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Growth performance and forecasts of FDI inflows to Sri Lanka

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Sri Lanka has strived hard to launch its economic reforms that favoured a greater role to FDI. The present study is an attempt to find the growth performance and forecasts of FDI inflows to Sri Lanka. The study concludes that Sri Lanka has not been able to attain the growth rate which can match the growth rate of FDI inflows to South Asia. South Asian aggregate FDI inflows have registered a growth rate of 24.58 percent during the period of 1991-2010. But, the growth rate in case of FDI inflows to Sri Lanka is as low as 9.31 percent. It means that its counterparts South Asian countries like India, Pakistan, and Bangladesh have registered higher growth rate than Sri Lanka. Keeping in view the past trends and future projections, Sri Lanka needs to put in place a comprehensive development strategy which includes being wide open to FDI. Efforts must be made to ensure that the actual inflows do exceed the forecasted figures

Keywords: Double Exponential smoothing; L-jung Box Q statistic; Forecasts,CAGR; Autocorrelation coefficient

INTRODUCTION

The last two decades have witnessed a dramatic world wide surge of FDI accompanied by marked change in the attitude of most developing countries towards inward FDI. As against highly suspicious attitude of these countries towards FDI in the past, most countries now regard FDI as beneficial for their development efforts and compete with each other to attract it. The success of South East and East Asian countries is attributable, to a large extent, to a high level of foreign investment and export promotion (Sury, 2004, p.44). This is precisely the reason that FDI is now welcomed and indeed actively sought by virtually all the developing countries of the world. Like other developing countries, South Asian economies have also focused their investment incentives largely on the foreign firms. Over the last two decades, market reforms, trade liberalization as well as more intense competition for FDI have led to reduced restrictions on foreign investment and expanded the scope of FDI in most sectors. However, the South Asian countries have mostly been

unsuccessful in attracting FDI (Sahoo and Nataraj, 2008, p.37). The global flows of FDI have taken a dramatic stride in recent years. The global FDI inflows rose from US \$ 154073 million in the year 1991 to US \$1243671 million in the year 2010. The FDI inflows to South Asia have escalated during the same period from meager US\$ 447 million to US\$ 31954 million (World Investment Report, 2010).

As far as Sri Lanka is concerned, prior to economic liberalization, it followed inward looking economic policies, which had limitations for foreign investors and free flow of FDI. Even then, during the period of 1950-1977, some measures had been taken to attract FDI. For instance, in 1966, was presented a white paper for FDI and also foreign investment advisory committee was set-up in 1968 in order to investigate and manipulate policies regarding foreign direct investment in Sri Lanka. With the market oriented economic policy accepted as being the most effective engine of growth, political entities have made it their top priority to create an investment friendly economic climate in 1977. Based on Foreign Investment Act in 1978, investment policies in Sri Lanka have been engineered to attract foreign investment. In addition, Sri Lanka has one of the longest democratic traditions in the

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region and over the past 20 years, successive governments have followed free market policies and continued to liberalize the economy. Investment has been actively canvassed and now there are over 1,000 companies from 55 countries operating in Sri Lanka. The country's investment laws are transparent and automatic across a wide range of sectors. There are no restrictions on the repatriation of earnings, profits, and capital proceeds (Athukorala, 2003, p.5).

Since the evolution of its FDI policy in 1977, Sri Lanka has strived hard to launch its economic reforms that favoured private sector led export oriented development including a greater role to FDI. The establishment of Board of Investment in 1992, with the powers of tax reliefs and administration discretion in all matters related to FDI, was an important step towards initiatives to attract FDI. Present study is an effort to find the growth performance and future prospects of FDI inflows to Sri Lanka.

Objectives of the study

The study has been conducted keeping in mind the following objectives:

To study the growth of FDI inflows to Sri Lanka

To generate the short term forecasts of FDI inflows to Sri Lanka.

Review of literature

There are quite a few but noteworthy empirical attempts made by researchers to examine the growth of FDI inflows and to generate the forecasts. Most notable studies finding growth trends of FDI inflows are : Kumar(1998), Radhakrishnan and Pradhan(2000), Mathur(2001), Nagraj(2003), Suri(2004), Kumar(2005), Badar(2006), Mehla and Singh(2007) and Sidhu and Dhingra (2009). As far as generation of forecasts is concerned, the literature keeps ample evidences of economic forecasting by many researchers such as : Nachane, Rao, Subbarao and Karnik (1981), Nanda (1988), Raman (1995), Kumar (2000), Srivastava and Choudhary (1999), Nagar (2001), Kumar, Thenmozhi and Rajendran (2004). Various variables have been forecasted in these studies like demand, production, export, population, unemployment and currency rates etc. In these studies different researchers have applied different forecasting models for generating forecasts ranging from simple and multiple regressions to the ones like Box-Jenkins ARIMA model, Double Exponential Smoothing model and Artificial Neural Networking model etc. Since our study is intended to generate forecasts regarding FDI inflows by making use of Double Exponential Smoothing Model (DES), the studies making use of this model are of our keen interest like : Sidhu and

Kumar (2006)¹ which generated the forecasts of number of units, employment, fixed capital and volume of production of sports goods industry of Punjab by applying Double exponential Smoothing Model and observed that the production level of the industry in the state will get a push but other variables will appear otherwise in the coming years. Bhardwaj and Kumar (2007) attempted to forecast by using DES model, the export demand of the sports goods industry of Punjab by the year 2014 and predicted that the foreign demand for the products of sports goods industry of Punjab would grow significantly in the coming years. Gupta and Kumar (2008) aim to generate the forecast of exports of leather industry of Punjab by fitting DES model and observe that these exports are going to rise optimistically by 2011.

As far as the literature regarding the forecasts of FDI inflows is concerned the rare use of forecasting is visible in economic literature. However, some pioneer attempts made are: Bashier and Bataineh(2007) made an attempt to generate the forecasts of FDI inflows to Jordan by applying univariate ARIMA model, built on Box-Jenkin's methodology. The empirical results which are based on the time series analysis for the period 1976-2003, have shown that FDI will follow an increasing trend over the period 2004-2025 and in the year 2025 Jordan is expected to receive FDI inflows to the tune of JDs 3214 million. Kumar and Singh (2008) in their study have performed a task of generating the forecasts of FDI to East Asia and South Asia with particular reference to China and India, by using Double Exponential Smoothing model. The study explains that East Asia has attracted 11.6 percent share of world FDI inflows on the average during the period of 1991-2006 whereas South Asia has received only 0.72 percent share. It is projected that by the year 2019- 2020, East Asia, represented by China is expected to receive FDI inflows 15 times more than South Asia, which is represented by India. Rajan, Rongala and Ghosh (2008) presented the forecasts of inwards direct investment to India for the years 2008 to 2012 and the projected figure of FDI inflows is US \$ 60 billion for the year 2012. The study also projects that the inwards direct investment as percentage of GDP will be 2.3 percent and as percentage of gross fixed investment as 5.7 percent by 2012. The present study is an attempt to generate the forecasts of FDI inflows to Sri Lanka by making use of DES model.

DATA BASE AND METHODOLOGY

The present study is based on secondary data and covers the period 1991 to 2010. The required data have been extracted from World Investment Report (UNCTAD).

To study the present position of FDI inflows to Sri Lanka, the compiled data has been arranged in the form of tables so that meaningful inferences can be drawn.

Percentage share of Sri Lanka in the FDI inflows of world, developing countries, Asian developing countries and South Asian countries is calculated. To find growth rates following exponential regression model has been fitted (Gujarati, 2004, p. 175).

$$Y_i = \beta_1 X_i^{\beta_2} e^{u_i} \dots(1)$$

In logarithmic form

$$\text{Log } Y_i = \text{Log } \beta_1 + \beta_2 \text{ log } X_i + u_i \dots(2)$$

Where Y_i - dependent variable
 X_i - independent variable
 β_1 and β_2 are unknown parameters
 U_i - disturbance term.

Using the ordinary least square method, estimated values of β_1 and β_2 denoted by

$\hat{\beta}_1$ and $\hat{\beta}_2$ have been calculated. Compound annual growth rate (Gr_c) has been computed by taking the antilog of estimated regression coefficient, subtracting 1 from it and multiplying by 100. (Gujarati, 2004, p. 179)

$$Gr_c = A.L. (\hat{\beta}_2 - 1) \times 100 \dots(3)$$

Since $\hat{\beta}_2$ is the estimate for β_2

In order to check the significance of growth rate student's 't' test has been applied (Gujarati, 2004, p. 135).

$$t = \frac{\hat{\beta}_2}{S(\hat{\beta}_2)} \sim t(n-2) \text{ d.f.} \dots(4)$$

where $S(\hat{\beta}_2)$ is the respective standard error.

Generating forecasts

The forecasts have been generated by applying Double Exponential Smoothing using Holt's approach. Since Double Exponential Smoothing model is best suited to address the type of data which exhibits either an increasing or decreasing trend over time. Moreover, in Double Exponential Smoothing model past observations are given exponentially smaller weights as the observations get older. In other words, recent observations are given relatively more weight in forecasting than the older observations. Exponential smoothing is frequently the only reasonable time series methodology in large forecasting systems

(Gardner,1985,p.23). Two equations associated with Double Exponential Smoothing, which help in forecasting, are as follows (<http://www.itl.nist.gov>).

$$f_t = \alpha \cdot Y_t + (1 - \alpha)(f_{t-1} + b_{t-1}) \dots(5)$$

$$b_t = \gamma \cdot (f_t - f_{t-1}) + (1 - \gamma) \cdot b_{t-1} \dots(6)$$

where:

Y_t is the observed value at time t.

f_t is the forecast at time t.

b_t is the estimated slope at time t.

α (Alpha) is the first smoothing constant, used to smooth the observations.

γ (Gamma) is the second smoothing constant, used to smooth the trend.

To adjust level at time t, the trend of the previous period b_{t-1} , is added to the last smoothed value of level component as shown by equation (5). Then equation (6) is used to update the trend component, which is expressed as the difference between the last two smoothed values. Since there might be some randomness remaining, the trend is modified by multiplying the trend in the past period ($f_t - f_{t-1}$) with γ and adding that to the previous estimate of the trend multiplied by $(1 - \gamma)$ (Gupta and Kumar, 2008, p.30; <http://www.itl.nist>).

The one-period-ahead forecast is given by:

$$F_{t+1} = f_t + b_t \dots(7)$$

The m-periods-ahead forecast is given by:

$$F_{t+m} = f_t + m b_t \dots(8)$$

Equation (7) is used to forecast the value for one period ahead and finally equation (8) was used to forecast ahead. For initialization process, grid search procedure was used on the software SPSS (version 7.5) and the values of two smoothing parameters α and γ were obtained. Only those values of α and γ were selected which corresponded to the lowest figure of accuracy measure used. The best value for the smoothing constant is the one that results in the smallest sum of the squared errors given by the following equation:

$$\text{Sum of Square of Errors (SSE)} = \sum e_t^2 = \sum (Y_t - \hat{Y}_t)^2 \dots(9)$$

Adequacy of the double exponential smoothing

Before generating forecasts it is imperative to check the adequacy of the forecasting technique used. Present study confirms the appropriateness of DES model to generate forecasts by making use of two identification

techniques namely autocorrelation function and Ljung-Box Test. Exponential smoothing when allied to appropriate identification technique constitute an even stronger competitor method to alternative univariate forecasting procedures (Chatfield, Koehler, Ord and Synder, 2001, p.158). To test the hypothesis of randomness as a mean to confirm the adequacy of the model used, autocorrelation coefficients and Ljung-Box Q statistic of residuals have been calculated.

Autocorrelation coefficient

The autocorrelation (Box and Jenkins, 1976) function has been used for the purpose of detecting non-randomness in data. Autocorrelations of residuals were worked out as under:

$$r_k(e) = \frac{\sum_{t=1}^{n-k} e_t \cdot e_{t+k}}{\sum_{t=1}^n e_t^2}; k=1,2,\dots,l \quad \dots(10)$$

Computed values of auto correlation coefficient, $r_k(e)$ and the lag k were displayed graphically to depict autocorrelation function (ACF) also known as correlogram. The 95% confidence interval for residual ACF was obtained by using Bartlett's approximation while calculating standard errors (Bartlett, 1946; Gupta and Kumar, 2008, p.31; <http://www.itl.nist>). Residual ACF, which lies within the 95% interval taken as insignificant and insignificance of ACF, implies adequacy of DES to generated forecasts.

Ljung-Box test

Out of a large number of tests of randomness we have selected Ljung-Box test which can be used to test multiple autocorrelation coefficients and instead of testing randomness at each distinct lag, tests the overall randomness based on a number of lags. For this reason, it is often referred as portmanteau (French word which refers to a coat rack that can hold many items of clothing on its hook) test. In this test we have considered the whole set of the values all at a time to see whether they are significantly different from zero. Ljung-Box Q statistics was computed from the model's residuals by using the following equation:

$$Q = n(n+2) \sum_{k=1}^L r_k \frac{(e)^2}{n-k} \quad \text{For } i = 1 \text{ to } k \dots(11)$$

Where Q is Portmanteau test statistic, n is the sample size, L is the number of lags being tested. Non-significance of Q test is taken to imply that the generated residuals could be considered as white noise, thereby indicating the adequacy of estimated model (Gupta and Kumar, 2008, p.31; <http://www.itl.nist>).

DISCUSSION AND RESULTS

The study has been divided into two sections. Section I discusses the present position of FDI inflows to Sri Lanka and presents the growth rate of FDI inflows to Sri Lanka. Section II explores the future prospects of FDI inflows to Sri Lanka by generating short term forecasts.

Section I

Sri Lanka's quantum of FDI inflows escalated nearly eight times in absolute sense from an amount of FDI equal to US\$ 67 million to US\$ 478 million during the period of 1991-2010. However, its FDI inflows constitute a very small percentage of FDI inflows of the world, of developing countries and even that of developing Asian Countries. It is clear from the Table 1 that Sri Lanka has received as small as 0.04 percent in the year 2010 which has marginally rose from 0.04 percent in the year 1991. The country received just 0.08 percent share of FDI inflows to the developing countries in the year 2010 which has rather declined from 0.17 percent in the year 1991. As percentage share of developing countries of Asia, Sri Lanka garnered 0.28 percent in 1991 and fell marginally to 0.13 percent in the year 2010.

If we look at Sri Lanka's position vis-à-vis other countries of South Asia as shown in Table 2, we observe that it is a small recipient of FDI inflows to South Asia. Its percentage share in the FDI inflows to South Asian aggregate was as high as 14.99 percent in the year 1991. Sri Lanka received good share of DI inflows to South Asia in the period 1991 to 1994, fluctuating in the period 1995 to 2000 but losing share in the subsequent years. We can observe that since the year 2000, it is perpetually having rank five in South Asia after the countries India, Pakistan, Iran and even Bangladesh. Its percentage share in aggregate FDI inflows of South Asia is as paltry as 1.50 percent in the year 2010.

As far as growth of FDI inflows is concerned, it is surprising to note that Sri Lanka has not been able to attain the growth rate which can match the growth rate of South Asia aggregate (see Table 3). South Asian aggregate FDI inflows have registered a growth rate of 24.58 percent during the period of 1991-2010. However, the growth rate in case of FDI inflows to Sri Lanka is as

Table 1. FDI inflows to Sri Lanka

Year	As percentage of world inflows	As percentage of inflows to developing Countries	As percentage of inflows to Asia	As percentage of inflows to South Asia	FDI inflows to Sri Lanka in US\$ million
1991	0.04	0.17	0.28	14.99	67
1992	0.07	0.23	0.37	16.31	123
1993	0.09	0.25	0.35	14.33	194
1994	0.06	0.16	0.24	8.51	166
1995	0.02	0.06	0.08	2.31	65
1996	0.03	0.09	0.14	3.93	133
1997	0.09	0.23	0.41	8.00	433
1998	0.02	0.08	0.16	3.82	150
1999	0.02	0.09	0.18	6.19	201
2000	0.01	0.07	0.12	3.56	173
2001	0.02	0.08	0.15	2.29	172
2002	0.03	0.11	0.20	1.84	197
2003	0.04	0.12	0.20	2.78	229
2004	0.03	0.08	0.13	2.18	233
2005	0.03	0.08	0.13	1.89	272
2006	0.03	0.11	0.17	1.73	480
2007	0.03	0.09	0.15	1.47	503
2008	0.04	0.11	0.20	1.45	752
2009	0.03	0.08	0.13	0.95	404
2010	0.04	0.08	0.13	1.50	478

Source: Authors' calculations on the basis of UNCTAD data

Table 2. Shares and Ranks of South Asian Countries in FDI inflows to South Asia

Year	Afghanistan		Bangladesh		Bhutan		India		Iran		Maldives		Nepal		Pakistan		Sri Lanka		South Asia
	Percent share in South Asia	Rank	Percent share in South Asia	Rank	Percent share in South Asia	Rank	Percent share in South Asia	Rank	Percent share in South Asia	Rank	Percent share in South Asia	Rank	Percent share in South Asia	Rank	Percent share in South Asia	Rank	Percent share in South Asia	Rank	
1991	0	9	0.22	8	0.22	8	16.78	2	5.15	4	1.57	5	0.45	6	60.85	1	14.99	3	100
1992	0	...	0.53	6	0	...	33.42	2	1.19	4	0.93	5	0	...	47.88	1	16.31	3	100
1993	0	...	1.03	5	0	...	39.29	1	15.36	3	0.52	6	0	...	29.47	2	14.33	4	100
1994	0	...	0.56	4	0	...	49.95	1	0	...	0.46	5	0	...	40.46	2	8.51	3	100
1995	0	...	3.27	3	0	...	76.38	1	0.32	5	0.25	6	0	...	17.47	2	2.31	4	100

Table 2. Cont.

1996	0.03	8	6.86	3	0.03	8	74.70	1	0.59	5	0.27	7	0.56	6	12.99	2	3.93	4	100
1997	-0.02	...	10.62	3	-0.02	...	66.85	1	0.79	5	0.20	7	0.42	6	13.13	2	8.00	4	100
1998	0	...	14.64	2	0	...	67.03	1	0.97	5	0.31	6	0.31	6	12.88	3	3.82	4	100
1999	0.18	7	9.51	3	0.03	9	66.73	1	0.49	5	0.37	6	0.12	8	16.37	2	6.19	4	100
2000	0	...	11.90	2	0	...	73.77	1	3.99	4	0.45	6	0	...	6.35	3	3.56	5	100
2001	0.01	8	4.71	4	0	...	72.91	1	14.43	2	0.27	7	0.28	6	5.10	3	2.29	5	100
2002	0.47	6	3.06	4	0.02	8	52.59	1	34.16	2	0.23	7	-0.06	...	7.69	3	1.84	5	100
2003	0.70	6	4.25	4	0.04	9	52.45	1	32.75	2	0.39	7	0.18	8	6.48	3	2.78	5	100
2004	1.75	6	4.30	4	0.03	8	54.03	1	26.96	2	0.50	7	0	...	10.45	3	2.18	5	100
2005	1.88	6	5.86	4	0.06	8	52.89	1	21.76	2	0.37	7	0.01	9	15.27	3	1.89	5	100
2006	0.86	6	2.85	4	0.02	8	73.07	1	5.92	3	0.23	7	-0.03	...	15.36	2	1.73	5	100
2007	0.71	6	1.94	4	0.23	8	73.91	1	4.87	3	0.27	7	0.02	9	16.30	2	1.47	5	100
2008	0.58	6	2.05	4	0.05	8	81.98	1	3.11	3	0.26	7	0.00	...	10.48	2	1.45	5	100
2009	0.44	6	1.65	4	0.04	9	83.96	1	7.10	2	0.26	7	0.09	8	5.51	3	0.95	5	100
2010	0.24	7	2.86	4	0.04	9	77.11	1	11.32	2	0.51	6	0.12	8	6.31	3	1.50	5	100

Source: Authors' calculations on the basis of UNCTAD data, World Investment Report, 2010.

Table 3. Growth of FDI inflows to Sri Lanka

Year	Sri Lanka	South Asia
1991	67	447
1992	123	754
1993	194	1354
1994	166	1950
1995	65	2816
1996	133	3380
1997	433	5414
1998	150	3928
1999	201	3249
2000	173	4864
2001	172	7513
2002	197	10705
2003	229	8239

Table 3. CONT.

2004	233	10695
2005	272	14411
2006	480	27821
2007	503	34297
2008	752	51901
2009	404	42458
2010	478	31954
CAGR 1991-2010	9.31*	24.58*

Source: World Investment Report, 2010 and authors' calculations Note: * significant at 5 percent level of significance.

Table 4. Performance and Potential of FDI inflows to Sri Lanka

Performance			Potential		
Year	Score	Rank	Year	Score	Rank
1990-1992	1.148	66	1990-1992	0.119	115
1991-1993	1.767	55	1991-1993	0.126	111
1992-1994	1.797	53	1992-1994	0.133	104
1993-1995	1.189	72	1993-1995	0.45	105
1994-1996	0.825	85	1994-1996	0.137	106
1995-1998	1.109	82	1995-1998	0.136	106
1996-1998	0.917	92	1996-1998	0.142	104
1997-1999	0.673	91	1997-1999	0.136	107
1998-1999	0.319	106	1998-1999	0.128	107
1999-2001	0.274	111	1999-2001	0.119	120
2000-2002	0.31	112	2000-2002	0.127	112
2001-2003	0.495	104	2001-2003	0.116	114
2002-2004	0.675	96	2002-2004	0.115	119
2003-2005	0.664	108	2003-2005	0.101	123
2004-2006	0.609	111	2004-2006	0.099	124
2005-2007	0.543	113	2007	...	119
2007	...	118	2008	...	117
2008	...	109	2009	...	110
2009	...	116			
2010	...	113			

Source: Compiled from various World Investment Reports, UNCTAD. Note: 1. Rank out of 141 countries; 2. Scores indicate three years moving average

low as 9.31 percent. It means that its counterparts South Asian countries like India, Pakistan, and Bangladesh have registered higher growth rate than Sri Lanka.

UNCTAD bench marks inward FDI potential of many countries, ranking them by how they do in attracting inward direct investment. The potential index captures several factors (apart from market size) which are expected to affect economy's attractiveness to foreign investors. The top factors are GDP per capita and GDP growth over previous ten years which are supposed to indicate the local demand on the assumption that higher income economies attract relatively more FDI be geared to innovative and differentiated products and services. The other factors include level of exports (both resources and services), level of infrastructure, energy usage,

expenditure on R&D, availability of high level skills, position of service sector, country risk (composite indicator capturing some macro economic and other factors that affect the risk perception of investors) and share of world inward FDI stock. Like inward FDI potential index, FDI performance index also ranks the countries by the FDI they receive relative to their economic size. It is the ratio of a country's share in global FDI inflows to its share in global GDP. A value greater than one indicates that the country receives more FDI than its relative economic size and a value less than one indicates that it receives less (www.unctad.org).

Table 4 indicates the FDI performance and potential of Sri Lanka along with its rank among 141 countries. On perusal of the table it is obvious that Sri Lanka's

Table 5. Initial Values and Optimum Smoothing Parameters for Level and Growth Components

	Sri Lanka	South Asia
fo	56.18421	-382.13158
bo	21.63158	1658.26316
α	0.100000	0.100000
g	0.1000000	0.1000000
SSE	302969.1381	1877898424

Source: Author's calculations on the basis of -UNCTAD data using the software SPSS version 7.5

Note:- fo- Initial value for level component; bo - Initial value for growth component;

α - Optimum value for smoothing parameter for trend;

g - Optimum value of smoothing parameter for growth; SSE – Sum of square of errors

performance in inward FDI has been quite heartening till the year 1995 as shows the performance score of more than one. It fluctuated between 1995 to 1999 but after that it has continuously fallen and so is its rank. As far as the potential of FDI inflows is concerned, Sri Lanka's ranks among the low potential countries which indicates that its position is not good with regards to macro economic variables which determine the potential for FDI.

Section II

Forecasts of FDI inflows to Sri Lanka

Future is highly uncertain but most people view the future as consisting of a large number of alternatives. Future research or forecasting is the best way of examining the different alternatives, identifying the most probable ones and thus reducing the uncertainty to the least. Forecasting is the best designed tool to help decision making and planning in the present (Walonick; 1993). Forecasting involves the preparation of statements concerning unknown events and reduces the area of avoidable risks. If forecasts depict a positive picture ahead, then an economic unit will be motivated to do its level best to make that come true (Sidhu and Kumar 2006). Forecasting is a necessary input to planning. It can empower the planners because its use implies that they can modify the variable, now, to alter or to be prepared for future. This enables them to formulate the economic policy which can affect the future value of variable the way, they wish it to be. A prediction is an invitation to introduce the best desirable changes in the existing system (Walonick, 1993). 'What will happen in future' is the function of 'what happened in the past'. Believing this, the study endeavors to generate the forecasts of FDI inflows to Sri Lanka and South Asia on the basis of study of past behavior assuming that it may help the policy makers in the country to monitor the FDI inflows the way they think most appropriate. Before

applying Double Exponential Smoothing (DES) model to generate the forecasts its adequacy has been tested and the results have been highlighted in Table 5.

Smoothing Parameters: Initial values and optimum smoothing parameters for level and growth components has been computed. The values of α and γ are considered optimal as these ensure the lowest error. The optimum values of smoothing parameters α (alpha), is equal to 0.10 and that of the growth parameter γ (gamma), is also 0.10.

Adequacy of the Model: The adequacy of DES model is ensured by computing auto correlation functions (ACF) of residuals and by applying Ljung-Box. The value of Q-statistics for Sri Lanka 11.043 is found to be insignificant at 5 percent level of significance and the value for South Asia aggregate is found to be 36.82. Both the Q-statistics are found to be non significant. The non-significance of Q- statistics ensures the adequacy of DES model used to generate the forecasts. A careful glance of Fig.1 (for Sri Lanka) and Fig.2 (for South Asia) reveals that the residual ACF showed no pattern. The coefficients were found to be non-significant as these were all (as a group) within specified limits. This confirms the adequacy of DES model to make prediction regarding future prospects of FDI inflows to Sri Lanka and South Asia.

The forecasts of FDI inflows to Sri Lanka and South Asia for the period 2011-12 to 2019-20 are depicted in Table No.6. On perusal of this table, one may be able to make this idea that by the year 2020, Sri Lanka is expected to attract tentative FDI inflows to the tune of US \$ 698.02 million, showing a CAGR of 3.83, significant at five percent level of significance. For South Asia higher growth is expected, to the tune of 4.8 percent and the amount of FDI anticipated in the year 2020 is US\$ 48309.88 million. It means that again Sri Lanka can expect to share nearly 1.5 percent share of aggregate inflows anticipated for South Asia.

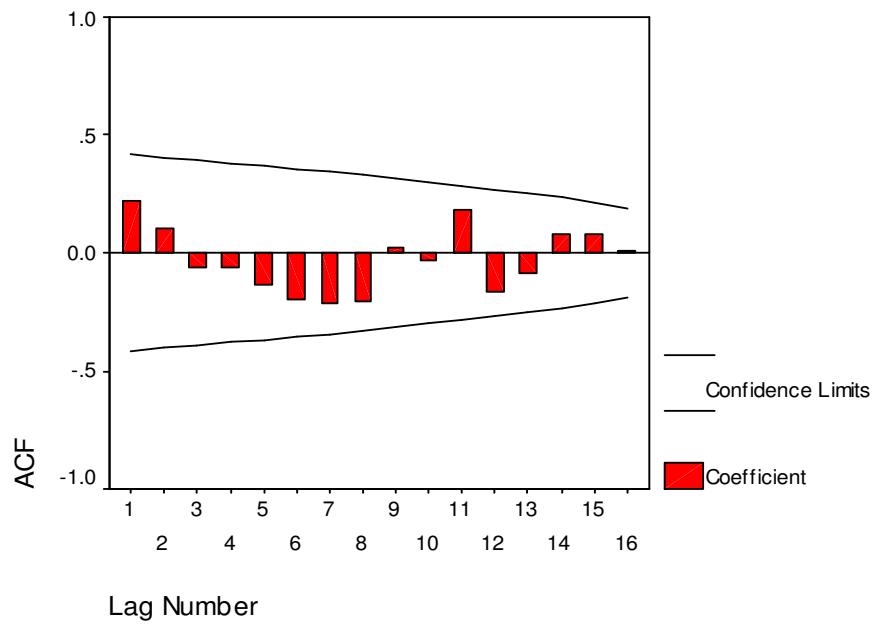


Fig. 1. Auto Correlation Function- Sri Lanka. Q = 11.043

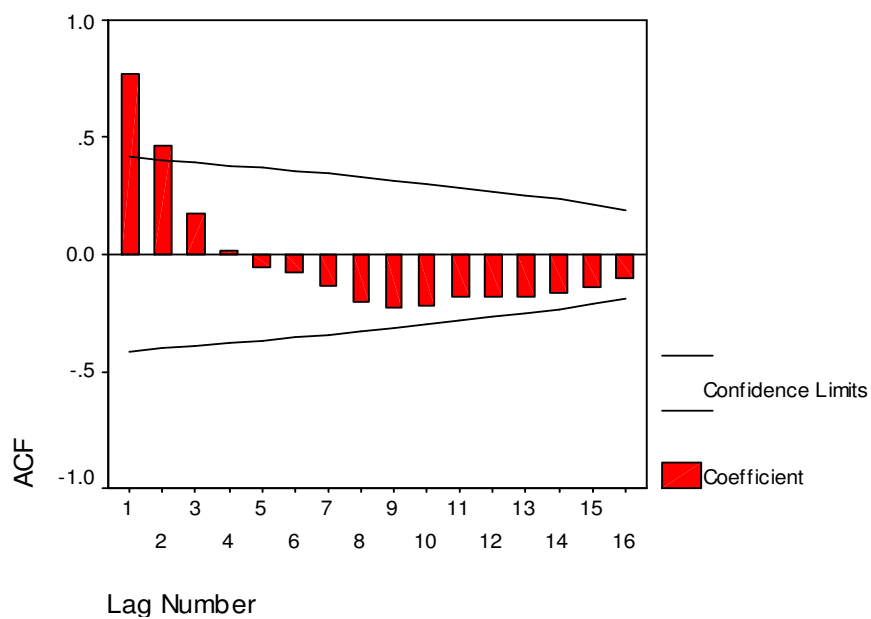


Fig. 2. Auto Correlation Function South Asia. Q = 36.82

Table 6. Forecasts of FDI inflows to Sri Lanka and South Asia

Amount in US\$ million		
Year	Sri Lanka	South Asia
2011	497.27	31629.57
2012	519.58	33482.94
2013	541.89	35336.31
2014	564.19	37189.68

Table 6. CONT.

2015	586.50	39043.04
2016	608.80	40896.41
2017	631.11	42749.78
2018	653.41	44603.15
2019	675.72	46456.51
2020	698.02	48309.88
CAGR	3.83*	4.8*

Source: Calculated by authors on the basis of UNCTAD data using SPSS version 7.5

CONCLUSION

Sri Lanka has strived hard to launch its economic reforms that favoured a greater role to FDI. However, Sri Lanka has not been able to attain the growth rate which can match the growth rate of FDI inflows to South Asia. South Asian aggregate FDI inflows have registered a growth rate of 24.58 percent during the period of 1991-2010. But, the growth rate in case of FDI inflows to Sri Lanka is as low as 9.31 percent. It means that its counterparts South Asian countries like India, Pakistan, and Bangladesh have registered higher growth rate than Sri Lanka. Keeping in view the past trends and future projections, Sri Lanka needs to put in place a comprehensive development strategy which includes being wide open to FDI. Efforts must be made to ensure that the actual inflows do exceed the forecasted figures

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