean dependent var		0.001345
Adjusted R-squared	0.659973	S.D. dependent var		0.445239
S.E. of regression	0.259627	Akaike info criterion		0.212899
Sum squared resid	9.976132	Schwarz criterion		0.443537
Log likelihood	-5.031895	Hannan-Quinn criter.		0.306553
F-statistic	29.05545	Durbin-Watson stat		1.985579
Prob(F-statistic)	0.000000			

Source: Author's own estimation

The value obtained for the ECT variable is negative and is justified with a high R squared of 68.3% and an adjusted R squared of 66% which could be considered as a precise estimation. The Durbin Watson statistic is 1.985579 which is K=15 and n=150. DW table value is 1.847 in the upper bound. Computed value in the model is lower than table value. Considering all these factors, this model

could be assumed to have serial correlation. 22.19% is the speed of adjustment to long run equilibrium.

#### 4.5.2.2 Short run Association

Short run association was tested using the Wald test done for the interest rate differentials. It assumes that the coefficients are zero and the test is run with keeping it as the null hypothesis.

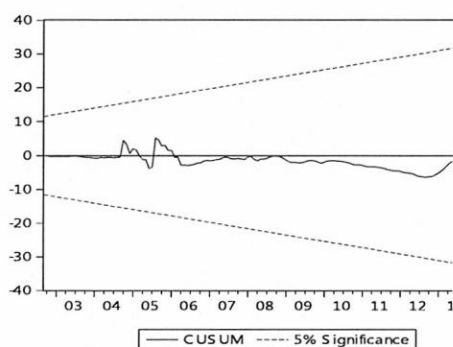
LYJP = 0.000751	-	0.638036 (LIRDJP (-1))	-	0.638036 (LIRDJP (-2))
(t = 0.021294)		(t = -0.942531)		(t = - 0.123809)
-0.086760 (LIRDJP (-3))	-	0.421788(LIRDJP (-4))		
(t = 1.377726)		(t = - 0.630573)		

The null hypothesis tested here is whether the coefficient is equal to zero. F statistic (0.275965) is greater than the test statistic estimated in the Wald Test. Therefore it could be concluded that the coefficient is not equal to zero. This could be taken for concluding that a short run association does not exist among the interest rate differentials and the exchange rate yields.

#### 4.5.2.2 CUSUM Test- LKR/JPY

The CUSUM Test tests the level of stability in the model. The result shows that there is no issue of recursive residuals in terms of mean and in terms of variance.

Figure 4.6: CUSUM Test- JPY



Source: Author's own calculations

## 5. Conclusions

The aim of this research was to test the UIP for JPY/LKR. ARDL model shows that there is no relationship between the two variables in the short run, but the variables are related in the long run implying that UIP condition between interest rate and exchange rate although exists is weak.

This is not in line with the previous studies. Nirmalee and Rajapakse (2016(b)) and (2016(c)) found that there was no relationship either short term or long term for the British pound or the US dollar.

The fact that the Sri Lankan financial markets are not well developed and the existence of the macroeconomic disturbances such as the instability in the financial markets due to the partial opening of the capital account to the outside world may have been major reasons for the lower predictability of the exchange rate. The underlying cause for the disequilibrium had been the information asymmetry.

## 6. References

- 1) Meese & Rogoff. Empirical Exchange Rate Models of the Seventies – Do they fit out of Sample”, *Journal of International economics*. North – Holland Publishing Company, 1983, 14, 3-24.
- 2) Calvo, Guillermo A, Carmen Reinhart. “When Capital Flows Come to a Sudden Stop: Consequences and Policy,” 2000, in Peter B. Kenen and Alexander K. Swoboda, eds., *Reforming the International Monetary and Financial System* (Washington, DC: IMF).
- 3) Calvo, Guillermo A. and Carmen Reinhart. “Fear of Floating” *Quarterly Journal of Economic*, 2000, 117(2), 379-408.
- 4) Bansal R, Dahlquist M. “The forward premium puzzle: Different tales from developed and emerging countries”, *Journal of International Economics*, 2000, 51, 115-144.

- 5) Basurto G, Ghosh A. "The Interest Rate-Exchange Rate Nexus in Currency Crises", International Monetary Fund Staff Papers, 2000, 47, 99-120.
- 6) Dharmadasa C. "Exchange Rate and Interest Rate Linkage: the Validity of Uncovered Interest Parity (UIP) in Sri Lanka", Lupcon Center for Business Research (LCBR) Archives, 2014.
- 7) Nirmali H, Rajapakse R P C R. "The Uncovered Interest rate Parity – A Literature Review" Imperial Journal of Interdisciplinary Research (IJIR), Finlogy Publications, 2016(a), 2, 6, 1346-1352.
- 8) Nirmali H, Rajapakse R P C R. "Test of Uncovered Interest Rate Parity for Sri Lanka-Evidence from LKR/GBP Rate" Proceedings of Intra Disciplinary Conference of Management Researchers, Sabaragamuwa University Sri Lanka. <http://www.mgt.sab.ac.lk/index.php/component/k2/item/122-icmr2016>, 2016(b).
- 9) Zhang J, Dou Y, "The Effectiveness of Interest Rate Parity", Journal Of Emerging Issues In Economics, Finance And Banking (JEIEFB), 2014, 3, 1.
- 10) Guo Hui, Savickas, Robert. "Foreign Exchange Rates Don't Follow a Random Walk." Working Paper, Federal Reserve Bank of St. Louis, 2005.
- 11) Shrestha, Keshab, Kok Hui Tan. "Real interest rate parity: Long-run and short-run analysis using wavelets." Review of Quantitative Finance and Accounting, 2005, 25-2, 139-157.
- 12) Weerasinghe E A, Ratnayake R M A K, The Time Series Analysis: the Behavior of the Exchange Rate in Sri Lanka, Proceedings of International Conference of Business Management, 2006.
- 13) Sivarajasingham S, Balamurali N, The Dynamic Behavior of Sri Lankan Exchange Rates: Evidence from Five Currencies of Main Trading Partners, Annual Academic Sessions, 2012, 276-280.