DOES FISHER EFFECT HOLD IN SRI LANKA? AN ANALYSIS WITH BOUNDS TESTING APPROACH TO COINTEGRATION

Prabhath Jayasinghe
Department of Business Economics, Faculty of Management & Finance, University of Colombo , Sri Lanka
prabhath@fmf.cmb.ac.lk

Thuraisingam Udayaseelan
Employees' Provident Fund Department, Central Bank of Sri Lanka, Sri Lanka
udayaseelan@cbsl.lk

ABSTRACT

Fisher Hypothesis implies a one-to-one long-term relationship between nominal interest rate and inflation. Though this one-to-one relationship does not hold in most of the financial markets, there exists strong evidence for a partial relationship between the two variables. This study inquires into the long-term relationship between nominal interest rate and inflation in the context of Sri Lankan financial markets. The study has two prime objectives. First, it examines the nature of the relationship between nominal interest rate and inflation in Sri Lanka. Second, it investigates whether there exists differences in this relationship across different frequencies of data such as monthly, quarterly and annual. As an alternative to the various methodologies used to test for Fisher Hypothesis with data for Sri Lanka, this study employs Autoregressive Distributed Lag bounds testing approach developed in Pesaran, Shin and Smith (2001). The main finding of the study is the evidence for the absence of a long-term relationship between nominal interest rate and inflation in Sri Lankan financial markets.

JEL Classification: E40, E43, E44, G10

Key words: Fisher hypothesis, ARDL models, Bounds testing, Cointegration, Sri Lanka

1. INTRODUCTION

Fisher (1930) hypothesis postulates that there is a one-to-one relationship between nominal interest rate and inflation assuming a constant real rate of interest over the long term. However, this does not mean that real interest rate is stable over time. The implication of the Fisher hypothesis is that the real rate of interest, the difference between nominal interest rate and the inflation rate, is basically determined by the real factors of the economy (Kinal and Lahiri, 1988). The one-to-one relationship between nominal interest rate and the expected inflation and the fact that real interest rate is determined by real factors also implies that the monetary policy measures cannot influence the real interest rate (Carmichael and Stebbing, 1983).

The presence of the Fisher effect in the financial markets has been a widely discussed topic. However, there is a dearth of studies that test for the Fisher effect in the financial markets of Sri Lanka. As such, this study focuses on two prime objectives. First, it attempts to examine the nature of the relationship between nominal interest rates and inflation in Sri Lankan financial markets. Second, it investigates whether the relationship between nominal interest rates and inflation differs across different frequencies of data.

The study is also warranted because the Sri Lankan government securities market and nominal interest rates have not been given enough attention by the researchers despite the fact that the market is continuously growing in size, availability and quality of infrastructure, number of participants, and volume of trading.
The structure of the study is as follows. Section 2 provides a brief review of literature on Fisher hypothesis. Theoretical background of the Fisher equation is outlined in Section 3. Econometric method employed is illustrated in Section 4, while Section 5 describes data and also performs some preliminary analysis of data. Empirical findings are reported in Section 6. Finally, Section 7 contains the concluding remarks.

2. A BRIEF LITERATURE REVIEW

Fisher hypothesis has been empirically studied extensively by using different measures for interest rates and inflation rates in both developed economies (Atkins and Coe (2002) on United States and Canada, and Chia-Yi (2001) on thirteen OECD Countries) and developing economies (Paul (1984) on India, Coppock and Poitras (2000) on 43 countries, Carneiro, Divino and Rocha (2002) on Argentina, Brazil and Mexico, Cooray (2002) on Sri Lanka, Nezhad and Zarea (2007) on Iran, Sathye, Sharma and Liu (2008) on India).

These studies are carried out by utilizing various econometric methods. For instance, there are studies that employ models such as Signal Extraction Framework (Garcia, 1993), Ordinary Least Squares (Shrestha and Chen, 1998; Cooray, 2002), Box-Cox (Hsing, 1997), Cointegration Analysis (Lee et el., 1998; and Hasan, 1999; Carneiro et al., 2002; Sathye et al., 2008), Unrestricted VAR (Atkins and Coe, 2002), Autoregressive Distributed Lag (Nezhad and Zarea, 2007) and Autoregressive Conditional Heteroskedasticity (Berument, 1999).

The empirical evidence on Fisher hypothesis is mixed and seems to be largely dependent on the estimation method, the sample period, the type of interest rate, countries in which the study was conducted, monetary policy regime, foreign exchange rate policy and proxy for inflation.

Mostly, Fisher hypothesis is supported in the US in particular and in other countries in general (Hasan, 1999). Lack of research on the Fisher effect in emerging economies may be due to the fact that the interest rates in emerging economies are mostly administered until recent times.

Payne and Ewing (1997) report that, among a few more less developed countries, Sri Lanka provides evidence supporting full Fisher effect. Cooray (2002) finds evidence for the presence of a Fisher effect in Sri Lanka in terms of both rational and adaptive expectations approaches. However, the adaptive expectations approach is more supportive for the evidence for the presence of Fisher effect than the other approach. In contrast, Udayaseelan and Jayasinghe (2010) finds no evidence for Fisher effect in Sri Lanka with quarterly and monthly data

3. THEORETICAL BACKGROUND OF THE FISHER EQUATION

The interrelation between nominal interest rate and inflation in computing the nominal return from holding a security for a certain period can be formally stated as follows:

$$(1+i_t) = (1+r_t)*(1+E_{t-1}\pi_t) \qquad (1)$$

where i_t is the nominal rate of interest; r_t is the real rate of interest; π_t is the rate of inflation and E_{t-1} is the expectations operator conditional on information at time *t*-1.

After making some manipulations, the following formula will be arrived:

$$i_t = r_t + E_{t-1}\pi_t + r_t E_{t-1}\pi_t \qquad (2)$$

In absolute equation given by (2), the last term on the right hand side is very small unless either the interest rate or expected rate of inflation is very high. By omitting this term, an action which is assumed to exert insignificant impact on results, one can obtain the following approximate equation:

$$i_t = r_t + E_{t-1}\pi_t \qquad (3)$$

However, this relation is not estimable. According to Fama (1975), in an efficient market, actual inflation can be decomposed into two parts: expected part and the foresting error, u_t, perpendicular to all information at time *t*. Formally,

$$\pi_t = E_{t-1}\pi_t + u_t \qquad (4)$$

Rearranging (4), substituting it into (3) and rephrasing the interest rate in a regression structure,

$$i_t = \beta_0 + \beta_1\pi_t + u_t \qquad (5)$$

If the Fisher hypothesis holds, then i_t and π_t should move together, which means that β_0 is stable in the long-term. If the real rate of interest is assumed to be constant, nominal rate must rise as inflation rises at the rate of increase in inflation rate. This one-to-one adjustment in nominal interest rate and inflation rate is termed as the Fisher effect.

4. DATA AND PRELIMINARY ANALYSIS

The study uses 91 day Treasury bill rate (i_t) and changes in Colombo Consumer Price Index (π_t) as proxies for nominal interest rate and inflation rate, respectively. 91TBR is selected as data is available for a longer period than other measures of interest rate. Though CCPI suffers from some deficiencies, it has been selected as it is the official measure of inflation. In addition, CCPI data is readily available for a longer period than other measures of inflation.

The study employs three data frequencies, monthly, quarterly and annual. Monthly and quarterly data cover a period from 1978 to 2007. Annual data comprises of observations ranging from 1953 to 2007. Due to the structural differences, this entire period is not taken as a single sample period and it has been divided into two subsample periods: 1953-1977 and 1978-2007. The study does not cover the period after April 2008 for any data frequency, as the compilation of CCPI came to a halt by April, 2008. Accordingly, there are four cases with three data frequencies to which all analytical tools are applied. Table 01 summarises the four cases.

Table 01: Data frequencies and samples used in the study

Frequency	Sample period
Monthly	1978:1 – 2008:4
Quarterly	1978:1 – 2008:1
Annual	1953 – 1977
Annual	1978 – 2007

The inflation rate is computed as follows:

$$\pi_t = \ln(CCPI_t / CCPI_{t-1})*100$$

where π_t is the inflation rate during time t-1 to t, $CCPI_t$ is the Colombo consumer price index of at time t, and $CCPI_{t-1}$ is the same price index at time t-1.

Tables 02 and 03 provide the descriptive statistics of inflation and interest rate for each frequency of data.

Table 02: Descriptive statistics of monthly and quarterly data

Statistics	Monthly Data		Quarterly Data	
	π_t	i_t	π_t	i_t
Mean	11.6	12.6	11.6	12.7
Median	10.0	12.7	11.7	12.7
Maximum	106.8	21.3	51.3	21.3
Minimum	-42.1	6.0	-20.5	6.0
Std. Dev.	19.9	3.0	14.2	3.0
Skewness	0.6	0.2	0.2	0.2
Kurtosis	5.2	2.5	3.2	2.8
JB Stat	102.3	5.8	0.9	1.4
Probability	0.00	0.05	0.61	0.49

Table 03: Descriptive statistics of annual data for two subsample periods

Statistics	1953–1977		1978–2007	
	π_t	i_t	π_t	i_t
Mean	2.9	3.3	11.6	13.7
Median	2.1	3.0	11.4	12.9
Maximum	12.3	9.0	26.1	21.3
Minimum	-1.6	0.6	1.4	7.2
Std. Dev.	3.4	1.8	5.0	3.9
Skewness	1.0	0.9	0.7	0.1
Kurtosis	3.4	4.4	3.9	1.8
JB Stat	5.0	5.6	3.6	1.7
Probability	0.08	0.06	0.16	0.42

All data frequencies show that, on average, the real rate of interest during the period of analysis is positive as the mean inflation rate is less than mean 91TBR. Irrespective of the data frequency, volatility of inflation is higher than that of interest rate in the cases of monthly data and subsamples of annual data. This observation notes that, on average, inflation risk is higher than interest rate risk.

Unit root test results are reported in Table 04. Both Augmented Dickey-Fuller (ADF) test and Phillips-Perron Test display similar results. 91TBR remains as an *I(1)* series, having unit root properties at one percent significant level. However, inflation, being the change in *CCPI*, is a *I(0)* series and implies the properties of stationarity. As the two variables in question are not of the same order of integration, conventional cointegration techniques, instrumental method or ordinary least square methods are not appropriate. This forces the researchers to look for an alternative analytical tool to examine the long-term relationship between interest rate and inflation in Sri Lanka.

Table 04: Unit root test results

Frequency	Series	Without trend	With trend
Panel A: ADF Test			
Monthly	i_t	-3.41**	-3.42*
	π_t	-6.14***	-6.12***
Quarterly	i_t	-3.17**	-3.17*
	π_t	-6.57***	-4.33***
Annual	i_t	-2.61	-2.58
	π_t	-4.61***	-4.77***
Panel B: Phillips-Perron Test			
Monthly	i_t	-3.41**	-3.42*
	π_t	-14.55***	-14.52***
Quarterly	i_t	-3.12**	-3.17*
	π_t	-15.64***	-15.64***
Annual	i_t	-2.43	-2.42
	π_t	-4.61***	-4.76***

Notes: ***, ** and * denote the statistical significance at 1%, 5% and 10% levels, respectively.

5. ECONOMETRIC METHOD

This study uses an econometric method that is different from the methods used by previous studies in examining the long-run relationship between the nominal interest rate and inflation suggested by the Fisher hypothesis. For example; Payne and Ewing (1997) used cointegration approach, while Cooray (2002) used instrumental variables approach. Udayaseelan and Jayasinghe (2010) employed instrumental variables approach for monthly and quarterly data and cointegration approach for annual data. Alternatively, this study adopts Autoregressive Distributed Lag (ARDL) bounds testing approach developed in Pesaran and Shin (1999) and Pesaran, Shin and Smith (2001) to test the Fisher hypothesis in Sri Lanka.

Cointegration procedure developed by Engle and Granger (1987), Johansen (1988) and others, Long-Horizon regression approach of Fisher and Seater (1993), Structural Vector Autoregression (VAR) method of King and Watson (1997) have been used to test Fisher effect. However, these methods require both the variables to be non-stationary at levels, or integrated in order one, *I(1)*. It is argued that the power of these unit root tests is somewhat low. The method used in this study, namely, ARDL modelling, does not impose such a restrictive requirement. Regardless of the unit root properties, *I(1)* and *I*(0), of the underlying variables, ARDL bounds testing approach can be used to analyze the long-term relationship between variables. Pesaran and Shin (1999) argues that ARDL approach can be used for two series, which are not integrated of the same order.

In examining the validity of the Fisher relationship in the Sri Lankan context, ARDL bounds testing approach can be thought of the most appropriate method of analysis, since the nominal interest rate has the unit root properties, *I(1),* whereas inflation series does not show such properties and is stationary, *I*(0), at level. There are only a few studies that employ ARDL bound testing approach to analyze the Fisher hypothesis in the literature. For instance, Atkins and Coe (2002) and Nezhad and Zarea (2007) use ARDL bounds testing approach to analyze the Fisher effect in the US and Canada and Iran, respectively.

As the independent variables may influence the dependant variable with a lag in time series analysis, it is sensible to include the lags of independent variables in the regression. In addition, dependant variable may be correlated with lags of itself, requiring the inclusion of the lag terms of the dependant variable in the regression as well. ARDL approach is based on these arguments to test for a long-run relationship between variables.

Consider the following ARDL(1,1) model which can be generalized to obtain a ADRL(*p,q*) model:

$$y_t = \varphi_1 y_{t-1} + \theta_0 x_t + \theta_1 x_{t-1} + u_t \qquad (6)$$

where φ_1, θ_0 and θ_1 are unknown parameters to be estimated and $u_t \sim iid\,(0, \sigma^2)$.

Suppose that x_t is an *I*(1) process represented by

$$x_t = x_{t-1} + e_t \qquad (7)$$

If it is assumed that all variables will converge to their equilibrium values in the long-run, $y_t = y_{t-1} = y^*$, $x_t = x_{t-1} = x^*$ and $u_t = 0$ for all t. Then, equation (6) becomes

$$y^* = \varphi_1 y^* + (\theta_0 + \theta_1)x^*$$

which can also be written as

$y^* = \beta x^*$ (8)

where $\beta = (\theta_0 + \theta_1) / (1 - \varphi_1)$ which can be treated as a long term multiplier.

An unrestricted error correction model can be derived from (6). Subtracting y_{t-1} from both sides of (6),

$\Delta y_t = -(1 - \varphi_1)y_{t-1} + \theta_0 x_t + \theta_1 x_{t-1} + u_t$ (9)

Substituting (7) into (9) and rearranging,

$\Delta y_t = -(1 - \varphi_1)y_{t-1} + (\theta_0+\theta_1)x_{t-1} + \theta_0 e_t + u_t$ (10)

Since $e_t = x_t - x_{t-1} = \Delta x,$ (10) will become

$\Delta y_t = -(1 - \varphi_1)y_{t-1} + (\theta_0+\theta_1)x_{t-1} + \theta_0\Delta x, + u_t$ (11)

which can also be expressed as

$\Delta y_t = \alpha y_{t-1} + \theta x_{t-1} + \psi\Delta x_t + u_t$ (12)

where $\alpha = -(1 - \varphi_1)$, $\theta = (\theta_0 + \theta_1)$ and $\psi = \theta_0$.

The following Error Correction Model (ECM) can be obtained from (12):

$\Delta y_t = \alpha(y_{t-1} + \beta x_{t-1}) + \psi\Delta x_t + u_t$ (13)

where β is the long-term cointegration parameter and can be represented as $\beta = \theta/\alpha = (\theta_0 + \theta_1) / (1 - \varphi_1)$ and α is the speed parameter.

In terms of the unrestricted ECM given by (12), the joint null hypothesis to be tested, which implies the absence of a long-term relationship between x and y, is $\alpha = \theta = 0$. The joint alternative hypothesis, the acceptance of which provides evidence for the presence of a long-term relationship between the two variables, would be $\alpha \neq 0$ and $\theta \neq 0$.

Testing the joint statistical significance of α and θ is performed with the help of a F test. However, in ARDL modeling, standard critical values of the F statistic are not effective. Since the order of integration can be either $I(0)$ or I(I), Pesaran et al (2001) suggest two sets of alternative critical values at each level of significance. One set which represents the lower bound assumes that all regressors are $I(0)$ and the other set that represents the upper bound assumes that they are $I(1)$.

If the computed F statistic is less than the lower bound for critical values (i.e. $F < F_L$), the null hypothesis of $\alpha = \theta = 0$ cannot be rejected. On the other hand, if the computed F value is greater than the upper bound for critical values (i.e. $F > F_U$), then the null hypothesis is rejected and this supports the view that there exists a long-term relationship between the two variables in question. However, if the computed F value lies between lower and upper bound critical values (i.e. $F_L < F < F_U$) the inference is said to be inconclusive and the order of integration of the variables in question has to be investigated further.

6. EMPIRICAL ANALYSIS

Data of monthly and quarterly frequencies are examined for the post-1977 period whereas annual data is analyzed under two subsample periods: 1953 – 1977 and 1978 – 2009.

Given that the interest rate (i_t) and inflation rate (π_t) are $I(1)$ and $I(0)$ processes, respectively, the following ARDL(p,q) model has been employed to test for the long-term relationship between two variables.

$$\Delta i_t = \omega + \alpha i_{t-1} + \theta\pi_{t-1} + \sum_{j=1}^{p}\delta_j\Delta i_{t-j} + \sum_{j=1}^{q}\gamma_j\Delta\pi_{t-j} + \psi\Delta\pi_t\lambda t + u_t \quad (14)$$

Some preliminary regressions show that time trend t is not significant in any of the cases except for annual data in sub sample period 1951-1977. However, the intercept is highly statistically significant in all cases. As such, the ECM in (8) was used with an unrestricted intercept and no time trend for all the cases (except for annual data sub sample for 1953-1977 for which the trend term is included). Optimal lag lengths for interest rate and inflation rate denoted respectively by p and q have been selected on the basis of AIC. For all cases $p = 1$ and $q = 1$.

F statistic is computed for all four cases to test for the joint null hypothesis that $\alpha = \theta = 0$. Results are reported in Table 05.

Table 05: ARDL bounds testing approach results

Data	F-	Cointegrated?

frequency	statistic	95%	99%
Monthly	4.57	No	No
Quarterly	5.52	Inconclusive	No
Annual	7.66	Yes	Inconclusive
Annual	2.21	No	No

Notes: Results are based on the following ARDL(1,1) model with an unrestricted intercept and no time trend: $\Delta i_t = \omega + \alpha i_{t-1} + \theta\, \pi_{t-1} + \delta\, \Delta i_{t-1} + \gamma\, \Delta\pi_{t-1} + \psi\Delta\pi_t + u_t$; Critical values suggested by Pesaran et al (2001) are as follows:

95%		99%	
$I(0)$	$I(1)$	$I(0)$	$I(1)$
4.94	6.84	5.73	7.84

As for the monthly and quarterly data, there is no strong evidence for a long-term relationship between interest rate and inflation as suggested by the Fisher Hypothesis. More specifically, at 95% confidence level, computed *F* value (4.57) is clearly less than the lower bound for critical values (4.94). This states that the joint null hypothesis of $\alpha = \theta = 0$ or no long-term relationship is not rejected for monthly data. At 95% confidence level, inference for quarterly data is inconclusive as the computed *F* value (5.52) lies between the lower and upper bounds for critical values (4.94 and 6.84, respectively). However, further investigation shows that quarterly data also supports the view that there is no long-term relationship between interest rate and inflation at 99% confidence level. This is because the computed *F* value (5.52) is clearly less than the lower bound for critical values at 99% confidence level.

Annual data shows somewhat different and interesting trend. As stated earlier, due to the underlying structural differences, the annual data from 1953 through 1977 has been divided into two subsample periods: 1953-1977 and 1978-2007. No evidence is found in support of the Fisher hypothesis under the latter sub sample period even at 95% confidence level. More specifically, the computed *F* value (2.21) is far below the lower bound for critical values (4.94). However, the computed *F* value for the former sub sample period (7.66) is greater than the upper bound for critical values (6.84) at 95% confidence level thus implying the presence of a long-term relationship between interest rate and inflation. Nevertheless, the inference becomes inconclusive when the test is performed at the 99% confidence level. Computed *F* value lies between the lower (5.73) and upper (7.84) bounds for critical values at a higher confidence level.

Cumulative sum of squared residuals (CUSUMSQ) test is performed to check the robustness of the *F* test results obtained for the annual data during the period 1953-1977. The test is based on the same regression and the results are reported in Figure 01 which proposes that the coefficients are not stable. The plot of CUSUMSQ does not stay within 5% significance level boundaries. On seeing these results, one may cast doubt on the validity of the presence of a long-term relationship between interest rate and inflation implied by the *F* test for annual data within the subsample period 1953-1977.

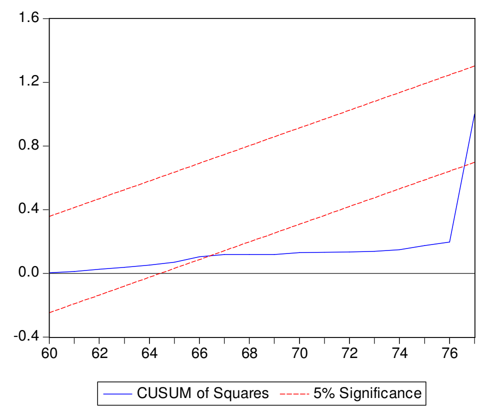

Figure 01: CUSUMSQ test results for annual data regression during 1953-1977

Overall, findings of this study hardly provide evidence for a stable long-term relationship between interest rate and inflation in Sri Lanka. These findings corroborate the findings of Udayaseelan and Jayasinghe (2010) which uses instrumental variable approach to analyze the same relationship.

Mixed results for Fisher effect in Sri Lanka during the sample periods may be due to the factors like the lack of transparency in managing public debt, deficiencies in CCPI and the use of non-market modes to borrow money to keep the cost of government borrowing down. These factors are likely to hinder the adjustment process of Treasury bill rates to be compatible with the inflation rate.

7. CONCLUSION

This study inquires into the long-term relationship between nominal interest rate and inflation, an important implication of the Fisher Hypothesis, in the context of Sri Lankan financial markets. In order to examine whether the results are consistent across various data frequencies, monthly, quarterly and annual data are used in the analysis. As an alternative to the econometric methods used so far in order to examine this relationship in Sri Lanka, this study employs ARDL bounds testing approach developed in Pesaran and Shin (1999) and Pesaran et al (2001).

Monthly and quarterly data clearly display the absence of a long-term relationship between nominal interest rate and inflation in Sri Lankan financial markets. Though, annual data during the period 1953-1977 provides some evidence for such a relationship at 95% confidence level, inference becomes inconclusive at 99% confidence level. CUSUMSQ test results for the annual data during that sample period show that the parameters generated by the relevant regression are not stable, a finding that will question the validity of the presence of the long-term relationship between the two variables during 1953-1977.

Overall, the study hardly provides evidence for the presence of a long-term relationship between nominal interest rate and inflation in Sri Lankan financial markets. This finding is consistent across various data frequencies.

REFERENCES

Atkins, J. A., and Coe, P. J. (2002). An ARDL bounds test of the long-run Fisher effect in the United States and Canada. *Journal of Macroeconomics, 24*, 255–266.

Cooray, A. (2002). Interest rates and inflationary expectations: Evidence on the Fisher effect in Sri Lanka. *South Asia Economic Journal, 3(2)*, 201–216.

Engle, R. F., and Granger, C. W. J. (1987). Cointegration and error correction: estimation and testing. *Econometrica, 55*, 251–276.

Fisher, M. E., & Seater, J. J. (1993). Long-run neutrality and super-neutrality in an ARIMA framework. *American Economic review*, 83, 402-415.

Gul, E. and Acikalin, S. (2008). An examination of the Fisher hypothesis: the case of Turkey. *Applied Economics, 40*, 3227–3231.

Hasan, H. (1999). Fisher Effect in Pakistan. *Pakistan Development Review*, Summer.

Johansen, S. (1988). Statistical analysis of cointegrating vectors. *Journal of Economic Dynamics and Control*, 12, 231-254.

King, R. G., and Watson, M. W. (1997). Testing long-run neutrality. *Federal Reserve Bank of Richmond Economics Review, 83*, 69-101.

Kutan, A. M., and Aksoy, T. (2003). Public information arrival and the Fisher effect in emerging markets: evidence from stock markets in Turkey. *Journal of Financial Services Research,* 23:3, 225–239,

Nezhad, M. Z., and Zarea, R. (2007). Investigating the causality Granger relationship between the rates of interest and inflation in Iran. *Journal of Social Science,* 3(4), 237–244.

Paul, T. M. (1984). Interest rates and the Fisher effect in India: an empirical study. *Economic Letters, 14*, 17–22.

Payne, J. E., & Ewing, B. T. (1997). Evidence from lesser developed countries on the Fisher hypothesis: A cointegration analysis. *Applied Economics Letters, 4*, 683–687.

Pesaran, H. M., and Shin, Y. (1999). An autoregressive distributed lag modelling approach to co-integration analysis. In: Strom, S. (Ed.), *Econometrics and Economic Theory in the 20th Century*: *The Ragnar Frisch Centennial Symposium*. Cambridge University Press, Cambridge.

Pesaran, H. M. Shin, Y. and Smith R. J. (2001). Bounds testing approaches to the analyzis of long-run relationships. *Journal of Applied Econometrics*, 16, 289-326

Sathye, M., Sharma, D., and Liu, S. (2008). The Fisher effect in an emerging economy: The case of India. *International Business Research, 1(2)*, 99–104

Udayaseelan, T, and Jayasinghe, P. (2010). The Validity of Fisher Effect: Evidence from Sri Lanka. *The Proceedings of the Seventh International Conference on Business Management.* University of Sri Jeyawardenapura, Sri Lanka.