Essays on the Impact of FDI on the Sri Lankan Economy

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Essays on the Impact of FDI on the Sri Lankan Economy

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Abstract

Sri Lanka is a developing country that is currently on the recovery path from 30 years of civil war. With the conclusion of hostilities in 2009, one of the main priorities of the Sri Lankan government has been to focus on major infrastructure improvements to boost its economic development. It has huge external debt stocks and low gross domestic savings. Sri Lanka considers attracting foreign direct investment (FDI) inflows as one of the strategies for sourcing funding for its major infrastructure projects, as it has been an important source of external financing for Sri Lanka since the introduction of the open economic policy in 1977. Therefore, understanding the role of FDI in the Sri Lankan economy is crucial for academic researchers and policy makers in the government and private sectors.

A review of previous research studies on FDI in Sri Lanka clearly shows that there is a lack of knowledge relating to FDI and its effects on the Sri Lankan economy. Therefore, the main focus of the thesis is to examine the impact of FDI on the Sri Lankan economy as a whole, as well as on the individual sectors of the Sri Lankan economy.

Statistical evidence show that foreign investors are still not ready to commit large-scale investments in Sri Lanka, even after repeated calls from the Sri Lankan government offering various tax incentives to attract foreign investment. Why is Sri Lanka lagging behind in attracting FDI? What are the factors that influence FDI inflows? The empirical analysis reveals that the major determinants of FDI in Sri Lanka are market size, openness, infrastructure development, labour cost and civil war.

In many countries, FDI has been an important source of economic growth. Sri Lanka is actively seeking FDI to cause a surge in economic growth. The analysis of the relationship between FDI and economic growth in Sri Lanka reveals that FDI has a positive but insignificant impact on Sri

Lankan economic growth. The empirical analysis also identifies four other major determinants that impact on Sri Lankan economic growth: domestic investment, trade, macroeconomic instability and political instability.

It is a common belief that FDI helps developing countries to develop their tourism sector. The Sri Lankan government has identified the tourism sector as a key growth area in the post conflict development. Investigation of the causal relationship between FDI and tourism in Sri Lanka over the period 1970 to 2014 shows that there is a unidirectional causality from FDI to tourism in both the long run and the short run. These results suggest that an increase in FDI inflows would increase the number of tourist arrivals in Sri Lanka.

Sri Lanka places a lot of emphasis on the tourism sector as a vehicle for economic growth. The results of testing Tourism-led Growth Hypothesis (TLG) show that a unidirectional causality from tourism to economic growth exists in both the long run and the short run, giving support to the TLG hypothesis in Sri Lanka. Thus, the Sri Lankan government should seek policies that attract significant FDI, which will result in higher numbers of tourist arrivals, stimulating its economic growth.

FDI not only brings in capital but also sophisticated managerial skills and advanced technology into the host country. In this way, FDI can increase the productivity of Sri Lanka. The relationship between FDI and total factor productivity (spill-over effect) is examined for the period 1978–2014, and the findings confirm that FDI has a positive impact on total factor productivity. This indicates that encouraging FDI inflows into Sri Lanka would have a beneficial effect on total factor productivity through the positive spill-over effects of FDI.

A review of past studies on FDI also reveals that FDI has impacted positively as well as negatively on the income distribution of host countries. The association between FDI and income inequality in Sri Lanka suggests that FDI does not increase income inequality. Therefore, the Sri

Lankan authorities could implement sound policies to attract more FDI, without any concern regarding the increasing income inequality.

The impact of FDI on domestic investment in a host country explicitly implies the crowding in or crowding out effect. These crowding effects of FDI on domestic investment in Sri Lanka do not have a significant influence on domestic investment, indicating that there is no crowding in or crowding out effect on domestic investment in Sri Lanka. Consequently, FDI has a neutral effect on the domestic investment in Sri Lanka.

Overall, these findings provide sound empirical evidence supporting the belief that FDI brings positive externalities that promotes economic growth into a country like Sri Lanka. The positive effects occur when FDI leads to tourism, which in turn stimulates economic growth and increases total factor productivity, bringing in positive spill-over effects. The neutral impacts occur when MNEs provide capital that does not complement or substitute for domestic investment. Furthermore, FDI does not increase income inequality. The main conclusion of the study is that FDI plays a vital positive role in Sri Lanka's economic development. However, Sri Lanka should develop appropriate economic policies and regulations to sustain the positive effects of FDI, and should find ways to convert any neutral effects so that they become beneficial.

Statement of Originality

The research and discussion presented in this thesis have not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

Signed:
Kalaichelvi Ravinthirakumaran

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List of Acronyms

ADF	Augmented Dickey-Fuller
AIC	Akaike Information Criterion
ARDL	Autoregressive Distributed Lag
BOI	Board of Investment
BRICS	Brazil, Russia, India, China, and South Africa
CEEC	Central and East European Countries
CFA	Cease Fire Agreement
CPI	Consumer price index
CUSUM	Cumulative Sum
CUSUMSQ	Cumulative Sum of Squares
DCs	Developed Countries
DOLS	Dynamic Ordinary Least Squares
ECM	Error Correction Model
ECT	Error Correction Term
EPZs	Export Processing Zones
EU	European Union
FDI	Foreign Direct Investment
FMOLS	Fully Modified Ordinary Least Squares
FTZ	Free Trade Zone
GCEC	Greater Colombo Economic Commission
GDP	Gross Domestic Product
GDPPC	Gross Domestic Product Per Capita
GFCF	Gross Fixed Capital Formation
GMM	Generalized Method of Moments
GNI	Gross National Income
GNP	Gross National Product
HIES	Household Income and Expenditure Survey
IRFs	Impulse Response Functions
LDCs	Less Developed Countries
LTTE	Liberation Tigers of Tamil Eelam

M&As	Mergers and Acquisitions
MENA	Middle East and North Africa
MNEs	Multinational Enterprises
OECD	Organisation for Economic Co-operation and Development
OLI	Ownership, Location and Internationalization
PA	People Alliance
PP	Phillips-Perron
PPP	Public Private Partnerships
R&D	Research and Development
SAARC	South Asian Association for Regional Cooperation
SBIC	Schwarz Bayesian Information Criterion
SLTDA	Sri Lanka Tourism Development Authority
SOEs	State Owned Enterprises
SSA	Sub-Saharan Africa
TLG	Tourism-Led Growth
UECM	Unrestricted Error Correction Model
UNCTAD	United Nations Conference on Trade and Development
UNHRC	United Nations Human Rights Commission
UNP	United National Party
UNWTO	United Nations World Tourism Organization
WDI	World Development Indicators
WEF	World Economic Forum

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Many individuals and institutions have contributed to the successful completion of my thesis. It is impossible for me to acknowledge each individual and institution, therefore I have selected only a few of them.

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Thesis Related Research Outputs to Date

Work published

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Refereed conference presentations

1. Ravinthirakumaran. K., Selvanathan E. A., Selvanathan, S. and Singh, T. (2016). Spill-over effects of Foreign Direct Investment in Sri Lanka, Paper presented at the 34th International Business Research Conference, Imperial College, London, April 4-5, 2016.
2. Ravinthirakumaran. K., Selvanathan E. A., Selvanathan, S. and Singh, T. (2015). Tourism and economic growth nexus in Sri Lanka, Paper presented at the 28th PhD Conference in Economics and Business, School of Economics, University of Queensland, 12 November, 2015.
3. Ravinthirakumaran. K., Selvanathan E. A., Selvanathan, S. and Singh, T. (2015). Tourism and Foreign Direct Investment in Sri Lanka, Paper presented at the Griffith PhD Symposium in Economics, Economics and Business Statistics Discipline, Department of Accounting Finance and Economics, Griffith University, 9 October 2015.
4. Ravinthirakumaran. K., Selvanathan E. A., Selvanathan, S. and Singh, T. (2015). Determinants of Foreign Direct Investment in Sri Lanka, Paper presented at the 2015 Australian Conference of Economists, Queensland University of Technology, Brisbane, Australia, 7-10 July 2015.

Awards

1. Winner of Department of Accounting, Finance and Economics 3MT Thesis Competition
2. Winner (Highly Commended) of Griffith Business School Poster Competition

CHAPTER 1

Introduction

1.1 Introduction

Most developed and developing countries need international capital to complement domestic savings. Foreign direct investment (FDI) helps those countries reach their economic potential by providing capital to finance new industries and to enhance existing industries, boosting infrastructure, productivity, and employment opportunities in the process. FDI opens up additional export opportunities by bringing in new businesses with connections in different markets. This also encourages competition and increases innovation by bringing new technologies and services to the host countries.

FDI, a private international capital flow from a parent firm to a location outside the parent firm's country of origin, is defined as cross-border investment by a resident entity in one economy with the objective of obtaining a lasting interest in an enterprise resident in another economy. This lasting interest implies the existence of a long-term relationship between the direct investor and the enterprise and a significant degree of influence by the direct investor on the management. Ownership of at least 10% of the voting power, representing the influence by the investor, is the criterion used by the Organization for Economic Cooperation and Development (OECD, 2014) to define FDI. FDI includes equity capital, reinvested earnings and intra company loans (World Investment Report, WIR, 2012). According to the IMF, a FDI relationship between two firms is deemed to exist when a direct investor firm, resident in another economy, owns 10% or more of the capital shares or voting power of a corporation (enterprise/firm), or the equivalent for an unincorporated enterprise, resident in one economy (IMF, 2009), known as the host. A review of the literature on FDI reveals that the impacts of FDI on the host country depends on a number of local conditions, such as the host country's market size, the level of education, the existence of a well-developed financial market and the economic and political stability. The impact of FDI on host countries remained a controversial issue: FDI is considered to have both positive and negative impacts on host countries.

Some researchers who argue for the negative impact of FDI point out that FDI is the main cause for the widening income inequality between developed and developing countries (for example, see Moran, 1978; Wilhelms and Witter, 1998; Herzer et al., 2014). They also point out that the benefits/economic surplus accrued from FDI have always advantaged the foreign company instead of financing the development of the host country. They also argue that the advanced technology used by the foreign companies removes the level playing field and disadvantages the local entrepreneurs, increasing the level of unemployment and altering consumer preferences and local culture. In addition, as most of the foreign enterprises come from high-income developed countries, sometimes they even use their home country's economic power and influence to inflict unwanted political pressure on the host country government to favour the Multinational Enterprises (MNEs).

The researchers who support the positive role of FDI argue that FDI helps the economic growth and development of the host countries (for example, see Caves, 1974; Blomstrom et al., 1992; Balasubramaniyam et al., 1996; Borensztein et al., 1998; Alfaro et al., 2004; Ahmed, 2012; Agrawal, 2015). They cite the possible advantages as the transfer of technology to individual firms and the technological spill-over to the wider economy; the increased productivity efficiency due to competition from MNEs; the improvement in the quality of the factors of production, including management in other firms and not just the host firm; the benefits to the balance of payments through the inflow of investment funds; the increase in exports; and the increase in savings and investment, leading to faster growth of output and employment.

The remainder of the chapter is organised as follows. Section 1.2 presents a global view of FDI. Section 1.3 describes the motivation and objectives of this thesis. Section 1.4 presents the research questions identified by the thesis. Section 1.5 discusses the contribution of the thesis. Section 1.6 presents a preview of the thesis.

1.2 FDI and the Global Economy

The growing significance of FDI flows shows the importance of FDI in the global economy. World FDI flows have risen from US$1.3 trillion in 2014 to US$1.8 trillion in 2015. This increase in FDI flows is largely as a result of cross-border mergers and acquisitions (M&As).

FDI inflows as a proportion of Gross Fixed Capital Formation (GFCF) have also increased, from 8% in 2014 to 10% in 2015 (WIR, 2016).

Table 1.1 presents the FDI stock in millions of dollars[1] ($m) and their percentages in sectors, for the two periods, 1990 and 2012, for the developed countries, the developing countries, and for the world as a whole. As can be seen from the 'World' columns, between 1990 and 2012 FDI stocks allocated to the primary sector have fallen from 9% to 8%, the manufacturing sector has also fallen from 39% to 25%, but the service sector has increased from 47% to 64%. The tourism sector, one of the major contributors to the services sector, will be analysed in detail in this thesis.

Table 1.1: Estimated World Inward FDI Stock, by Sector/Industry, 1990 and 2012

	Developed Economies		**Developing Economies**		**World**	
Sector	$bn	%	$bn	%	$bn	%
			1990			
All	1633	79	445	21	2197	100
Primary	157	87	24	13	192	9
Manufacturing	660	81	153	19	859	39
Services	807	83	167	17	1030	47
Unspecified	9	8	101	92	116	5
			2012			
All*	15905	68	7031	30	23304	100
Primary	1082	62	593	34	1739	8
Manufacturing	3832	65	1998	34	5915	25
Services	10379	69	4358	29	14954	64
Unspecified	612	88	81	12	697	3

Note: * In 2012, transition economies also shared the world inward FDI stock. However, their contribution was very low (2%).
Source: World Investment Report, WIR, 2014

Table 1.2 presents FDI inward stock and FDI inflows for the world, developed economies, developing economies and transition economies for selected years. As can be seen, the world FDI stock steadily increased from $2197bn in 1990 to $24983bn in 2015. Similar trends can be observed for the developed, developing and transition economies. The trends found in the FDI

[1] The $ values referred to in this thesis are all in US dollars. $m refers to millions of US dollars and $bn refers to billions of US dollars.

inward stock can also be seen with the FDI inflows in the world, developed economies, developing economies and transition economies.

Table 1.2: FDI Inward Stock and FDI Inflows, by Regions and Economy, 1990, 2002 and 2015

Region/Economy	FDI Inward stock ($bn)			FDI Inflows ($bn)		
	1990	**2002**	**2015**	**1990**	**2002**	**2015**
World	2197	7361	24983	205	590	1762
Developed Economies	1688	5584	16007	170	413	962
	(77%)	***(76%)***	***(64%)***	***(83%)***	***(70%)***	***(55%)***
Europe	932	2991	8782	103	290	503
North America	652	2312	6344	56	97	4284
Developing Economies	509	1673	8374	35	167	764
	(23%)	***(23%)***	***(34%)***	***(17%)***	***(28%)***	***(43%)***
Africa	61	171	740	3	15	54
Asia	340	1034	5886	23	96	540
East and South-East Asia	302	913	4794	22	81	447
South Asia	7	45	387	0	11	50
West Asia	31	76	705	1	4	42
Latin America and the Caribbean	107	465	1719	9	56	168
Oceania	2	2	29	0	0	2
Transition Economies	0	105	601	0	10	35
	(0%)	***(1%)***	***(2%)***	***(0%)***	***(2%)***	***(2%)***

Source: UNCTAD Stat, 2016

To measure the relative importance of the FDI inflows to domestic investment, the study uses the share of FDI inflows as a percentage of Gross Fixed Capital Formation (GFCF). Table 1.3 presents FDI inflows as a percentage of GFCF, and FDI stock as a percentage of Gross Domestic Product (GDP) for the selected years 1990, 2002 and 2015.

As can be seen, the share of world FDI inflows as a percentage of GFCF increased from 3.6% in 1990 to 9.9% in 2015. The share of FDI inflows as a percentage of GFCF in developed economies, increased by 7.5 percentage points between 1990 and 2015 (from 3.7% to 11.2%). In developing economies, the share of FDI inflows as a percentage of GFCF has risen by 5.5% between 1990 and 2015 (from 3.2% to 8.7%), while the share to transition economies declined by 4.3% between 2002 and 2015 (from 10.6% to 7.3%). In general, for the world as well as for the three groups of economies, FDI inflows as a percentage of GFCF have increased significantly, except for transition economies.

To measure the relative importance of FDI stocks in an economy, Table 1.3 also presents FDI stock as a percentage of GDP. As can be seen, the share of world FDI stock as a percentage of GDP has increased from 9.6% in 1990 to 33.6% in 2015. The FDI stock for developed economies, as a percentage of GDP, has steadily increased from 9.3% in 1990 to 37.3% in 2015. The trend is similar for the developing and transition economies.

Table 1.3: FDI Inflows as a Percentage of GFCF and FDI Inward Stock as a Percentage of GDP, 1990, 2002 and 2015

Region/Economy	FDI inflows as % of GFCF			FDI stock as % of GDP		
	1990	2002	2015	1990	2002	2015
World	3.6	7.8	9.9	9.6	21.3	33.6
Developed Economies	**3.7**	**7.2**	**11.2**	**9.3**	**21.1**	**37.3**
Europe	5.2	13.3	14.6	11.7	29.9	50.7
North America	4.0	3.9	11.0	9.9	19.7	32.5
Developing Economies	**3.2**	**9.4**	**8.7**	**11.1**	**21.8**	**28.5**
Africa	2.1	11.3	11.8	9.9	26.6	32.1
Asia	3.2	7.4	7.4	12.3	20.3	27.0
East and South-East Asia	5.7	8.3	7.7	22.9	28.0	30.4
South Asia	0.1	5.3	5.9	0.7	5.5	12.6
West Asia	0.9	3.5	7.2	7.1	7.5	23.6
Latin America and the Caribbean	4.0	16.4	16.6	9.0	24.8	34.1
Oceania	23.7	4.9	12.6	20.4	4.4	15.7
Transition Economies	-	**10.6**	**7.3**	-	**20.2**	**31.2**

Source: WIR, 2016

Figure 1.1 presents the FDI net inflows for the three groups of countries, namely, high income, middle income and low income countries, for the period 1980–2015. As can be seen, FDI net inflows to high income countries began to increase around 1985, continued increasing until 2000, declined between 2001 and 2003, and then increased again sharply to reach a peak in 2007. Since then it has been falling, possibly due to the global financial crisis during 2007–2008. FDI net inflows in middle income countries have been on a steady increase throughout the years, while FDI net inflows to low income countries have been almost flat during the whole sample period.

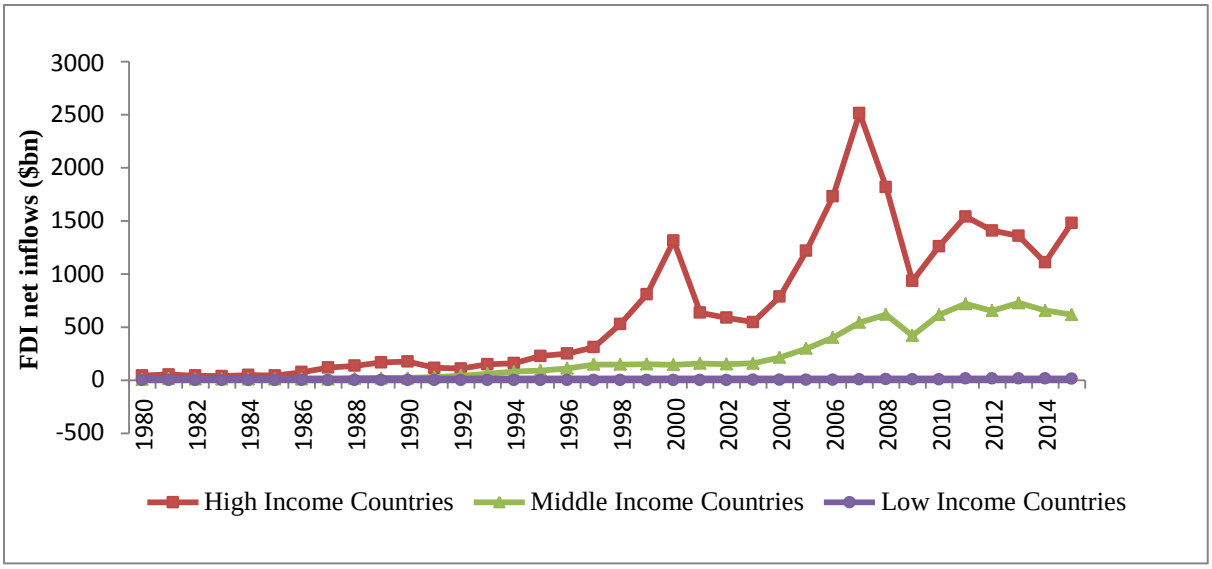

Figure 1.1: FDI Inflows: High Income, Middle Income and Low Income Countries, 1980–2015

Source: World Bank (World Development Indicators, WDI), 2016

Figure 1.2 plots the FDI inflows against GDP for the period 1980 to 2015, for high income, middle income and low income countries. As can be seen, there is a strong positive linear relationship between FDI and GDP for these three groups of countries.

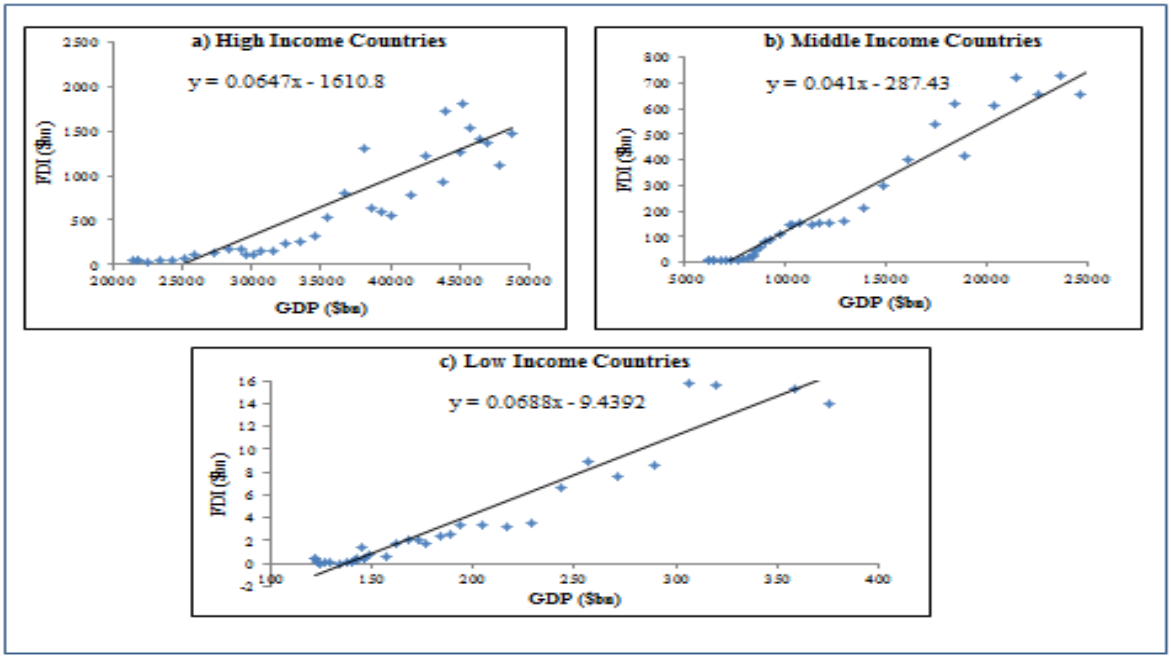

Figure 1.2: FDI inflows and GDP in High, Middle and Low Income Countries, 1980–2015

Source: WDI, 2016

Following the East Asian miracle, many South Asian countries, including Sri Lanka, have been actively seeking FDI inflows to cause a surge in economic growth. Table 1.4 shows the FDI net inflows as a percentage of GDP for Sri Lanka and other selected South Asian countries (Bangladesh, India, Maldives and Pakistan). Sri Lanka introduced free trade and open market economic policies in 1977, the first country in South Asia to do so (Panagariya, 2002 and Athukorala, 2014). As can be seen, Sri Lanka attracted FDI that was well above the other selected South Asian countries, as it had led the FDI net inflows as a percentage of GDP, with 1.1%, in 1980. However, in the following years, other South Asian countries also vigorously introduced FDI-friendly policies and attracted more FDI. For example, from 1985 onwards, Maldives continued to increase its FDI net inflows as a percentage of GDP, from 1% in 1985, by almost ten-fold (10.3%) in 2015, and was ranked number one among the selected South Asian countries, reaching 10.3% in 2015. In 2015, based on FDI net flows as a percentage of GDP, Sri Lanka has not done well compared to other countries in that region, being pushed down to the fourth position with only 0.8%, just in front of Pakistan with 0.4%.

Table 1.4: FDI net Inflows as a Percentage of GDP, 1980–2015 (Selected Years)

	FDI net inflows (% of GDP)				
Year	Bangladesh	India	Maldives	Pakistan	Sri Lanka
1980	0.0	0.0	-0.3	0.3	1.1
1985	0.0	0.0	1.0	0.4	0.4
1990	0.0	0.1	2.6	0.6	0.5
1995	0.0	0.6	1.8	1.2	0.4
2000	0.5	0.8	3.6	0.4	1.1
2005	1.1	0.9	4.7	2.0	1.1
2010	1.1	1.6	9.3	1.1	0.8
2015	1.7	2.1	10.3	0.4	0.8

Source: WDI, 2016

The reason for Sri Lanka being in the worst position among other selected South Asian countries needs explanation. This situation occurred because there had been a sharp fall in the FDI inflows to Sri Lanka, since the beginning of the 1983 ethnic riots in the capital, Colombo, and in other parts of the country. For example, two major electronic multinational companies, Motorola and Harris Corporation, had confirmed plans to establish plants in the Export Processing Zone prior to the ethnic riots in 1983. Harris Corporation had begun building a plant with an initial employment capacity of 1850 workers. However, both these companies withdrew from Sri

Lanka after the ethnic riots. In addition, Marubeni, Sony, Sanyo, Bank of Tokyo and Chase Manhattan Bank, which all were in line to invest in Sri Lanka in the early 1980s (Kelegama, 2006), were reluctant after the 1983 riots, to invest in Sri Lanka; as a result, Sri Lanka lost these golden opportunities through the three decades of civil war[2].

Since the end of hostilities in May 2009, there has been some interest from the MNEs to invest in Sri Lanka; the Sri Lankan government is also providing various concessions to MNEs to attract higher amounts of FDI into the country. The environment is still not conducive to foreign investment in Sri Lanka, even though the civil war has come to an end, because of the lack of progress in finding a political solution to the ethnic problem and with the ongoing United Nations Human Rights Commission (UNHRC) investigation into alleged war crimes against the Sri Lankan government and its armed forces. Consequently, FDI's progress in Sri Lanka is still slow but is moving in a positive direction.

1.3 Motivation and Objectives of the Thesis

At the end of the civil war in 2009, Sri Lanka was in urgent need of FDI to fund its major infrastructure improvements in order to boost economic development. Sri Lanka had huge external debt stocks (60% of GDP) and low gross domestic savings (24% of Gross National Income (GNI)) in 2014 (World Bank, 2016). FDI has been an important source of external financing for Sri Lanka since the introduction of the open economic policy in 1977. The concept of Public Private Partnerships (PPP) which was introduced, in 1990s, is vital to the development of infrastructure in Sri Lanka as it allows governments and the private sector to work together and share resources on important projects. According to the Ministry of Finance, the proposed PPP mechanism will attract more foreign investors, especially to the infrastructure development sector, thereby easing the government's current budget constraints (The official Government news portal of Sri Lanka, 27th September 2016).

Even though there is a vast pool of literature discussing the positive and negative impacts of FDI on an economy, very little research has been published on this topic in relation to Sri Lanka. It is a common belief that Sri Lanka has positively benefited from FDI inflows. This thesis

[2] Throughout this thesis, ethnic riots, civil war, war, hostilities and political instability are used interchangeably.

empirically investigates the relationship between FDI and selected important macroeconomic variables, such as the economic growth, tourism, the spill-over effect, income inequality and domestic investment.

The main objective of this thesis is to investigate the impacts of FDI on the Sri Lankan economy. To achieve this objective, the thesis analyses, models and estimates FDI and many other relationships between:

- FDI and economic growth
- FDI and tourism
- Tourism and economic growth
- FDI and total factor productivity
- FDI and income inequality
- FDI and domestic investment.

Figure 1.3 proposes a conceptual framework of the relationships between FDI and each of the other economic variables that impact on the Sri Lankan economy. The causal links between the variables: FDI and domestic investment, FDI and tourism, tourism and economic growth, domestic investment and economic growth, and FDI and economic growth are bidirectional. However, unidirectional causal links exist from FDI to economic growth, FDI to income inequality, FDI to spill-over and spill-over to economic growth.

1.4 Research Questions

From the review of the research studies on FDI, we have identified the following research questions that require answers in relation to Sri Lanka. We believe that such answers will make significant contribution to the knowledge on this topic.

(1) What are the factors that influence FDI inflows into Sri Lanka?
(2) Is the FDI-led growth hypothesis supported by the Sri Lankan data?
(3) Is there any causal relationship between FDI and tourism in Sri Lanka? Does tourism influence economic growth?
(4) Does FDI induce improvement in the total factor productivity in Sri Lanka?

(5) Does FDI affect the income inequality in Sri Lanka?

(6) Is there any relationship between FDI and domestic investment in Sri Lanka?

(7) What effect did the civil war have on FDI, Economic Growth, Tourism, Income Inequality and domestic investment in Sri Lanka?

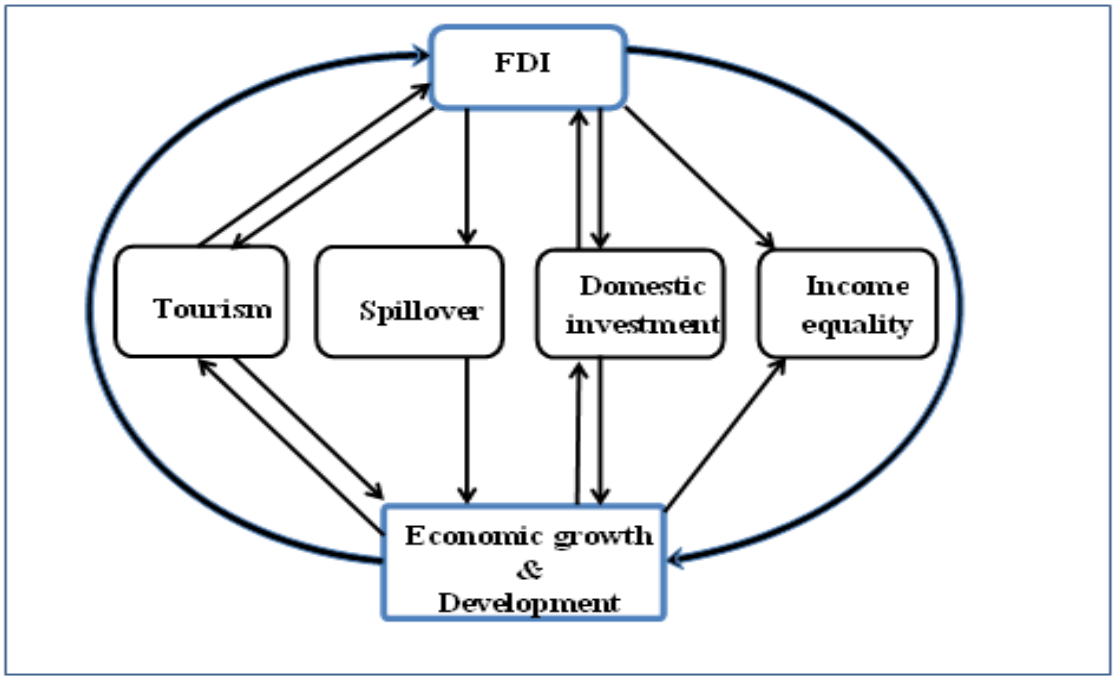

Figure 1.3: Conceptual Framework Showing the Impact of FDI on the Sri Lankan Economy

1.5 The Contribution of the Study

As stated earlier, this study empirically examines the effects of FDI on different dimensions of the Sri Lankan economy. We expect that the findings from this comprehensive analysis will contribute to the FDI-related literature on Sri Lanka in the following ways:

(1) This research is the first attempt to investigate the impact of FDI on various aspects of the Sri Lankan economy by using more recent econometric techniques.

(2) Infrastructure is a vital component that helps the economic development of an economy. This study constructs a unique infrastructure index using data available on

telecommunication, electricity and transport, to investigate the link between infrastructure and FDI in Sri Lanka.

(3) In general, it is expected that civil war discourages foreign investors and adversely affects the economy. This study investigates the impact of civil war on the Sri Lankan economy as well as on the level of FDI attracted by Sri Lanka.

(4) In any country, shortage of capital is a major obstacle to developing the tourism industry, as the tourism sector requires large amounts of infrastructure funding. Sri Lanka is not an exception and is looking for foreign investors to provide the required capital that will help the development of the tourism industry. This study is the first research that uses the multivariate approach to explain the relationship between FDI and tourism in Sri Lanka.

(5) It is a common belief that FDI reduces the level of income inequality by creating employment. This study makes a significant contribution in this area by examining the relationship between FDI and income inequality in Sri Lanka.

(6) The crowding effects of FDI on domestic investment are an important issue that affects any economy. This study investigates the relationship between FDI and domestic investment in Sri Lanka.

1.6 A Preview of the Thesis

The thesis comprises nine chapters, outlined as follows.

- This chapter (Chapter 1) presents background information on the research topic, the motivation and objectives for the research, the research questions to be investigated, the contributions of the thesis and a preview of the thesis structure.
- Chapter 2 focuses the discussion on FDI and its determinants, starting with a review of the selective FDI theories and identifying the major determinants of FDI, based on the review of empirical literature. An analysis on Sri Lanka's FDI policy and the FDI inflows follows. In addition, this chapter also empirically identifies the determinants of FDI in relation to Sri Lanka.
- The relationship between FDI and economic growth, along with the relevant literature on FDI and economic growth, are discussed in Chapter 3. The empirical analysis of the study reveals the following findings:

- Major determinants of economic growth in Sri Lanka are domestic investment, trade, macroeconomic stability and political stability.
- FDI has a positive but insignificant effect on economic growth.
- Political instability negatively impacts on economic growth.

- Chapter 4 analyses the relationship between FDI and tourism in Sri Lanka. The chapter begins by presenting the historical evolution of FDI and tourism in Sri Lanka, then investigates the causal relationship between FDI and tourism and the factors affecting tourism. The results of the chapter reveal that
  - A unidirectional causal relationship between FDI and tourism exists in the direction of FDI to tourism in both the long run and the short run.
  - An open economy policy positively influences FDI.
  - Political instability has a negative impact on tourism.
- Chapter 5 deals with the tourism-led growth hypothesis. The relevant literature on the effect of tourism on economic growth, the role of tourism on economic growth in Sri Lanka, and the causal relationship between tourism and economic growth are explored. The empirical analysis of the chapter reveals that
  - There is a unidirectional causality running from tourism to economic growth, which supports the TLG hypothesis in Sri Lanka.
  - As open economy policy positively influences economic growth, it confirms the validity of openness-led growth hypothesis for Sri Lanka.
- The impact of FDI on total factor productivity (spill-over effect) and the factors, that influence total factor productivity, are analysed in Chapter 6. Based on the review of relevant literature on FDI and spill-overs, an analytical framework for the relationship between FDI and total factor productivity has been developed. The analysis of the chapter concludes that
  - FDI is one of the determinants of total factor productivity. As a result, FDI brings positive spill-overs into Sri Lanka.
  - Other determinants of total factor productivity: research and development, human capital, trade, technology gap and population.
  - Civil war has a negative impact on total factor productivity.

- The relationship between FDI and income inequality and the relevant literature on FDI and income inequality are discussed in Chapter 7. Also analyzed in this chapter are the background of income inequality in Sri Lanka and the impact of FDI on income inequality and factors that affect income inequality. The findings of the chapter reveals that
  - FDI does not increase income inequality in Sri Lanka.
  - Economic growth and international trade lead to widening the income inequality.
  - Human capital and population tend to reduce income inequality.
- Chapter 8 investigates the crowding effect of FDI on domestic investment, in order to understand the relationship between FDI and domestic investment. The background to domestic investment in Sri Lanka is presented. The empirical results of this chapter conclude that
  - FDI does not have a significant effect on domestic investment. This indicates that FDI does not harm the domestic investment.
  - Economic growth has a positive impact on domestic investment.
  - The civil war has an adverse effect on domestic investment.
- The last chapter provides a summary of key empirical findings and relevant policy implications. This chapter also discuss the limitations of the current research and provides future research directions.

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Chapter 2

Determinants of Foreign Direct Investment

This chapter includes a co-authored paper. The bibliographic detail of the co-authored paper, including all authors, is:

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My contribution to the paper

I generated the basic research idea through an extensive literature review. I then developed the theoretical framework and hypotheses, and identified the research models and relevant data. I also collected the data and conducted the analysis, interpretation and discussion of the results. However, my supervisors helped me to improve the overall research by providing their valuable comments and suggestion since the beginning of the chapter.

Signed:

Date: 12 December, 2016

Kalaichelvi Ravinthirakumaran

Countersigned:

Date: 12 December, 2016

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Countersigned: Selvanathan

Date: 12 December, 2016

Supervisor: Saroja Selvanathan

CHAPTER 2

Determinants of Foreign Direct Investment

2.1 Introduction

Foreign direct investment (FDI) can play a significant role in achieving rapid economic growth[3] in developing countries by bridging the gap between domestic savings and investment, and by bringing the latest technology and management know-how from the developed countries. It can therefore easily be understood why many developing countries seek new ways to attract FDI inflows. Some developing countries have been successful in attracting FDI: others have not. The reason for this lies in how a country handles the factors that determine its FDI inflows.

The amount of FDI that inflows into a country depends on various factors, such as the market size and growth potential of a host country; financial and natural resources endowments and quality of workforce; macroeconomic environment, law and order situation; legislative and incentive structure; openness to international trade and access to international markets; and the quality of its physical, financial and technological infrastructure. Political instability and inadequate security in a country can also disrupt foreign and domestic investments. Unstable political environments increase the risk for investments which all investors generally prefer to avoid; this increased risk also adds direct cost to the investment. Good governance practices provide a clear signal to domestic and foreign investors that the country in question values their contribution to the betterment of the society and that it will work with these investors to achieve mutual benefits. The matters related to FDI, both at the national and international levels, have received much attention during the last six decades.

The development of a number of theories to explain the causes and effects of FDI was led by the growing interest in FDI, as FDI has become a stimulus tool for rapid economic

[3] Throughout this thesis, Economic growth and GDP growth are used interchangeably.

growth and development. To understand FDI, one must first understand the basic motivation that causes a firm to invest abroad rather than to export or outsource production to national firms. Theoretical studies on FDI have led to a better understanding of the underlying economic mechanisms and the behaviour of economic agents, both at the micro and macro levels, allowing for the opening of new areas of study in economics.

The existing literature on the theories of FDI can be classified into three main schools of thought, namely, (1) the dependency school, (2) the modernization school and (3) the integrative school (Wilhelms and Witter, 1998). The dependency school comprises neo-Marxist and structuralist theories; the modernization school consists of both the perfect market and the imperfect market approaches; the integrative school integrates both the dependency and modernization schools.

The remainder of the chapter is organised as follows. Section 2.2 reviews the theories of FDI and the relevant theoretical and empirical literature on the determinants of FDI. Section 2.3 presents a literature review of the determinants of FDI. Section 2.4 discusses the evolution of FDI policies in Sri Lanka. Section 2.5 empirically identifies the factors that determined the FDI inflows into Sri Lanka. Section 2.6 provides the conclusions and policy implications.

2.2 A Review of Theories of FDI

In this section we present a review of FDI based on published theoretical studies. The flow chart in Figure 2.1 gives a brief description of the three schools of thought and the relevant FDI theories proposed under them. All major theories of FDI can be classified into these three schools of thought: the dependency school, the modernization school and the integrative school.

The Dependency School

The dependency school traces the role of multinational enterprises and foreign capital on host countries. Within the dependency school, two theories have emerged to explain the causes of underdevelopment in poor nations: (1) the Neo-Marxist theory and (2) the Structuralist theory.

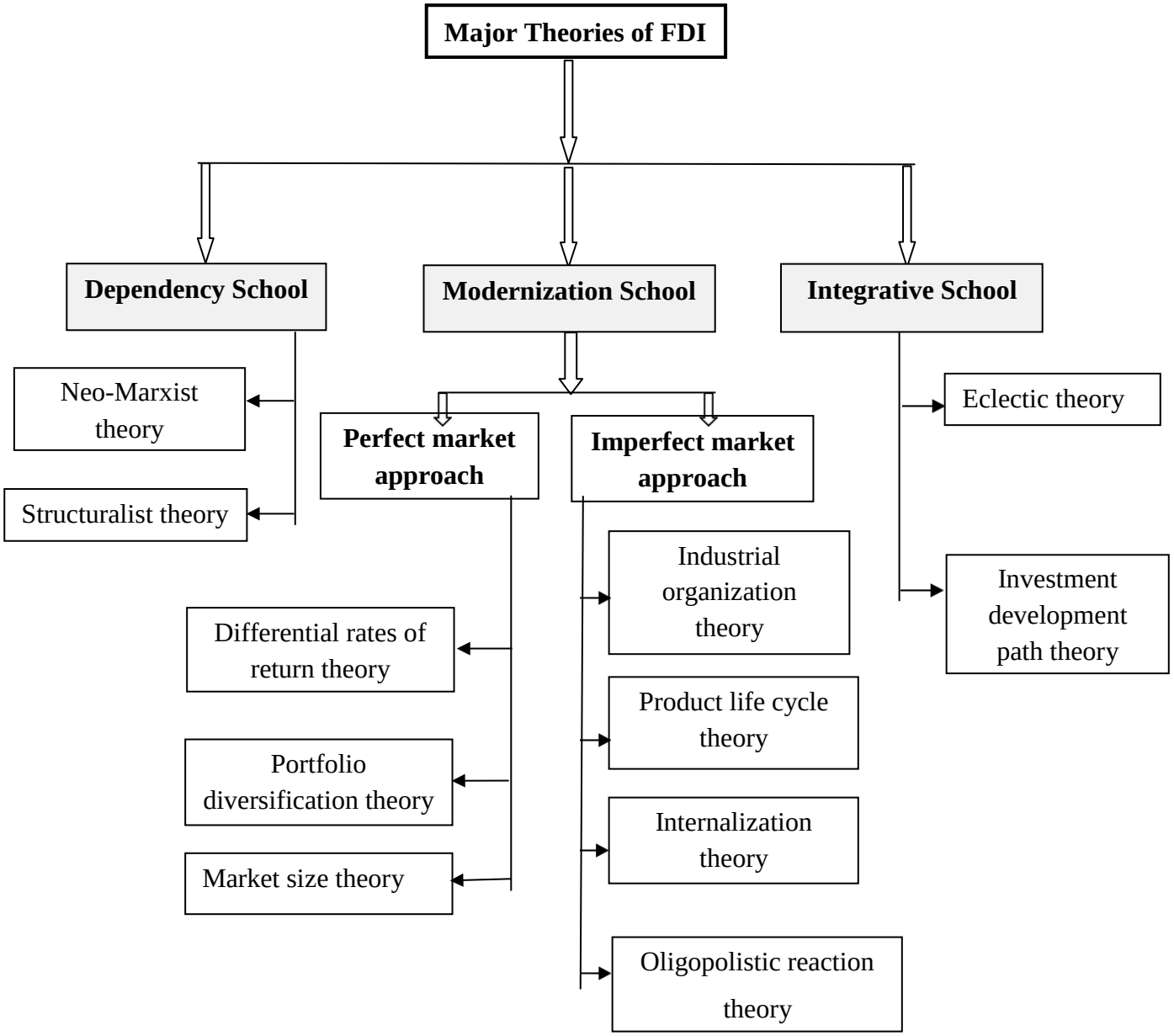


Figure 2.1: Major Theories of FDI

(1) The Neo-Marxist Theory

Neo-Marxist theory applies Marxist ideas to global economic conditions. Neo-Marxist theory is often used to describe how capitalist policies can hinder development and can increase the inequality between the Global North (developed) and the South (underdeveloped). This theory argues that underdeveloped countries are exploited, either through international trade or through multinational enterprises. To resolve the

problems of underdevelopment, Neo-Marxist theory suggests that these underdeveloped countries strive to overthrow capitalism and need to follow socialism as this is seen as the only system to be able to avoid underdevelopment (Kay and Gwynne, 2000).

(2) The Structuralist Theory

The structuralist's vision is based on the conceptualization of the international system, which is being constituted by asymmetric centre periphery relations (Kay and Gwynne, 2000). The relationship between the centres (developed countries) and the peripheries (underdeveloped countries) has continued to widen. The structuralist posits that centres extract resources from the peripheries and exploit them either through international trade or through MNEs (Wilhelms and Witter, 1998). This theory does not criticize capitalism absolutely; rather, it points out that the peripheries do not gain from capitalism as much as the centre does. Meanwhile, structuralists sought to reform capitalism both internationally and nationally. In this regard, reforming the capitalist system is seen as a more feasible option for those searching for an alternative to the existing system. For example, structuralists argue in favour of an inward-directed development policy, largely through import substituting industrialization (ISI).

Both theories claim that the cause of underdevelopment in many developing countries is primarily exploitation by the industrialized nations. Influential works of this school of thought began with Karl Marx's theory on development and underdevelopment, followed by Baran's (1952) analysis of economic backwardness, Frank's (1966) analysis of the development of underdevelopment, and Amin's (1977) work on unequal development (Fan, 2003).

The Modernization School

The Modernization school views FDI as a prerequisite, a catalyst for sustainable growth and development, assuming that the difference in the rate of return across the globe and the objective of reducing the risk by portfolio diversification will result in the FDI flows. This school of thought recommends that developing countries should follow in the footsteps of developed countries by overcoming endogenous barriers to exogenously

motivate development through industrialization, liberalization, and opening up of the economy (Wilhelms and Witter, 1998). The ability to overcome these barriers will depend on how endowed the country is with production factors such as labour, capital, and natural resources. The modernization school theories are classified into two major approaches: (1) the perfect market approach and (2) the imperfect market approach.

(1) The Perfect Market Approach

The perfect market approaches stem from free trade theories employing general equilibrium analyses. The approach discusses how the capital flows, marginal returns, risk assessment and market size affect FDI (Krishna, 2011). Moosa (2002) categorizes the theories under the perfect market approach into three, namely, (a) differential rates of return theory, (b) the portfolio diversification theory and (c) market size theory (see figure 2.1).

(a) The Differential Rates of Return Theory

The profitability of investment is one of the major determinants of investment. Thus the rate of return on investment in a host economy influences the investment decision. According to the differential rates of return theory (Moosa, 2002), FDI is a result of capital flowing from countries with low rates of returns to countries with high rates of return in a process that leads to the equality of *ex ante* real rates of return (Morris, 1991). The theory assumes risk neutrality, making the rate of return the only variable on which the investment decision depends. Risk neutrality in this case implies that the investor considers domestic investment and FDI to be perfect substitutes, or in general that FDI in any country, including the home country, is a perfect substitute.

(b) The Portfolio Diversification Theory

The investment decision not only depends on the marginal returns but also equally considers the risk factor. As the differential rates of return theory failed to provide a sufficient explanation to FDI considering the risk factors, the phenomenon moved to the portfolio diversification theory to describe FDI (Krishna 2011). The portfolio diversification theory is an improvement over the differential rates of

return theory in the sense that by including the risk factor, it can account for countries experiencing simultaneously inflows and outflows of FDI (Morris, 1991). According to Morris, a firm can reduce its risk by investing in various countries as the returns on individual countries are likely to have less than perfect correlation. The theoretical foundations of this theory can be traced back to the theory of portfolio selection of Tobin (1958) and Markowitz (1959).

(c) The Market Size Theory

The market size theory reveals that the amount of FDI in a host country depends on its market size, which is typically measured by the sales of MNE in that country or by the country's GDP. It suggests that a large market size is necessary for the efficient utilization of resources and exploitation of economies of scale. As soon as the market size of a particular country grows to a level upholding the exploitation, the country becomes a potential target for FDI inflows. A larger market size allows for the specialization of the factors of production, and consequently the achievement of cost minimization (Moosa, 2002). Thus, an economy with a large market size (along with other factors) should attract more FDI.

(2) The Imperfect Market Approach

Hymer (1976) argued that the structure of the market and the specific characteristics of investing firms could explain FDI. The imperfect market approach (see Figure 2.1) focuses on (a) industrial organization theory, (b) the product life cycle theory, (c) the internalization theory and (d) the oligopolistic reaction theory (Moosa, 2002; Dinkar and Choudhury, 2014). Two types of market imperfection are of particular importance: structural imperfections and transaction cost imperfections. The structural imperfections gave rise to the industrial organization theory of FDI whereas the transaction costs led to the internalization theory of FDI (Lizondo, 1995).

(a) Industrial Organization Theory

The industrial organization theory, first developed by Hymer (1960) and further extended by Caves (1971, 1974), McManus (1972), Hufbauer (1975) and Dunning

(1988), was the first theory of FDI. Since then FDI theories have undergone several stages of development. The industrial organization theory was formed from existing theories of international trade and capital movements. It explains why MNE of one nationality is able to penetrate the foreign markets better than the indigenous firms located in host countries.

The industrial organisation theory recognizes that investing abroad is more costly than doing business at home. That is, when a firm establishes an investment in another country, it passes through several disadvantages, in comparison to a local firm. This includes the difficulties of managing operations spread out in distant places, as well as dealing with different languages, cultural factors, legal systems, technical standards, and customer preferences (Lizondo, 1995). In order to be successful, the MNEs operating overseas through direct investment have to create offsetting advantages for themselves. The advantages of the MNEs were those associated with brand name, patent-protected superior technology, marketing and managerial skills, cheaper sources of financing, preferential access to markets, and economies of scale (Sahoo, 2004). Further, the theory suggests that firms choose an investment location because of its comparative advantage, after accounting for the friction arising from transportation costs and trade barriers. Kindleberger (1970) agrees with Hymer that firms invest abroad because of the possession of monopolistic advantages such as product differentiation, marketing skills in the goods market, proprietary knowledge, discrimination in access to capital and managerial skills in factor markets.

(b) Product Life Cycle Theory

Vernon (1966) developed the product life cycle theory, which considers trade and FDI to be different stages of a sequential development process. Vernon's theory was used to explain certain types of FDI made by the US MNEs after the Second World War. The reason put forward is that technological development generates changes in the product factor intensity, thus changing the comparative advantages of countries. Vernon explains that the investment decision of a firm is a decision

between exporting and investing, taking place as products move through a life cycle that gives a cost based reason for switching from exporting to FDI. Vernon proposes that the life cycle of the product go through three stages, namely (1) innovative, (2) maturity and (3) standardized.

According to Vernon, the first stage in the product life cycle is a new product stage, known as the innovation stage, in which a new product is highly differentiated and is produced by skilled labour at relatively high cost (the new product is price inelastic). In order to compete with other firms and to have a lead in the market, the firm makes innovations on a product with the help of research and development. The product is produced in the home country, primarily to meet the domestic demand.

The second stage in the product life cycle is a mature product, where a certain level of standardization has been achieved, demand for the product expands and knowledge of its production become more diffuse. In this stage, the product is exported to other countries. As this demand continues to grow and competition emerges, the innovative firm resorts to FDI in these countries to meet local demand. At this stage the home country is a net exporter of the product, while foreign countries are net importers (Moosa, 2002).

The final stage in the product life cycle is a standardized product, in which a product becomes highly standardized and the production process becomes common. At this stage, price competitiveness becomes even more important; in view of this fact, the innovator shifts the production to a low cost location, preferably a developing country where labour is cheap. The product produced in a low cost location is exported back to the home country or to other developed countries. The later works by Vernon (1974, 1979) modify the product life cycle model by emphasizing the oligopolistic structure of industries where MNEs operate. MNEs are further categorized as innovation based oligopolies, mature oligopolies, and senescent oligopolies.

(c) Internalization Theory

The idea of internalization theory was first introduced by Coase in 1937, and then it was developed by Buckley and Casson, in 1976 and followed by Rugman (1981) and Casson (1983). Internalization is the activity in which an MNE internalizes its globally dispersed foreign operations through a unified governance structure and common ownership. This theory holds that the available external market fails to provide an efficient environment in which the firm can profit by using its technology or production resources. Therefore, the firm tends to produce an internal market via investment in many countries, thus creating the needed market to achieve its objective. The MNEs achieve their objectives not only through exploiting their proprietary knowledge but also through internalizing operations and management.

In his original proposal of the theory, Coase (1937) argues that firms exist because they reduce the transaction costs which arise during production and exchange, capturing efficiencies that individuals are not able to. These transaction costs are organized more efficiently within the institution of the firm. However, he also points out that there are also internal costs to the firm, due to the diminishing rate of return when a firm expands above certain scale and the inefficient allocation of resources resulting from the absence of a price mechanism directing all economic activities (Coase, 1937).

Buckley and Casson (1976) claim that a firm will engage in international production if the net benefit of its joint ownership of domestic and international activities outweighs those offered by the market. They maintain the assumption of profit maximization but relax the assumptions of perfect competition. This allows them to analyse imperfect competition in markets for intermediate products. Further, they argue that both industry-specific factors and industry-related factors lead to internalization of markets and confirm that the industry-specific factors will lead directly to the internalization of markets for intermediate products, whereas

the industry-related factors will lead to the internalization of the market for knowledge (Ferry, 2012).

Rugman (1981) and Hennart (1982) examine the knowledge and information advantages of internalization in the face of natural transaction costs and the extra (special) costs of foreign production and distribution. According to Rugman, internalization theory is a general theory of FDI, as the process of internalization explains most of the reasons for FDI. Hennart develops the idea of internalization by developing models between the two types of integration: vertical and horizontal (Denisia, 2010).

(d) Oligopolistic Reaction Theory

Knickerbocker (1973) introduced 'oligopolistic reaction' to explain why firms follow rivals into foreign markets. According to the theory, one firm invests in one country in order to increase its market share; immediately thereafter the other rival oligopolistic firms invest in that country in order not to lose their market shares. Knickerbocker argues that, in an oligopolistic environment, investing abroad by a firm causes other firms to react in a similar way to keep their market share constant. This kind of investment is also known as 'Follow the leader'. Besides, as firms avoid ambiguities and risks, they wait for an investment by a leader firm before themselves and its consequences, and then they invest. This constitutes the reasoning of the follow-the-leader theory. Based on this theory, defensive investment is done by MNE in order to keep their share from the domestic market. He concludes that increased industrial concentration (the market share in industry) causes an increased oligopolistic reaction in the field of FDI.

Integrative School

The integrative school attempts to transform categorical thinking on FDI by analysing it from the perspectives of host countries as well as of investors. It integrates those dependency and modernization concepts that are applicable to current FDI analysis. Wilhelms and Witter (1998) developed the concept of the integrative school to account for both the causes of FDI and its treatment by host countries. Integrative school theories can

be grouped into two major types, namely, (1) eclectic theory or paradigm and (2) investment development path theory.

(1) The Eclectic Theory or Paradigm

Dunning (1977) developed an eclectic theory by integrating the industrial organization theory, the internalization theory and the location theory. The eclectic theory is based on the principle that an investor will have a competitive edge in the form of trademarks, production techniques, entrepreneurial skills and returns to scale. The theory speculates that the intended investment location has specific advantages in the form of the existence of raw materials, low wages, special taxes or tariffs. The investing firm prefers to internalize these advantages without selling licenses or entering into joint ventures (foreign and domestic firm) by producing in host country (Adjei, 2007).

The theory suggests that the ownership advantages, internalization advantages, and location advantages are three necessary and sufficient conditions for FDI. These advantages establish the well-known OLI (ownership, location, internalization) model of Dunning. Of the three advantages, ownership advantages are essential. An enterprise is unable to engage in FDI without any ownership advantages. However, if the firm has only ownership advantages, without the other two advantages, it will benefit from licensing rather than from FDI. If the firm has advantages of ownership and internalization but not location advantages, it will prefer to sell its products by exporting. Further, the theory explains that these advantages are not likely to be uniformly spread among countries, industries, and enterprises and are likely to change over time (Morris, 1991).

Why do MNEs go abroad? Ownership advantages address this issue, elaborating on the core competencies that give competitive advantage over the firms already serving foreign markets. According to Dunning, ownership advantages are firm-specific advantages, which are basically the same as the monopolistic advantages. Ownership advantages comprise products and manufacturing processes protected by patents,

trademarks, copyrights, and trade secrets. Ownership advantages also include superior marketing and managerial skills, control over market and trade advantages, economies of scale, and firms' established reputations that enable them to gain easy access to raw material, labour, and borrowed capital (Ferry, 2012). These ownership advantages provide firms with market power and competitive advantages over domestic firms.

Location advantages, a firm's motivation to produce abroad, address where the location is and the location-specific factors which favour overseas production, as firms use the same production resources more effectively than in their home country. One form of location-related differences in the costs of factors of production is the locational advantage of low wages. Location-specific factors are not limited to the natural resource endowment of a country, but also include cultural, legal, political, institutional, and market structure environments in which a firm operates. Government policies also matter because tariffs, quotas, subsidies, and other nontariff barriers, such as local content requirements, affect a firm's decision to locate abroad (Dunning, 1993). Through these factors, the MNE makes a profit and earns returns on its firm-specific advantages. The location advantages of various countries are most important in determining which countries become host to investments.

Internalization advantages address 'How do MNEs go abroad', answering the question of why firms engage in FDI rather than licensing foreign firms to use their proprietary assets. This internalisation is defined by Dunning (1993) as a choice between investing abroad or licensing a firm to exploit ownership advantages possessed by the licensor. The MNEs have various choices of entry mode, ranging from vertical to horizontal. The internalization advantages are derived from the benefits the firm gains from the common governance of its value added activity. Further, internalization advantages include the desire to avoid search and negotiation costs, to engage in transfer pricing, cross subsidization and price differentiation, and to maintain the firm's established reputation (Dunning, 1993).

(2) Investment Development Path Theory

The investment development path theory was developed as a dynamic approach to the eclectic paradigm (Dunning, 1981; Dunning and Narula, 1996; Narula and Dunning, 2010; Narula and Guimon, 2010). It reveals an association between a country's levels of development (proxied by GNI per capita) and its international investment position (net outward FDI *per capita* – NOI). It has since become the basis for a wide range of theoretical and empirical studies covering many countries around the world. This dynamic interaction can be categorized in five stages which could be observed in most countries, although with significantly different rates of change and points of inflection (Narula and Guimon, 2010).

At the first stage, there is pre-industrialization in most of the least developed countries. Due to the small domestic markets size, the inadequate infrastructure, the poorly educated labour force and the inappropriate commercial and legal frameworks, both inward and outward FDI are very small. *At stage two*, with the expansion of the domestic market, the adjustment of the policies on foreign capital and the improvements in the investment environment, the country begins to display strong regional advantages, creating inward FDI but little outward FDI. Consequently, the net stocks of outward investment will become increasingly negative.

At stage three, great enhancement in their ownership advantages and internalization ability lead to the rapid increase in their FDI. This is eventually overtaken by outward direct investment, and the net FDI stock will, for the first time start to increase despite remaining negative for some time. Stronger domestic firms will be more competitive in the domestic market, while engaging in resource seeking investment in less developed countries, and in market and strategic asset seeking investment in more developed countries.

At stage four, location advantages become almost entirely based on created assets. The firms' ownership advantages that result from managing and coordinating geographically dispersed assets become far more important than those based on the

home country's specific characteristics. Intra-industry production, a consequence of the growing similarity in the advantages of countries at this stage, generally follows prior growth in intra-industry trade. At this stage, the NOI position turns positive after continued growth in outward FDI underscores the development of ownership advantages (Dunning and Narula, 1996; Narula and Dunning, 2010).

At stage five (Dunning and Narula, 1996; Narula and Dunning, 2010; Narula and Guimon, 2010), with permanently high stocks of both inward and outward FDI, the expected outcome is an unstable equilibrium around zero, although often this unstable equilibrium is achieved, not at zero but rather, around a substantially positive or negative position. At this stage, two points can be highlighted: 1) these stages are indicative; 2) progress within stages and between stages is by no means (automatic). Countries may move backwards as well as forwards (Narula and Guimon, 2010).

The review of the literature on theories of FDI shows that the theory on FDI has been developing. The perfect market theory and the imperfect market theories of FDI are vital for entrepreneurs, in terms of foreign investment. These theories build a strong base for choosing the location and setting for a business in an unknown economy. However, the mainstream FDI theories are the industrial organization theory, the product cycle theory, the internalization theory, the eclectic theory and the investment development path theory. Among the FDI theories, the eclectic theory is considered to be the most comprehensive, discussing ownership-specific advantages, internalization-specific advantages and location-specific advantages. Two other FDI theories of less importance are the dynamic comparative advantage theory and the currency premium theory.

Kojima (1978) proposed the dynamic comparative advantage theory, which explains a macroeconomic perspective of MNE activities to FDI. This theory argues that FDI should originate from the idea of comparative advantage. A country has a comparative advantage in an activity if that country can perform the activity at a lower opportunity cost than any other country. This implies that investment in industries within the home country has a comparative disadvantage. This leads to welfare improvement in both countries.

Currency areas theory (also known as currency premium theory), another notable theory of FDI, was proposed by Aliber (1970). According to currency premium theory, the pattern of FDI could be explained in terms of the relative strength of various currency areas. This theory postulates that firms belonging to a country with strong currency tend to invest abroad, while firms belonging to a country with weak currency do not have such a tendency.

2.3 Determinants of FDI: A Theoretical Review

Dunning's research work (1977, 1981) provides a comprehensive analysis based on ownership, location and the internalization (OLI) paradigm (labelled in Section 2.2 as 'eclectic theory') (Dunning, 2000). The United Nations Conference on Trade and Development (UNCTAD, 1998), applying Dunning's OLI paradigm, confirms that FDI tends to go to countries where it is possible to combine the ownership advantages with the location specific advantages of the host countries through the internalization of foreign investments.

MNEs are confronted by differing investment incentives. The motives for firms to engage in foreign production activities can be classified into four groups: *market seeking, resource seeking, efficiency seeking,* and *strategic asset seeking* (Dunning, 1993). *Market seeking* FDI attempts to secure market and sales growth in the target foreign market. It may represent a deeper involvement of the firm, following the success of exports, or the expansion of the firm into an entirely new market. Transportation costs and government regulations are the main reasons behind market seeking FDI. *Natural resources seeking* FDI attempts to acquire particular resources (e.g. minerals, raw materials and agricultural products) with a guaranteed low cost and safe supply. *Efficiency seeking* FDI has two main forms. First, in probably the more frequent type, firms often seek to increase their cost efficiency by transferring production, totally or in part, to low labour cost locations. This is especially likely to happen in industries where unskilled or semi-skilled labour represents an important part of the production costs. The second type of efficiency seeking FDI corresponds to investment aimed at rationalising the operations of existing MNEs. The target may be to exploit comparative advantages in adjacent territories (e.g. following

a process of economic integration, such as the creation of the Single European Market, in 1992), or to make use of economies of scale and scope across borders. However, as noted, the market seeking FDI is a pre-condition for this variation of efficiency seeking foreign investment. Finally, *strategic asset seeking* attempts to acquire the assets of foreign firms so as to promote their long-term strategic objectives, especially advancing their international competitiveness. MNEs with this intention often establish global strategic alliances or acquire local firms. Firms increasingly use FDI to obtain strategic assets (whether tangible or intangible) that may be critical to their long-term strategy but that are not available at home.

2.4 Determinants of FDI: An Empirical Review

A number of empirical studies consider the determinants of FDI in a single-country as well as those cross-country. This section is divided in to two parts: single-country studies and cross-country studies.

Single-Country Studies

Hara and Razafimahefa (2003) investigate the determinants of FDI inflows into Japan for the period from 1980 to 2001. The determinants considered in their study are GDP, exchange rate, volatility of exchange rates, price movements, land price, stock price and laws and regulation. The study finds that size of the market (GDP), volatility of exchange rates, price movements, cost of green field plant (land price) and deregulation of the environment are significant FDI determinants in Japan. However, the authors indicate that FDI inflows into Japan have remained low, in comparison with FDI outflows and with FDI inflows of other leading developed countries.

Using survey data for the year 2004, Ali and Guo (2005) investigate the determinants of FDI in China. The findings of the study reveal that China's huge potential market size is the most significant factor for FDI inflows into China. China's large population and fast growing economy, coupled with membership of the World Trade Organization, are major attraction for many foreign firms to invest in China. Further, government incentive policies, labour costs, and high investment return are other important factors for their

decision. One other finding from this study is that global integration is also a key factor for some foreign firms to invest in China.

Albert and Stuart (2008) investigate the long-run impact changes in a number of macroeconomic variables on Sri Lanka's FDI inflows over the period 1950–2004. The macroeconomic variables considered are real GDP, trade, wage rate, exchange rate and interest rate. They found that the wage rate is the most important determinant of FDI among the variables considered, but that, in order for Sri Lanka to sustain this comparative advantage, labour productivity growth is vital. Their study also suggests that countries with very high labour costs can still attract FDI if higher productivity can compensate for higher wage rates. The study also recommends that Sri Lanka should focus on the health of their major economic indicators, particularly the wage rate, GDP, exchange rates, interest rates and trade, when designing policies to attract FDI inflows.

Two studies focus on Malaysia (Ang, 2008 and Karim et al., 2011). Ang (2008) investigates the determinants of FDI in Malaysia for the period 1960–2005. The determinants considered in this study are financial development, real GDP, GDP growth, infrastructure development, openness, real exchange rate, corporate tax rate, macroeconomic uncertainty and dummy for financial crisis. The findings of the study reveal that real GDP has a significant positive impact on FDI inflows and that the GDP growth exerts a small positive impact on inward FDI. In addition, the results suggest that increases in the level of financial development, infrastructure development, and openness promote FDI, while higher statutory corporate tax rate and appreciation of the real exchange rate appear to discourage FDI inflows. Another interesting finding of this study is that higher macroeconomic uncertainty induces more FDI inflows. The author suggests that this is likely to be the case when foreign investors perceive a higher level of uncertainty as a greater potential investment return.

The other study, by Karim et al. (2011), also investigates the role of institutions on the inflow of FDI in Malaysia for the period 1984–2009. This study considers five political risk components: government stability, investment profile, corruption, law and order, and

bureaucracy quality. These are the institution variables important for affecting the inflow of FDI. The study reveals that there exists a long-run relationship among FDI and the institution variables. Specifically, three institution variables, government stability, bureaucracy, and corruption, are found to play prominent roles in influencing the inflow of FDI. In addition, the authors suggest that maintaining government stability has to be given high priority, as this will not only lead to better management of the country but will also attract foreign MNEs to come in and do business, potentially also reducing or even eliminating the level of corruption in the country, as a high level of corruption has been proven to deter foreign investments. However, these two Malaysian studies are totally different in terms of considered variables.

Ahamad and Tanin (2010) examine the relationship between FDI and GDP, identifying the determinants of FDI in Bangladesh for the period 1975–2006. The study finds economic growth, market size, openness, exchange rate, and labour cost are important determinants of FDI flows; they also find that there is a positive relationship between FDI and GDP. The study also reveals that foreign investors always prefer to invest not only in large markets but also in economies which are experiencing high rates of economic growth. The study also suggests that the Bangladesh government's policy framework could be developed to be an attractive destination for FDI, as it has a positive spill-over effect that results in high economic growth.

Khan and Nawaz (2010) examine the determinants of FDI in Pakistan for the period 1970–2004. Growth rate, exchange rate, whole sale price index, custom duty on imports, and export are the determinants included in their study. The findings of the study reveal that 91% of the variation in FDI inflows to Pakistan is explained by the GDP growth, exchange rate, whole sale price index, tariff rate and exports. Another important finding of this study is that export is the major determinant of FDI in Pakistan.

Severiano (2012) analyses the determinants of FDI in Portugal at the industry level, during the period 1980–2009. The determinants included in this study are corporate income tax rate, real minimum wages, openness, GDP growth, real GDP per capita, exchange rate, high school education, rate of inflation, annual growth and average real salary. The results

suggest that FDI in the primary sector (namely, in mining activities) exhibits a small dependence on economic conditions (GDP growth, GDP per capita); FDI towards the utilities sector is demonstrated by GDP per capita. In contrast, investments in the secondary sector are determined by the macroeconomic environment, which includes openness, exchange rate and minimum wage. In addition, even though the real minimum wage was found to positively affect the FDI inflows, it is surprising to see that the study finds that foreign investing firms do not choose to invest in Portugal to take advantage of a cheap work force.

Singhania and Gupta (2011) examine the determinants of FDI in India for the period 1991–2008. They consider GDP, rate of inflation, interest rate, scientific research (patents), money growth and foreign trade are explanatory variables in their analysis. The results indicate that GDP, rate of inflation and scientific research are important determinants, influencing FDI inflows. They also found that the policy changes in India during the years 1995, 1996 and 1997 have had an important impact on the FDI inflows into India.

Jayasekara (2014) investigates the determinants of FDI in Sri Lanka and evaluates the attractiveness of Bangladesh, India, Sri Lanka and Pakistan for FDI during the period 1975–2012. The study finds that GDP growth, rate of inflation, infrastructure quality, lending interest rate, labour force, exchange rate, and corporate income tax are significant determinants of FDI in Sri Lanka., The attractiveness of the selected countries for FDI was estimated by using an index. This result suggests that India and Bangladesh were more attractive for FDI inflows than Pakistan and Sri Lanka.

Boateng et al. (2015) investigate the impact of macroeconomic factors on FDI inflows in Norway for the period 1986–2009, using quarterly data. The study finds that the variables used are significant: real GDP, sector GDP, exchange rate and openness have a positive and significant impact on FDI inflows; money supply, rate of inflation, unemployment and interest rate produced significantly negative results. The results imply that, in seeking to promote a dynamic competitive advantage in the home country, governments need to pay

more attention to their macroeconomic policies to help fashion and reduce the production and transaction costs of MNEs.

Table 2.1 presents a summary review of the single-country studies. As can be seen, the determinants of FDI inflows in single countries are GDP, GDP growth, openness, labour cost, infrastructure, interest rate, rate of inflation, exchange rate, unemployment, corporate tax, return on capital, whole price index, tariff rate, export, scientific research, financial development, government stability, corruption, bureaucracy quality, macroeconomic uncertainty, deregulation of environment, global integration, government incentive policies, money supply, land price, and custom duty.

Cross-Country Studies

Sader (1995) examines the privatizing public enterprises and foreign investment for a cross-section of thirty six developing countries for the period 1988–1993. In this study, variables considered against FDI are GDP per capita, trade, domestic investment, government consumption and exchange rate. The results show that trade, domestic investment and government consumption influence FDI positively, with statistical significance, while GDP per capita and exchange rate have a negative but not significant influence on FDI.

Chunlai (1997) investigates the location determinants that affect FDI inflows into 33 developing countries, covering the data period 1987–1994, and compares performance of these countries with China in attracting FDI. The determinants considered in this study are GDP, absolute annual change in GDP, GDP growth, gross national income, manufacturing efficiency wage, distance (from home country to host country) and openness. The findings reveal that countries with larger GDP, faster economic growth, higher national income, and a higher degree of openness attracted relatively more FDI inflows, while higher wages and greater remoteness (distance) from the rest of the world deter FDI inflows. The study also finds that China's relative performance in attracting FDI inflows was moderately above average, compared with both the developing countries and the East and South-East Asian countries.

Table 2.1: A Summary of Findings from Single-Country Studies on Determinants of FDI

Author(s), Year	Country	Period	Technique	Determinants
Ahamad and Tanin (2010)	Bangladesh	1975–2006	Two Stage Lease Squares (TSLS)	• GDP • GDP growth • Openness • Exchange rate • Labour cost
Albert and Stuart (2008)	Sri Lanka	1950–2004	Vector Autoregressive (VAR)	• Labour cost • GDP • Exchange rate • Interest rate • Openness
Ali and Guo (2005)	China	2004	Descriptive Method	• GDP • Government incentive policies • Labour cost • Return on capital • Global integration
Ang (2008)	Malaysia	1960–2005	TSLS	• GDP • Financial development • Infrastructure • Openness
Boateng et al. (2015)	Norway	1986–2009	Fully Modified Ordinary Least Squares (FMOLS)	• GDP • Openness • Exchange rate • Interest rate • Rate of inflation • Money supply • Unemployment
Hara and Razafimahefa (2005)	Japan	1980–2001	Ordinary Least Squares (OLS)	• GDP • Volatility exchange rates • Land price • Deregulation

Jayasekara (2014)	Sri Lanka	1975–2012	FMOLS	• GDP growth • Infrastructure • Labour force • Exchange rate • Rate of inflation • Interest rate • Corporate income tax
Karim et al. (2011)	Malaysia	1984–2009	Autoregressive Distributed Lag (ARDL)	• Government stability • Bureaucracy • Corruption
Khan and Nawaz (2010)	Pakistan	1970–2004	OLS	• GDP growth • Exchange rate • Whole sale price index • Tariff rate • Exports
Koojaroenprasit (2013)	Australia	1986–2011	OLS	• GDP • Custom duty • Interest rate • Exchange rate
Severiano (2012)	Portugal	1980–2009	OLS	• Openness • Exchange rate • Minimum wage • GDP per capita
Singhania and Gupta (2011)	India	1991–2008	Autoregressive Integrated Moving Average (ARIMA)	• GDP • Rate of inflation • Scientific research

Billington (1999) investigates the determinants of FDI using pooled data across seven industrialized countries, Australia, Canada, France, Germany, Japan, the UK and the US, for the period 1986–1993. The same study extends the analysis at the regional level in the UK using pooled data from 11 regions for the years 1984, 1986 and 1990–1994. The determinants considered in this study are real GDP, GDP growth, unemployment rate, imports, corporate tax rate, interest rate, openness, infrastructure, population density and industrialization. The study finds that, at the individual country level, GDP, economic growth, level of unemployment, host country imports and certain policy variables (corporate tax and interest rates) are significant determinants of FDI location. At the regional level, population density, labour costs and unemployment are the most influential factors. This study also finds that FDI inflows appear to have a nonlinear relationship with corporate tax rates and imports at the individual country level, and with unit wage costs at the regional level.

Using panel data on 32 Sub-Saharan Africa (SSA) and 39 non-SSA developing countries for the three periods 1988–1990, 1991–1993 and 1994–1997, Asiedu (2002) examines the determinants of FDI and analyses why SSA has been relatively unsuccessful in attracting FDI. The determinants of FDI used in the study are return of investment in the host country, infrastructure development, political risk, openness, GDP, GDP per capita, rate of inflation and GDP growth. The findings of the study indicate that countries in SSA have received FDI at a lower average level, compared to countries in other regions. Higher return on investment and infrastructure development promote FDI to non-SSA countries but have no significant impact on FDI flows to SSA; openness promotes FDI to both SSA and non-SSA countries. However, the marginal benefit from increased openness is less for SSA than for non-SSA countries.

Mold (2003) analyses the locational determinants of FDI outflows from the US to developed European countries in the manufacturing sector for the period 1978–1995. The determinants considered in this study are GDP, economic growth, labour cost, bond, real exchange rate, variation for monthly exchange rates and distance. The study finds that GDP, exchange rate and relative unit labour cost are significant FDI determinants. Moreover, Mold finds that the

growth rate of real FDI inflows was much higher in the peripheral countries[4] than in the European centre (63 versus 31%).

Using cross-sectional data for the year 1997, Janicki and Wunnava (2004) investigate the determinants of FDI among the members of the European Union and eight other Central and East European Countries (CEEC). The study considers the variables GDP, labour cost, country risk and openness, and concludes that the determinants of FDI are country risk, size of the economy (GDP), labour costs, and openness. The study also claims that transportation infrastructure could play an important role in determining FDI; however, due to data unavailability, this was not included in their empirical analysis.

Two studies focus on South Asia. Sahoo (2006) identifies the determinants of FDI and examines the impact of FDI on growth in five South Asian countries, namely Bangladesh, India, Nepal, Pakistan and Sri Lanka, for the period 1975–2003. The determinants considered for this analysis are GDP, growth, openness, infrastructure, exports, rate of inflation, labour force, literacy rate, rate of return, total reserve for imports, domestic bank credit, and real interest rate. The study finds that determinants GDP, labour force growth, infrastructure and openness have significant impact on FDI. Based on these findings, the study proposes that, to attract further FDI, South Asian countries need to maintain growth momentum to improve the market size, increase the use of the abundant labour force, improve infrastructure facilities and follow more open trade policies.

The other study, by Bhavan et al. (2011), also investigates the determinants of FDI and its effect on economic growth in the case of the four South Asian countries, Bangladesh, India, Pakistan and Sri Lanka, over the period of 1995–2008. The determinants used in this study are GDP, growth, infrastructure, distance, population, openness, exchange rate and human development. The study found that distance, openness, human development, population and electricity consumption per capita (infrastructure) in the host country play a significant role in determining the FDI flows in the four South Asian countries. In both studies (Sahoo, 2006;

[4]The peripheries are those countries that are not reaping the benefits of global wealth and globalization. http://geography.about.com/od/politicalgeography/a/coreperiphery.htm

Bhavan et al., 2011), infrastructure and openness are found to be significant factors of FDI inflows.

Cevis and Camurdan (2007) investigate the economic determinants of FDI inflows by employing a panel data set of 17 developing countries and transition countries for the period of 1989(1)–2006(4). The determinants included in this analysis are GDP growth, wage, openness, interest rates, rate of inflation, lagged FDI, and domestic investment. The study finds that the main determinants of FDI inflows are lagged FDI, rate of inflation, interest rate, economic growth and openness.

Vogiatzoglou (2007) examines the determinants of inward FDI in nine South and East Asia host countries and ten OECD investing countries during the period 1994–2003. The determinants considered in this study are market size, bilateral geographical distance, GDP growth, labour cost, infrastructure, human capital, natural resources, macro-economic instability, corporate tax rate, openness, bilateral trade, and vertical specialization links. The findings of the study reveal that the significant factors for FDI are bilateral trade, vertical specialization links and openness. Based on the findings, the study suggests that the South and East Asian countries should promote closer economic relations and bilateral trade with the investing countries, build bilateral vertical specialization-production links with the investing countries, and increase the openness and degree of integration of the domestic economy to the global economy.

Using cross-sectional data for the period 2000–2004, Demirhan and Masca (2008) explore the determining factors of FDI inflows in 38 developing countries. They have used seven independent variables: growth rate of per capita GDP, rate of inflation, infrastructure (telephone lines), labour cost, openness, risk and corporate tax rate. Their results show that growth rate of per capita, infrastructure and openness have a positive and statistically significant impact on FDI, and rate of inflation and tax rate have a negative and statistically significant impact on FDI. However, labour cost (positive) and risk (negative) have impact on FDI but are considered insignificant.

Casi and Resmin (2010) analyse the determinants of FDI in 25 European countries at the regional level using data for the period 2005–2007. The determinants included in the analysis are GDP growth, labour cost, market potential, transport and communication and financial

services. The study found that the traditional determinants of foreign investments (market potential, GDP growth, and labour cost) are still important drivers for FDI. The study also found that FDI flows are more sensitive to the functional rather than to the economic specialization of regions, with the exception of the financial services and the transportation and communication services. The study suggests a change in the localization strategies of MNEs in Europe, which must be taken into account when implementing specific policies to attract FDI.

Mottaleba and Kalirajan (2010) identify the factors that determine FDI inflows to 31 low-income and 37 lower-middle income developing countries during the period 2005–2007. The study included the following determinants in the analysis: GDP and its growth, infrastructure, trade, aid and industrial value added, business environment and rate of inflation. The results show that the determinants of FDI – GDP, trade, aid and the growth rate of industrial value added – positively and significantly affect the inflows of FDI in lower middle income countries. The study also finds that countries with a larger GDP and high GDP growth, a higher proportion of international trade and a more business friendly environment are more successful in attracting FDI. It is interesting to note that their finding reinvigorates the positive role of foreign aid to developing countries in attracting FDI. The findings are robust across the countries and income groups.

Using OECD data for the years 1980–2003, Ramasamy and Yeung (2010) investigate the determinants of FDI in the services and manufacturing sectors. The variables included in their analysis are GDP and GDP growth, openness, labour cost, education, infrastructure, risk, lagged FDI and interest rate. The study finds all selected variables are significant in the market seeking, efficiency seeking and strategic reasons categories, which are essential to attract FDI.

Comparing FDI in European Union (EU) and non EU–OECD countries, Piteli (2010) analyses the determinants of FDI in 17 developed OECD countries (Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, Portugal, Spain, Sweden, the UK, and the US) for the period 1972–2000. The determinants considered in this study are GDP per capita, real unit labour cost, firms' gross operating surplus, total factor productivity (TFP), the gap between actual and trend GDP, and

corporate tax rate. The results find that TFP is an important determinant of FDI among the variables considered. Further, the study also reveals that some differences exist between developed European and non-European countries, as well as factors other than TFP that influence FDI in these groups of countries.

Koojaroenprasit (2013) investigates the determinants of FDI inflows into Australia from three major countries (Japan, UK and US) for the period 1986–2011.The determinants considered in the study are GDP, wage, openness, customs duty, interest rate, exchange rate, rate of inflation, corporate tax and research and development expenditures. The findings of the study reveal that a larger GDP tends to increase FDI, whereas openness and a higher corporate tax rate tend to decrease FDI inflows into Australia. Lower customs duty and lower interest rate and depreciation of exchange rates will attract more FDI. The relationship between FDI inflows and wages is not significant in Australia.

Table 2.2 presents a summary review of these cross-country studies. As can be seen, the main determinants of FDI inflows across these countries are lagged FDI, GDP, GDP growth, GDP per capita, openness, labour cost, education, risk, infrastructure, interest rate, customs duty, rate of inflation, exchange rate, minimum wage, corporate tax, total factor productivity, domestic investment, research and development expenditures, return on capital, distance, FDI stock, foreign aid, bilateral trade, vertical specialization, financial development, government stability, development, population, import, and government consumption.

Table 2.3 presents the summary information in Tables 2.1 and 2.2 by grouping them (major determinants in both single and cross-counties) based on observed effects on FDI. As can be seen, GDP and GDP growth, openness and infrastructure generally have a positive influence on FDI while wage, exchange rate and rate of inflation impact negatively on FDI.

We present the summary results presented in Tables 2.1 and 2.2 in a histogram. Figure 2.2 presents the frequency distribution of these factors that significantly influence the level of FDI.

Table 2.2: A Summary of Findings from Cross-Country Studies on Determinants of FDI

Author(s), Year	Country	Period	Technique	Determinants
Asiedu (2002)	71 developing countries (SSA-Sub-Saharan Africa and non SSA)	1988–1990 1991–1993 1994–1997	Panel regression	• Return on capital • Infrastructure development • Openness
Bhavan et al. (2011)	Bangladesh India Pakistan Sri Lanka	Panel data 1995–2008	Generalised Method of Moments (GMM)	• Distance • Openness • Human development • Population • Infrastructure
Billington (1999)	7 industrialized countries and 11 UK regions	7 Countries: 1986–1993; 11 Regions: 1984,1986, 1990–1994	Pooled regression	• GDP • GDP growth • Unemployment • Host country imports • Corporate tax • Interest rates • Population density • Labour cost
Casi and Resmin (2010)	25 European countries	2005–2007	OLS	• GDP • GDP growth • Labour cost
Cevis and Camurdan (2007)	17 developing countries and transition economies	1989(1) – 2006(4)	Generalised Least Squares (GLS)	• Lagged FDI • Rate of inflation • Interest rate • GDP growth • Openness
Chunlai (1997)	33 developing countries	1987–1994	GLS	• GDP • GDP growth • GDP Per capita • FDI stock • Openness
Demirhan and Masca (2008)	38 developing countries	2000–2004	OLS	• GDP per capita • Infrastructure • Openness • Rate of inflation

				• Tax rate
Janicki and Wunnava (2004)	European Union and 8 Central and East European countries (CEEC)	1997	Weighted Least Squares (WLS)	• GDP • Risk • Labour cost • Openness
Mold (2003)	US and developed European countries	1978–1995	Panal regression	• GDP • Exchange rate variability • Labour costs
Mottaleba and Kalirajan (2010)	68 low-income and lower-middle income developing countries	2005–2007	OLS	• GDP • GDP growth • Foreign aid • Business environment
Piteli (2010)	17 developed OECD countries	1972–2000	Panel regression	• Total factor productivity
Ramasamy and Yeung (2010)	OECD countries	1980–2003	GMM	• Lagged FDI • GDP • GDP growth • Openness • Labour cost • Education • Infrastructure • Risk • Interest rate
Sader (1995)	36 developing countries	1988–1993	OLS	• Trade • Domestic investment • Government consumption
Sahoo (2006)	5 South Asian countries (Bangladesh, India, Nepal, Pakistan and Sri Lanka	1975–2003	Panel regression	• GDP • Labour force growth • Infrastructure • Openness
Vogiatzoglou (2007)	South and East Asia (9 host-countries from South and East Asia and 10 major home or investing countries)	1994–2003	Panel gravity model	• Bilateral trade • vertical specialization

Table 2.3: Previous Findings on Effect of Selected Variables on FDI

Determinants of FDI	Observed effect of Selected variables on FDI		
	POSITIVE	NEGATIVE	INSIGNIFICANT
GDP and GDP growth	Chunlai (1997) Billington (1999) Hara and Razafimahefa (2003), Mold (2003) Janicki and Wunnava (2004) Ali and Guo (2005) Sahoo (2006) Albert and Stuart (2008), Ang (2008) Demirhan and Masca (2008) Ahamad and Tanin (2010) Casi and Resmin (2010) Mottaleba and Kalirajan (2010) Ramasamy and Yeung (2010) Khan and Nawaz (2010) Singhania and Gupta (2011) Koojaroenprasit (2013) Jayasekara (2014) Boateng et al. (2015)		Asiedu (2002) Vogiatzoglou (2007)
Openness	Chunlai (1997) Asiedu (2002) Janicki and Wunnava (2004) Sahoo (2006) Cevis and Camurdan (2007) Albert and Stuart (2008) Ang (2008), Demirhan and Masca (2008) Ahamad and Tanin (2010) Ramasamy and Yeung (2010) Bhavan et al. (2011) Severiano (2012) Boateng et al. (2015)	Koojaroenprasit (2013)	
Infrastructure	Asiedu (2002), Sahoo (2006) Ang (2008), Demirhan and Masca (2008) Ramasamy and Yeung (2010) Bhavan et al. (2011) Jayasekara (2014)		Billington (1999) Asiedu (2002, SSA)
Wage		Janicki and Wunnava (2004) Ali and Guo (2005) Albert and Stuart (2008) Casi and Resmin (2010)	Cevis and Camurdan (2007) Koojaroenprasit (2013)
Exchange rate	Boateng et al. (2015)	Ang (2008) Khan and Nawaz (2010) Severiano (2012) Koojaroenprasit (2013)	Sader (1995) Mold (2003)
Rate of inflation	Jayasekara (2014)	Cevis and Camurdan (2007) Demirhan and Masca (2008) Singhania and Gupta (2011) Boateng et al. (2015)	
Interest rate	Billington (1999) Cevis and Camurdan (2007)	Ramasamy and Yeung (2010) Koojaroenprasit (2013) Jayasekara (2014) Boateng et al. (2015)	

As can be seen, GDP or GDP growth, openness, infrastructure, exchange rate, wage, interest rate and rate of inflation are the dominant determinants identified by the majority of the studies in single countries and across countries.

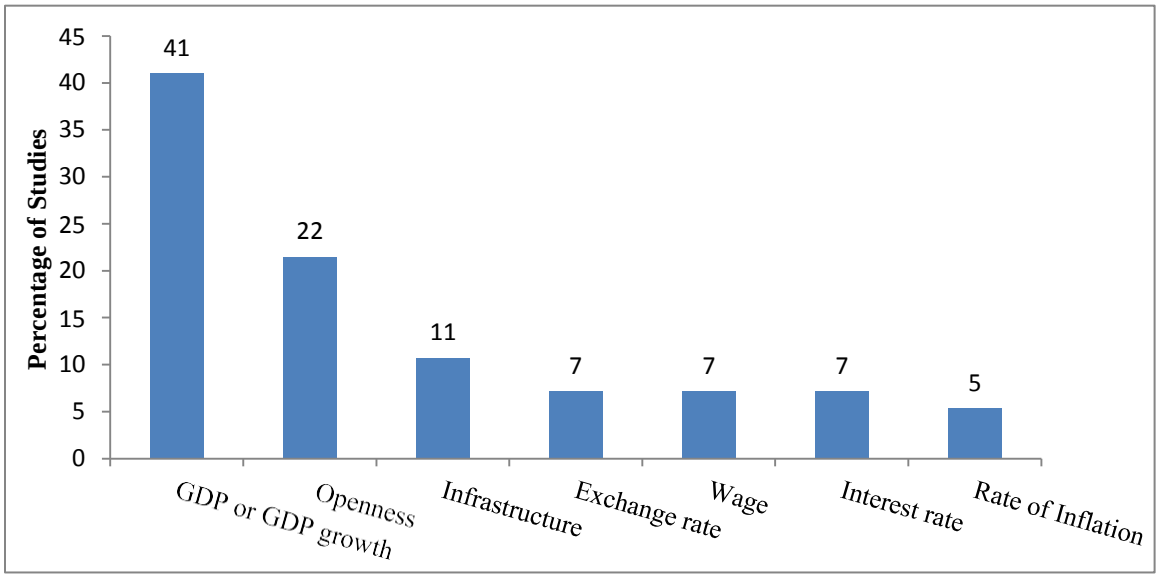


Figure 2.2: Major Determinations of FDI, based on the Review

We shall use some of these variables in Section 2.6 of this chapter, when we consider the major determinants that influence FDI.

2.5 Evolution of the FDI Policies in Sri Lanka

Sri Lanka, an island located off the southern coast of India in South Asia, has a total area of about 65,610 square kilometers, and a population of 20.9 million (2015). At the time of gaining independence from Britain in 1948, Sri Lanka represented a classic example of a dualistic export economy comprising an export oriented modern plantation economy and a traditional subsistence-oriented agricultural economy (Snodgrass, 1966).

Since independence, there have been two distinctive phases of government policy towards private investment in Sri Lanka. In the first phase, from 1948 to 1977, the public sector was the dominant entity and controlled the country's resources. During this phase, mixed policies were

pursued. For example, during the late 1960s, a partial liberalization generated better conditions for the private sector. The period 1971–1977 saw a reversal of intensified government intervention and several policy measures that had an adverse impact on private sector investment (UNCTAD, 2004).

The second distinctive phase was when Sri Lanka launched its economic liberalization reforms in 1977, becoming the first country in the South Asian region to do so. These reforms replaced the quantitative restrictions on imports with tariffs and revised the tariff structure to achieve greater uniformity. Such reforms resulted in reducing restrictions, together with new incentives for export-oriented foreign investment, under an attractive Free Trade Zone (FTZ) scheme. Reforms on financial institutions led to the adjustment of the interest rates to levels above the rate of inflation, opening the banking sector to foreign banks and freeing the credit markets to determine interest rates. Furthermore, reforms were introduced to limit public sector participation in the economy; a programme for the privatization of public enterprises, the exchange rate realignment and incentives for non-traditional exports was also implemented (Athukorala, 2005).

Two significant developments have occurred in the investment environment since the liberalization phase began in 1977. The introduction of export processing zones (EPZs) has been important, in terms of attracting export-oriented foreign firms. An enabling regime for EPZs was set up in 1978 as part of the creation of the Greater Colombo Economic Commission (GCEC). EPZs contribute a significant share to Sri Lanka's industrial export earnings. Another notable change was the adoption of an ambitious privatization programme, announced as a state policy in 1987, with the objective of reducing the burden on the budget created by the operations of the state-owned enterprises (SOEs) and improving the efficiency and profitability of these enterprises. In 1992, the most important building block of Sri Lanka's FDI policies was the establishment of the Board of Investment (BOI). With the aim of improving Sri Lanka's effectiveness in attracting FDI, the BOI was bestowed with wide powers of tax relief and administrative discretion in all matters relating to FDI. The BOI provides "one-stop-shop" (many organizations in one) service for foreign investors, with duties including approving projects, granting incentives, arranging utility services, and facilitating import and export clearances.

Sri Lanka's foreign investment regime has been significantly liberalized. Total foreign ownership is permitted in most industries and in a number of service sector activities including banking, insurance, finance, construction, mass transportation, telecommunications and information technology and petroleum distribution. There is no restriction on the repatriation of profits/dividends of foreign companies. The remittance of management fees, royalties and licensing fees are also permitted for companies with majority foreign investment approved under Section 17 of the BOI Act. Stock market investments can be remitted without prior approval from the Central Bank. Investment returns can be remitted in any convertible currency at the market rate, while foreign investors may invest in foreign currency denominated bonds. National treatment is offered to all foreign investors.

The BOI promotes the following sectors as priority sectors for FDI: tourism and leisure, infrastructure, knowledge services, utilities, apparel, export manufacturing, export services, agriculture and education. However, FDI is not permitted in the following businesses: non-bank money lending, pawn-brokering, retail trade with a capital investment of less than US$1 million and coastal fishing. The BOI maintains a number of EPZs (Biyagama, Horana, Kandy, Katunayake, Koggala, Malwatta, Mawathagama, Mirigama, Mirijjawila, Polgahawela, Seethawaka and Wathupitiwala) that feature business-friendly regulations and improved infrastructure for foreign investors (BOI, 2014). Sri Lanka seems to have had a relatively well-designed (FDI) promotion strategy since the end of the civil war in 2009. Despite the fact that Sri Lanka's FDI regime has been liberalized more quickly than that of most of its competitors, Sri Lanka is still facing a number of impediments, where policy instruments are needed to take effect.

Sri Lanka is one of the developing countries that badly needs FDI, as its capacity to allocate its own funds for development is very low due to its lower level of domestic savings, which was only 21% of gross domestic product (GDP) in 2014 (Ministry of Finance, Annual report, 2014). The investment-favourable policies adopted by successive governments over the past three decades did result in FDI inflows into Sri Lanka. However, the growth of FDI inflows into Sri Lanka has performed below the government's post-civil war expectations. Despite the rapid

growth of infrastructure, the sound macroeconomic conditions, the favourable investment climate and the huge government support for FDI inflows, Sri Lanka still fails to attract a significant amount of FDI inflows compared to its South Asian neighbours. For example, Sri Lanka had set a target to attract $2 billion FDI in 2013 (US Department of State Report, 2014), but managed to receive only $0.933 billion. What are the factors that influence FDI inflows into Sri Lanka? Did political instability impact FDI? The next section aims to find answers to these questions by using historical (time series) data on FDI inflows and a number of other relevant explanatory variables.

Figure 2.3 presents the FDI inflows and FDI inflows, as a percentage of GDP, to Sri Lanka during the period 1970–2014. As can be seen, before the implementation of inward-oriented policies in 1977, FDI inflows were negligibly small. FDI inflows tremendously increased with the establishment of the GCEC and the EFZ in 1978. For example, FDI inflows tremendously increased from $47 million in 1979 to $64 million in 1982. However, the impressive upward trend in FDI inflows was disrupted by ethnic riots that took place in 1983. Major ethnic riots in the capital city and elsewhere took place in July 1983; in later years the civil war between the government of Sri Lanka and the Liberation Tigers of Tamil Eelam (LTTE) made the investment climate less attractive to foreign investors.

Since 1983, the FDI inflows have declined during periods of hostilities and increased during periods of peace negotiations between the Sri Lankan government and the LTTE. In the final stages of the civil war, during 2008–2009, FDI inflows declined sharply from $752 million to $404 million.

They then increased to $941 million in 2012, but decreased to US$ 893.6 million in 2014 (World Bank, 2015). The line graph in Figure 2.3 shows that the FDI inflows as a percentage of GDP remained very low (less than 1%) until 1977. Even though FDI inflows as a percentage of GDP have increased from 1978, due to unfavourable investment climate, they have fluctuated over the years, with a result of 1.12% by the end of 2014.

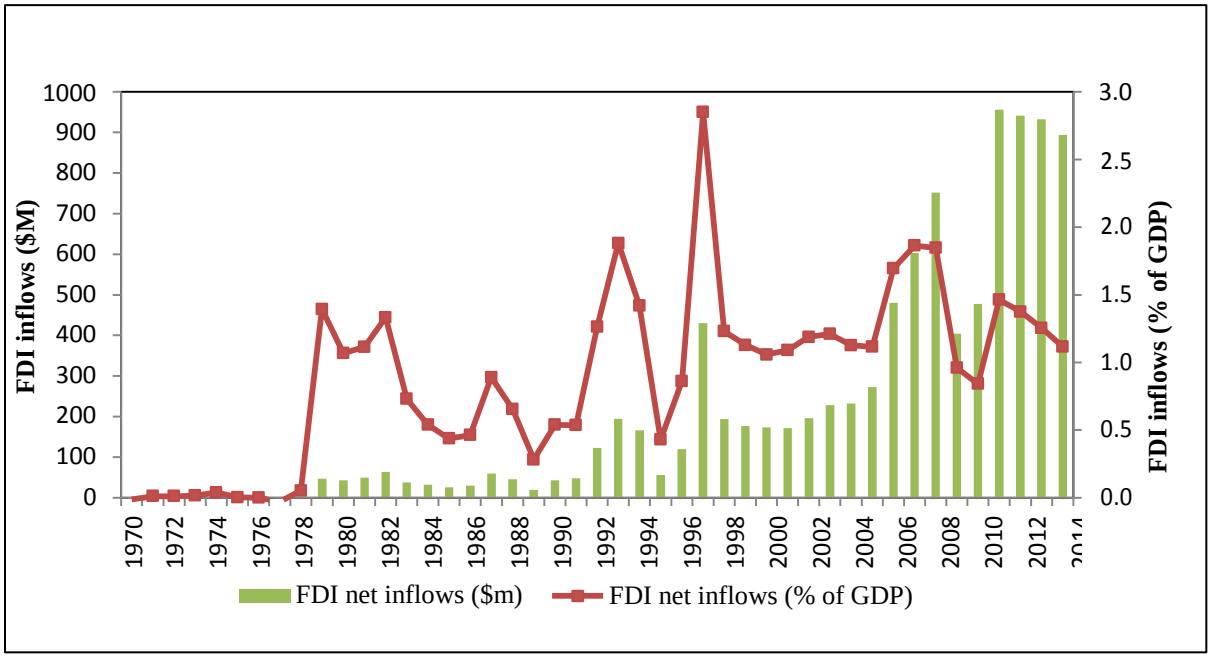


Figure 2.3: FDI Inflows in Sri Lanka, 1970–2014

2.6 Empirical Analysis

This section presents the variables and their sources of data used in the study and conducts a preliminary analysis of the data. In the following section, time series analysis is used to analyse formally the relationship between FDI and its determinants.

The Data

Annual time series data to cover the period 1978–2014 is used for the following variables: FDI, GDP per capita (GDPPC), openness, infrastructure, exchange rate, wage, interest rate, rate of inflation and political stability. These data are collected from various issues of *World Development Indicators* (World Bank, 2015), *Annual Reports* and *Economic and Social Statistics Reports of the Central Bank of Sri Lanka (2015)* and *the Sri Lankan Election Commission reports* (2015). FDI net inflows are measured in US$. GDP per capita (GDPPC) (constant 2005 US$) and GDP growth are used as proxies for market size and growth of market size; openness (OPEN) (i.e., OPEN = [(exports + imports)/GDP)] as a proxy for 'openness' of the country. An 'infrastructure index' is used as a proxy to measure the level of infrastructure. This weighted index is constructed based on three variables, namely number of telephone lines (per 100 people), road mileage (national highway roads) and electricity production (kWh) (Li,

2004; Ramasamy and Yeung, 2010), where the weights are the share of these variables on the GDP. Exchange rate is the average official US$ per Sri Lankan Rupees (Rs); the wage rate index (real wage rate index for all workers) as a proxy for labour cost; interest rate (real lending interest rate) as a proxy for cost of capital; the rate of inflation (GDP deflator, annual percentage) as a proxy for the level of macroeconomic instability; and a dummy variable (political instability, POLINS), taking a value 1 for the change of government years and 0 otherwise, as a proxy for political instability (Mauro, 1995; Alesina et al., 1996; Benhabib and Spiegel, 1997).

The expected signs of the determinants on FDI are as follows: GDPPC, openness, GDP growth and infrastructure are expected to have a positive impact on FDI, while wage, rate of inflation and political instability are expected to have a negative effect. The exchange rate and interest rate could have either positive or negative effects on FDI. These expected signs are also supported by the review summary presented in Table 2.3. A larger size of GDPPC results in more FDI inflows, due to the benefits of economies of scale. Openness is often interpreted as a measure of trade restrictions. As less trade restriction encourages export, the presence of high openness (less trade restriction) will increase FDI inflows. Economic growth could attract more FDI as it provides market potential. The well-developed infrastructure raises the productivity of investments and therefore stimulates FDI inflows. An appreciation of the domestic currency reduces FDI, since it increases the cost of capital investment. Higher labour cost discourages FDI because it makes production in an economy more costly. If the rate of interest in the host nation is low (relative to world interest rates), foreign MNEs will invest more in the host country. As a high rate of inflation would reduce the return on investment, FDI inflows will be discouraged. Political instability causes an uncertain political environment, raising risks and reducing FDI.

As a preliminary investigation, scatter plots of FDI inflows against each of the following possible determinants are plotted: (i) GDP per capita (GDPPC), (ii) Openness (OPEN), (iii) Infrastructure (INFRA), (iv) Wage (WAGE), (v) Rate of inflation (INF), (vi) Interest rate (INT), (vii) Exchange rate (EXCH) and (viii) GDP growth (GRO). The corresponding scatter plots are presented in Figures 2.4 to 2.11. As can be seen, there is as expected a positive relationship between FDI and GDPPC, openness, infrastructure, interest rate and growth rate, but a negative relationship between FDI and rate of inflation, wage, and exchange rate.

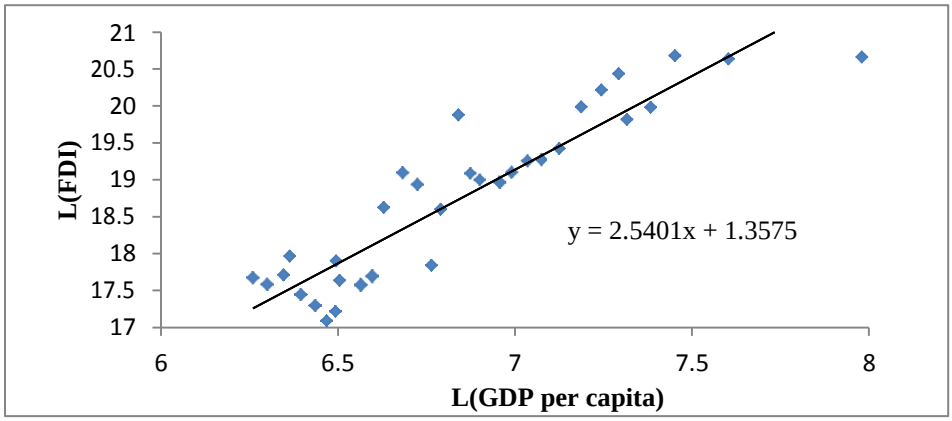


Figure 2.4: FDI inflows vs GDP per capita

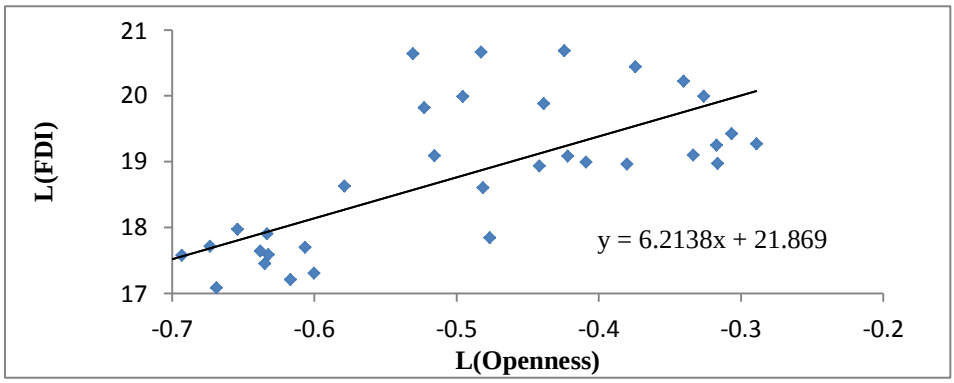


Figure 2.5: FDI inflows vs Openness

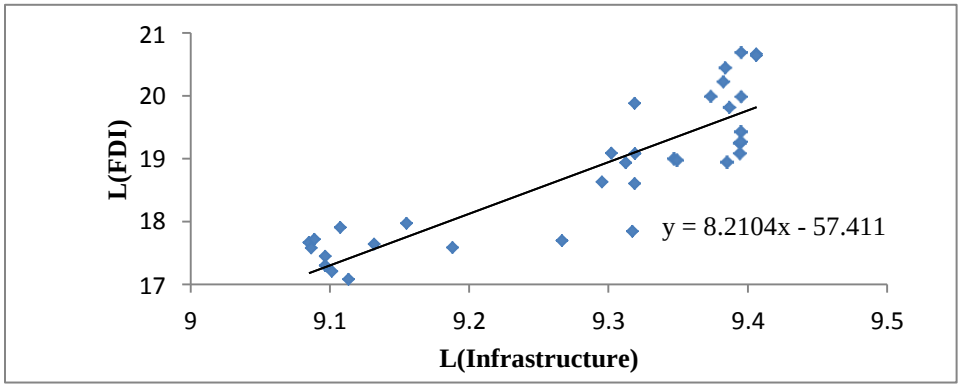


Figure 2.6: FDI inflows vs Infrastructure

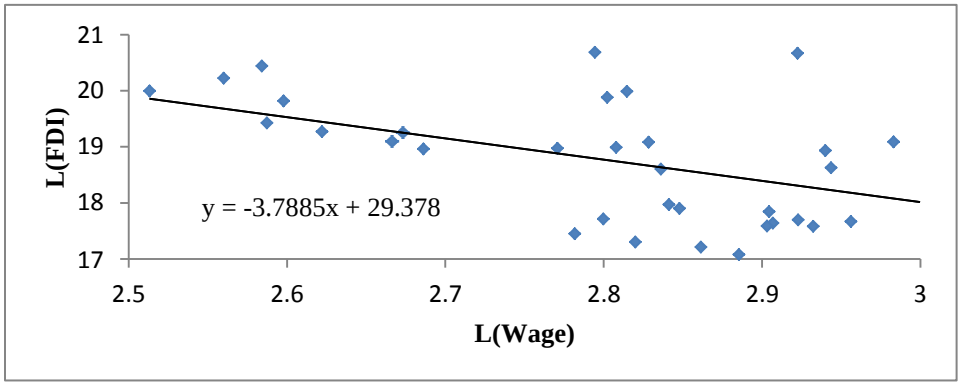


Figure 2.7: FDI inflows vs Wage

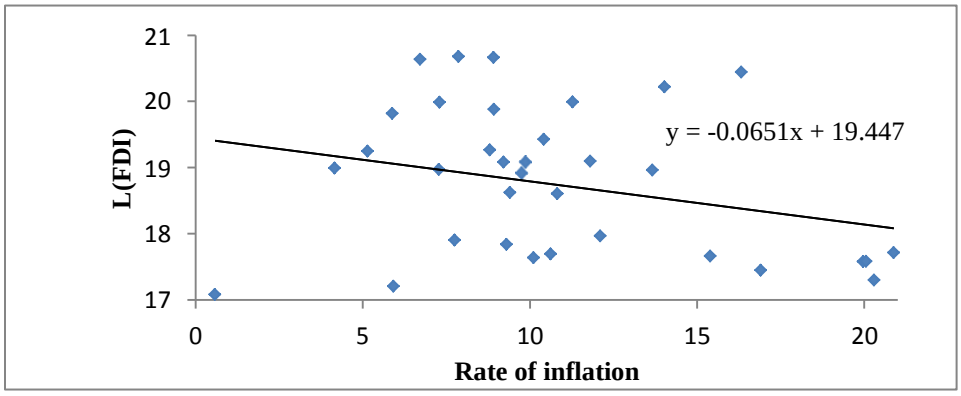


Figure 2.8: FDI inflows vs Rate of inflation

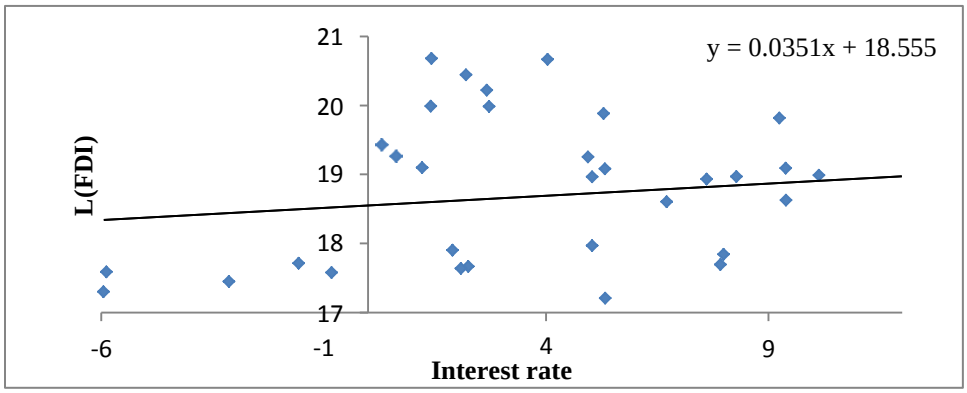


Figure 2.9: FDI inflows vs Interest rate

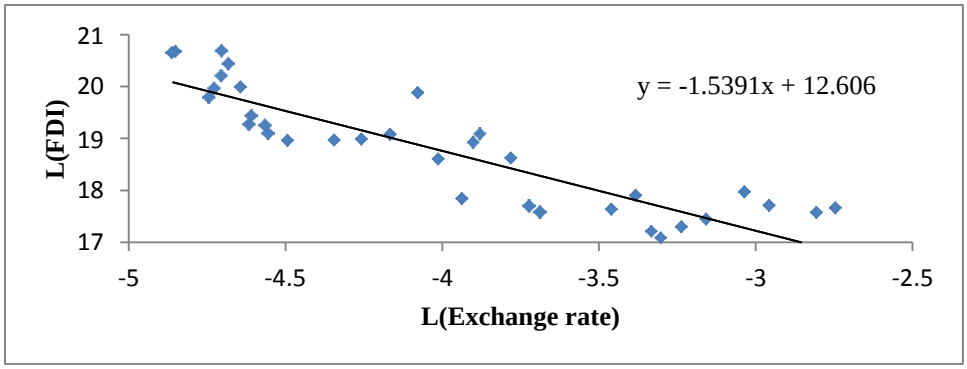


Figure 2.10: FDI inflows vs Exchange rate

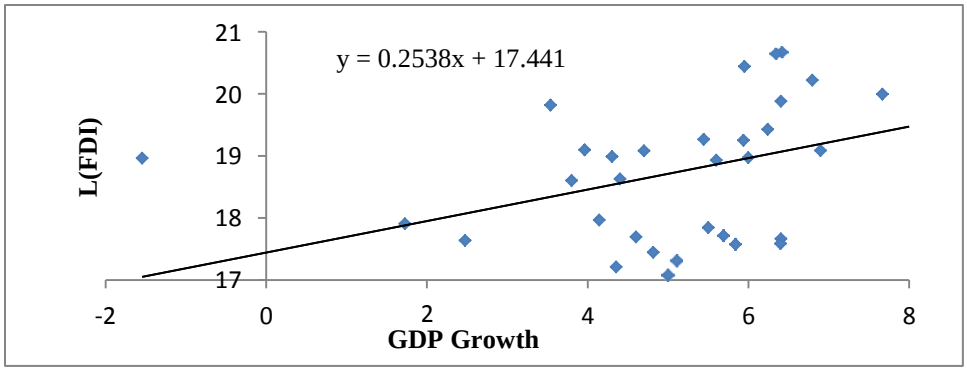


Figure 2.11: FDI inflows vs GDP growth

Model Estimation and Results

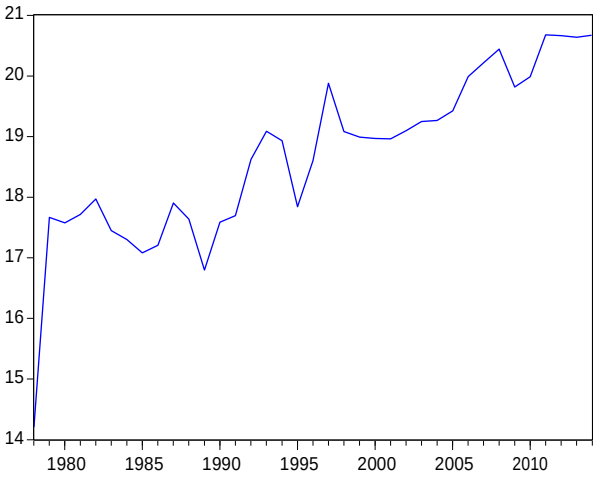
To investigate the relationship between FDI and its possible explanatory variables, FDI is considered as a linear function of the following variables: GDPPC, OPEN, INFRA, WAGE, INF and POLINS. Since exchange rate and interest rate are highly correlated with the remaining independent variables, these two variables are excluded from the model to avoid the multicollinearity problem[5] (Sun et al., 2002). All variables except rate of inflation are in natural logarithm. The estimating equation takes the form,

$$LFDI = \lambda_0 + \lambda_1 LGDPPC + \lambda_2 LOPEN + \lambda_3 LLINFRA + \lambda_4 LWAGE + \lambda_5 INF + \lambda_6 POLINS + \varepsilon \quad (2.1)$$

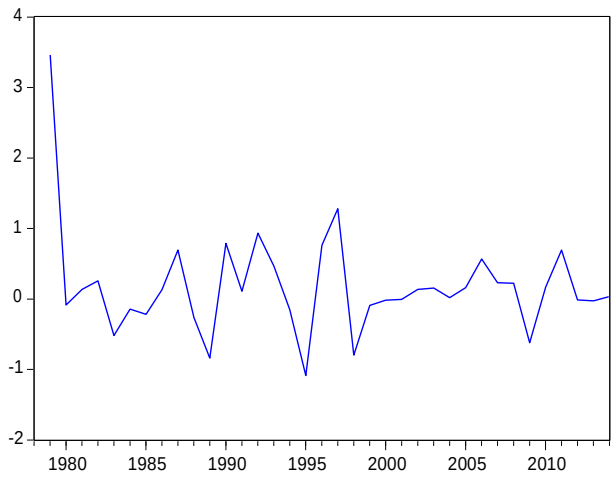
[5] (Correlation(Interest rate , Rate of inflation) = –0.76, Correlation(Exchange rate ,GDPPC) = –0.93, Correlation(Exchange rate, Openness) = –0.85, Correrlation (Exchange rate, Infrastructure) = –0.96.)

Figure 2.12 presents the time series plots for the six variables in their level forms and first differences. As can be seen, all variables appear to be non-stationary in level forms (with the exception of rate of inflation) and are stationary in their first differences. We next formally apply the unit root tests to confirm that the variables are non-stationary in their level forms and stationary in their first differences.

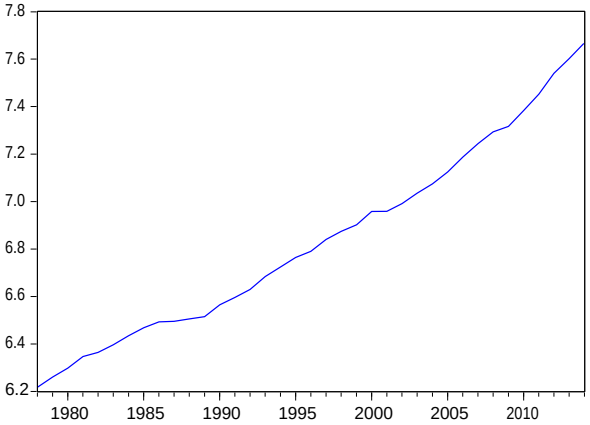
FDI (LFDI) in Level



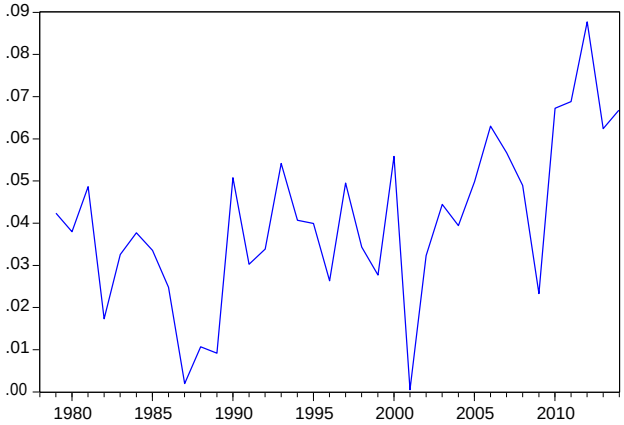
FDI (LFDI) in First difference



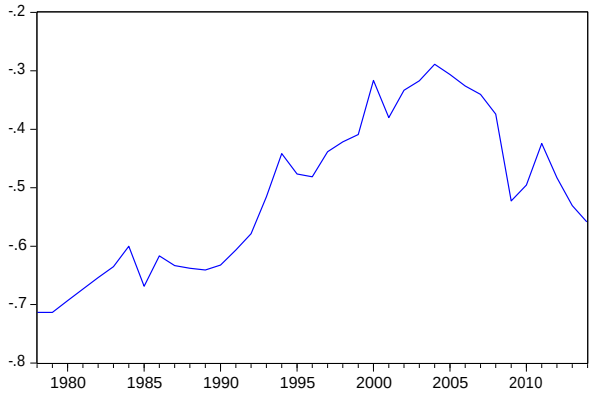
GDP per capita (LGDPPC) in Level



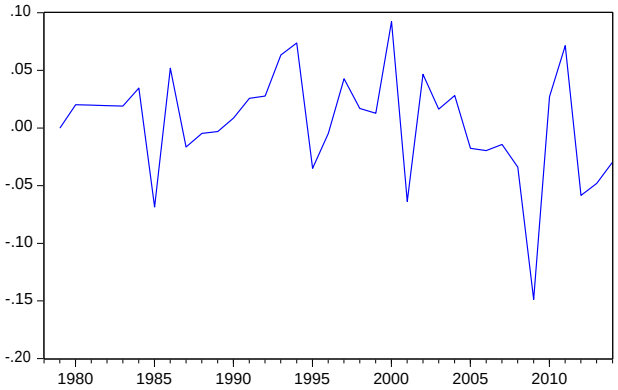
GDP per capita (LGDPPC) in First difference



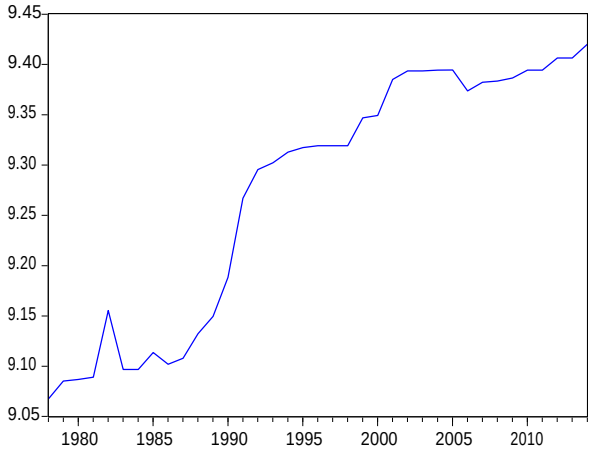
Openness (LOPEN) in Level



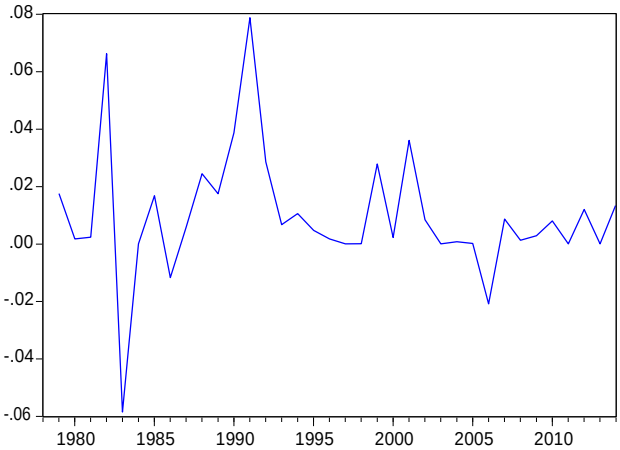
Openness (LOPEN) in First difference



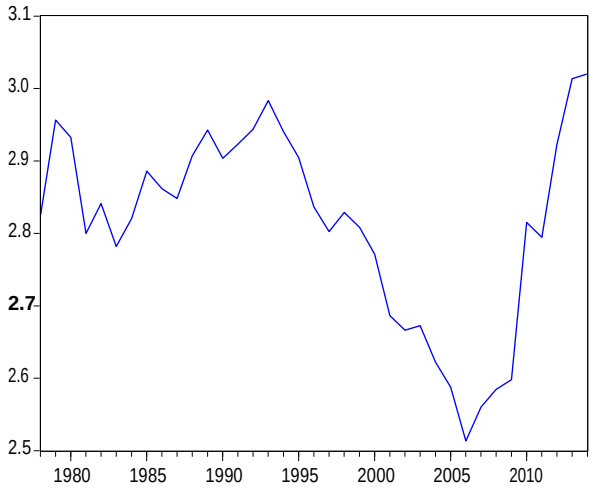
Infrastructure (LINFRA) in Level



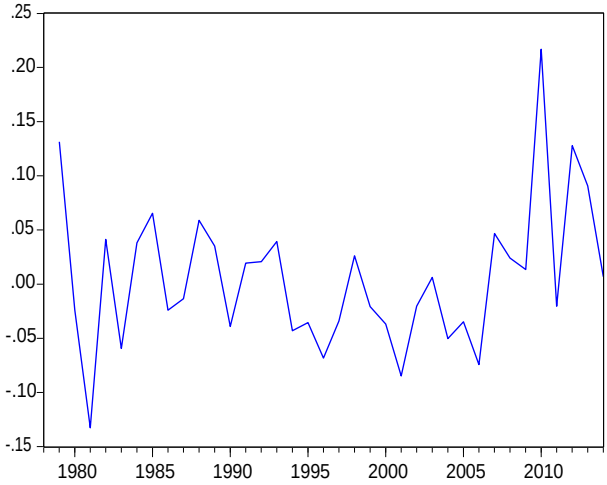
Infrastructure (LINFRA) in First difference



Wage (LWAGE) in Level



Wage (LWAGE) in First difference



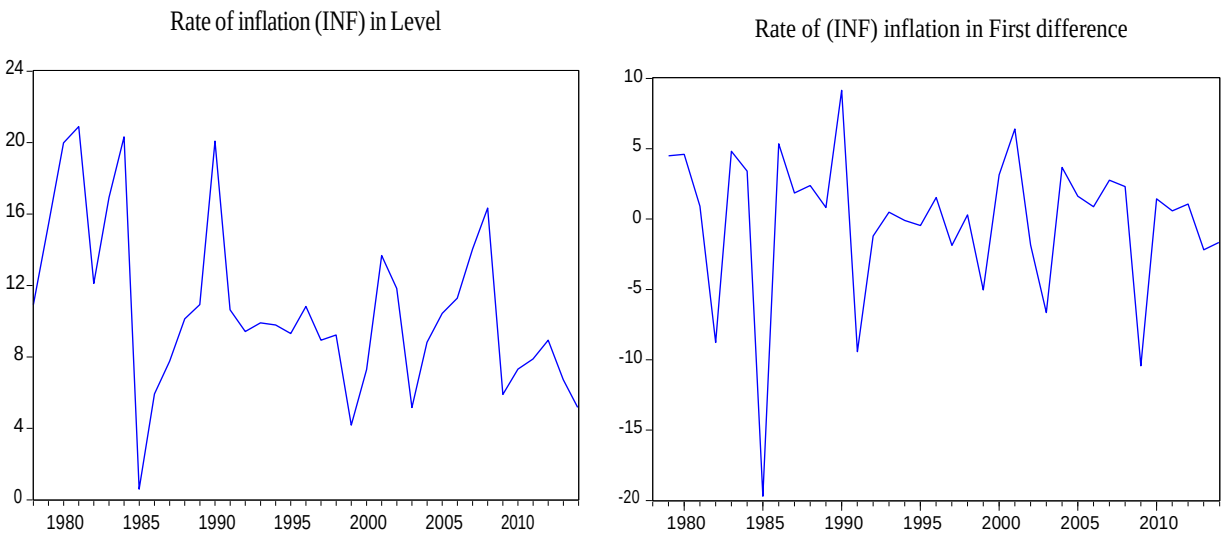


Figure 2.12: Time Series Plots of the Five Variables in Level and First Difference form, 1978–2014

Unit Root Test

We now formally test the stationary properties of the six time series variables of interest and determine their order of integration, using Augmented Dickey-Fuller (ADF, 1979) and Phillips and Perron (PP, 1988) tests. The results of the unit roots tests are reported in Table 2.4. It can be seen, the rate of inflation is integrated of order zero, I(0): FDI, GDP per capita, openness, infrastructure, and wage are integrated of order one, I(1) in both tests.

Table 2.4: Unit Root Test Results

Variables	ADF		PP		Order of Integration
	Levels	First Differences	Levels	First Differences	
LFDI	-0.782	-5.782***	-0.987	-6.455***	I(1)
LGDPPC	1.379	-3.489***	1.184	-3.564***	I(1)
LOPEN	-1.597	-5.957***	-1.582	-5.958***	I(1)
LINFRA	-1.403	-5.767***	-1.673	-5.800***	I(1)
LWAGE	-2.583	-5.794***	-1.513	-5.853***	I(1)
INF	-3.916***		-3.940***		I(0)

Note: *** indicates statistical significance at the 1% level.

Bound test for Cointegration

As some variables are I(0) and others are I(1), it is desirable to use the recently developed Autoregressive distributed lag (ARDL) bounds test for cointegration (Pesaran et al., 2001) to analyse the determinants of FDI. The ARDL approach, originally introduced by Pesaran and Shin (1999), was further extended by Pesaran, et al. (2001). Due to the lower power and further problems associated with other estimation methods, the ARDL approach to cointegration has become popular in recent years. It is observed that ARDL has a number of advantages over other cointegration techniques. First, the ARDL procedure can be applied whether the regressors are I(1) and/or I(0), while conventional cointegration techniques require that all the variables in the system be of equal order of integration. This means that the ARDL can be applied irrespective of whether underlying regressors are purely I(0), purely I(1) or mutually cointegrated. Second, while the Johansen cointegration techniques require large samples for validity, the ARDL procedure is applicable even in small sample situations. Third, the ARDL procedure allows that the variables may have different optimal lags, which is impossible with conventional cointegration procedures. Finally, the ARDL procedure employs only a single reduced form equation, while the conventional cointegration procedures estimate the long-run relationships within the context of a system of equations.

The following unrestricted error correction model (UECM) is used to model the short-run and long-run relationships between the FDI and its possible explanatory variables. The ARDL model can be written as:

$$\begin{aligned}\Delta LFDI_t &= \beta_0 + \beta_1 LFDI_{t-1} + \beta_2 LGDPPC_{t-1} + \beta_3 LOPEN_{t-1} + \beta_4 LINFRA_{t-1} \\ &+ \beta_5 LWAGE_{t-1} + \beta_6 INF_{t-1} + \beta_7 POLINS_{t-1} + \sum_{i=1}^{j} \alpha_{1i} \Delta LFDI_{t-i} \\ &+ \sum_{i=0}^{k} \alpha_{2i} \Delta LGDPPC_{t-i} + \sum_{i=0}^{l} \alpha_{3i} \Delta LOPEN_{t-i} + \sum_{i=0}^{m} \alpha_{4i} \Delta LINFRA_{t-i} \\ &+ \sum_{i=0}^{n} \alpha_{5i} \Delta LWAGE_{t-i} + \sum_{i=0}^{p} \alpha_{6i} \Delta INF_{t-i} + \sum_{i=0}^{q} \alpha_{7i} \Delta POLINS_{t-i} + \varepsilon_t\end{aligned} \tag{2.2}$$

where Δ is the first-difference operator, ln (.) is the logarithm operator and ε_t is the white-noise disturbance term. The coefficients β_i (i =1,2,..,7) measure the long-run effects, whereas the

coefficients α_{ri} (r =1,2,..,7) measure the short-run dynamics of the model. The structural lags *j, k, l, m, n, p* and *q* are to be determined by using minimum Schwarz Bayesian Information Criterion (SBIC).

The ARDL approach to cointegration involves three steps for estimating long-run relationship (Pesaran and Pesaran, 1997; Pesaran et al., 2001). The first step in the ARDL bounds testing approach is to estimate the Equation (2.2) by ordinary least squares, in order to test for the existence of a long-run relationship among the variables by conducting *F*-test for the joint significance of the coefficients, β_i's (i =1,2,..,7).

Null hypothesis:

$H_o : \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = 0$ (no cointegration or no long-run relationship)

Alternative hypothesis:

H_1: At least one $\beta_i \neq 0$ i=1, 2,…, 7 (cointegration or long-run relationship exists)

The F-test statistic has a non-standard distribution which depends upon (i) whether variables included in the ARDL are I(0) or I(1), (ii) whether the ARDL model contains an intercept and/or a trend, (iii) the number of regressors, and (iv) the sample size. Thus, the computed F-statistic is compared with two asymptotic critical values tabulated in Table CI (iii) of Pesaran et al. (2001). Table CI (iii) provides Critical Value bounds for all classifications of the regressors into purely I(1), purely I(0) or mutually cointegrated. According to Pesaran et al. (2001), the lower bound critical values assumed that the explanatory variables are integrated of order zero, or I(0), while the upper bound critical values assumed that the explanatory variables are integrated of order one, or I(1). Therefore, if the computed F-statistic is greater than the upper critical bounds, the null hypothesis should be rejected and the conclusion made that there is long-run relationship between the selected variables. If the calculated F-statistic is below the lower critical bounds, the null hypothesis cannot be rejected and there is no long-run relationship among them. If the computed F-statistic falls within the critical values bounds, the test is inconclusive.

An ARDL (1, 1, 1, 0, 0, 2) model is selected based on the SBIC. Table 2.5 presents the results. The calculated value of the *F*-statistic to test the above null hypothesis is 5.66, which is greater

than the upper critical bound value of 3.61 at the 5% level of significance, and we have supported for the alternative hypothesis. Therefore, we conclude that cointegration exists among all seven variables. That is, there is a long-run relationship between FDI and other variables considered in model (2.1).

A point worth noting is that our sample consists of 36 observations. However, the critical values available in Pesaran et al. (2001) are asymptotic and valid for larger sample sizes. As our study has only 36 observations, we could also use the finite sample critical values available in Narayan (2005) for $T = 36$ to see whether our conclusions based on asymptotic critical values still remain the same. The lower and upper bound critical values from Narayan (2005) corresponding to T = 36 are in Table: Case III, are [3.98, 5.86] at the 1% level, [2.86, 4.30] at the 5% level and [2.39, 3.64] at the 10%level of significance. Since the calculated value of the test statistic is 5.66, which is greater than the upper bound values, the null hypothesis of no cointegration is rejected in favour of the alternative hypothesis at the 5% level. Therefore, we conclude that the seven variables are cointegrated. There exists a long-run relationship between FDI and the 6 selected variables in the model.

Table 2.5: ARDL (1, 1, 1, 0, 0, 2) Estimation Results

Regressor	Parameter	Coefficient	Standard Error	t-Ratio	*p*-value
ΔLFDI(-1)	α_{11}	0.197	0.168	1.171	0.254
ΔLGDPPC	α_{20}	11.447	4.995	2.292	0.032
ΔLGDPPC(-1)	α_{21}	10.956	5.421	2.021	0.056
ΔLOPEN	α_{30}	0.625	2.077	0.300	0.766
ΔLOPEN(-1)	α_{31}	4.176	1.902	2.195	0.039
ΔLINFRA	α_{40}	7.703	2.247	3.428	0.003
ΔLWAGE	α_{50}	-3.260	1.129	-2.886	0.009
ΔINF	α_{60}	-0.006	0 .016	-0.394	0.697
ΔINF(-1)	α_{61}	-0.018	0.018	-1.005	0.326
ΔINF(-2)	α_{62}	-0.052	0.017	-3.017	0.007
C		-52.486	16.242	-3.231	0.004
ΔPOLINS	α_{70}	-0.391	0.156	-2.513	0.020
$\bar{R}^2$		0.93	S.E of Regression		0.310
AIC		-13.82	SBIC		-24.70
Computed F-statistic		5.66			

Note: The lower and upper bounds of the critical values at the 1, 5 and 10 % significance levels are [3.15, 4.43], [2.45, 3.61] and [2.12, 3.23], respectively (Pesaran et al., 2001, Table C1(iii)).
AIC - Akaike Information Criterion, SBIC: Schwarz Bayesian Information Criterion

In the second step, having established that the variables are cointegrated, the conditional ARDL long-run model for LFDI is estimated based on Equation (2.1). The estimated long-run coefficients of the model are reported in Table 2.6. As can be seen, in the long-run, GDPPC contributes positively to FDI inflows and is statistically significant at the 5% level, confirming the argument that motivation of the market-seeking FDI holds in the Sri Lankan case as well. An increase in market size increases the prospects for higher demand within the Sri Lankan economy. Specifically, a 1% increase in GDPPC would generate a 6.12% increase in FDI inflows, provided all other things being are equal.

This result is in line with the results reported in previous studies, such as Billington (1999), Mold (2003), Janicki and Wunnava (2004), Ali and Guo (2005), Hara and Razafimahefa (2005), Sahoo (2006), Albert and Stuart (2008), Ang (2008), Casi and Resmin (2010), Khan and Nawaz (2010), Ramasamy and Yeung (2010), Singhania and Gupta (2011), Koojaroenprasit (2013) and Boateng et al. (2015).

Table 2.6: Estimated Long-run Coefficients of the ARDL Model

Regressor	Parameter	Coefficient	Standard Error	t-Ratio	*p*-value
LGDPPC	λ_1	6.120	2.637	2.321	0.043**
LOPEN	λ_2	5.979	3.309	1.806	0.085*
LINFRA	λ_3	9.592	3.630	2.642	0.015**
LWAGE	λ_4	-4.060	1.848	-2.197	0.039**
INF	λ_5	-0.079	0.052	-1.540	0.138
POLINS	λ_6	-1.465	0.373	-3.936	0.001***
C	λ_0	-65.361	25.625	-2.551	0.019

Note: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

The coefficient of openness is positive and significant at the 10% level. A 1% increase in openness would lead to a 5.97% increase in FDI inflows into Sri Lanka, all things being considered equal. This supports the argument that the extent to which a country allows free movement of goods and services would determine the level of FDI inflows. This result is also in line with the results reported in Asiedu (2002), Janicki and Wunnava (2004), Sahoo (2006), Cevis and Camurdan (2007), Albert and Stuart (2008), Ang (2008), Demirhan and Masca (2008), Ramasamy and Yeung (2010), Bhavan et al. (2011) and Severiano (2012), Jayasekara (2014) and

Boateng et al. (2015). However, this result contradicts the study of Koojaroenprasit (2013), which found a negative relationship between FDI and openness.

The estimated coefficient for the infrastructure variable is positive and statistically significant at the 5% level. A 1% improvement in infrastructure facilities in Sri Lanka would lead to a 9.59% increase in FDI inflows, ceteris paribus. This reveals that improvements in infrastructure facility would attract FDI inflows to Sri Lanka. Similar findings are reported by Asiedu (2002), Sahoo (2006), Ang (2008), Demirhan and Masca (2008), Ramasamy and Yeung (2010), Bhavan et al. (2011) and Jayasekara (2014).

The wage rate coefficient is significant at the 5% level and has a negative impact on FDI inflows, as expected. A 1% increase in the Sri Lankan wage rate would cause a 4.06% decrease in FDI inflows, which confirms that FDI is highly negatively influenced by labour cost, as it represents a large percentage of the production cost. Hence, a higher wage rate reduces FDI inflows into Sri Lanka. Our results, in relation to labour cost, are also supported by the findings of a number of other studies. For example, see Janicki and Wunnava (2004), Ali and Guo (2005), Albert and Stuart (2008) and Casi and Resmin (2010).

The variable, rate of inflation, as expected has a negative influence on FDI. However, the estimated coefficient is not statistically significant. The coefficient of political instability has a negative impact on FDI, as expected, and it is significant at 1% level, suggesting that a change in government leads to political instability, reducing FDI inflows. Our finding in relation to political instability is in line with the results reported in Azzimonti and Sarte (2007) and Minhas and Ahsan (2015).

In the third and final step, the short-run dynamic parameters are obtained by estimating an error correction model as follows:

$$\Delta LFDI_t = \alpha_0 + \sum_{i=1}^{j} \alpha_{1i} \Delta LFDI_{t-i} + \sum_{i=0}^{k} \alpha_{2i} \Delta LGDPPC_{t-i} + \sum_{i=0}^{l} \alpha_{3i} \Delta LOPEN_{t-i} + \sum_{i=0}^{m} \alpha_{4i} \Delta LINFRA_{t-i} + \sum_{i=0}^{n} \alpha_{5i} \Delta LWAGE_{t-i} + \sum_{i=0}^{p} \alpha_{6i} \Delta INF_{t-i} + \sum_{i=0}^{q} \alpha_{7i} \Delta POLINS_{t-i} + \varphi ECM_{t-1} + \varepsilon_t \quad (2.3)$$

where, α_{ij}'s ($i = 1,2,..,7$) are the short-run dynamic coefficients, φ is the speed of the adjustment parameter and ECM is the error correction term derived from the estimation of Equation (2.1) in the following form,

$$ECM_{t-1} = LFDI_{t-1} - \lambda_0 - \lambda_1 LGDPPC_{t-1} - \lambda_2 LOPEN_{t-1} - \lambda_3 LLINFRA_{t-1} - \lambda_4 LWAGE_{t-1} - \lambda_5 INF_{t-1} - \lambda_6 POLINS_{t-1}. \quad (2.4)$$

where $\lambda_i (i = 1, 2, \ldots, 7)$ are the estimated parameters. The results of the short-run dynamic coefficients associated with the long-run relationships obtained from the ARDL-ECM Equation (2.3) are presented in Table 2.7. The optimal lag length for the selected error correction representation of the ARDL model is determined by using the SBIC.

Table 2.7: Estimates of Error Correction Representation

Regressor	Parameter	Coefficient	Standard Error	t-Ratio	*p*-value
ΔLGDPPC	α_{20}	11.447	4.995	2.292	0.031
ΔLOPEN	α_{30}	0.625	2.078	0.301	0.766
ΔLINFRA	α_{40}	7.703	2.247	3.428	0.002
ΔLWAGE	α_{50}	-3.260	1.129	-2.886	0.008
ΔINF	α_{60}	-0.006	0.016	-0.394	0.697
ΔINF(-1)	α_{61}	0.052	0.017	3.017	0.006
POLINS	α_{70}	-0.391	0.156	-2.512	0.019
ECM(-1)	φ	-0.803	0.168	-4.776	0.000

Beginning with the long-run results, the coefficient of the error correction term is highly significant with the expected negative sign, which confirms the result of the bounds test for cointegration. Once shocked, the larger the error correction coefficient, the faster will be the return to equilibrium (Pesaran and Pesaran, 2009). The coefficient of the error correction term is –0.80, which suggests a fast adjustment process. Approximately 80% of the disequilibrium of the previous year's shock adjusts back to the long-run equilibrium in the current year.

Diagnostic Tests

Diagnostic tests for serial correlation, functional form, normality and hetroscedasticity of the models were conducted and the results are presented in Table 2.8. As can be seen, the model satisfies the desired econometric conditions, in that it has a correct functional form and its residuals are serially uncorrelated, normally distributed and homoscedastic. Therefore, the results are valid for meaningful interpretation.

Table 2.8: Diagnostics Tests Results

Test	F- Statistic	*p*-value
Serial correlation [a]	2.317	0.144
Model specification [b]	0.963	0.338
Normality [c]	0.062	0.998
Heteroscedasticity [d]	0.373	0.545

Note: a: Lagrange multiplier (LM) test of residual serial correlation; b: Ramsey's RESET test; c: Jarque-Bera test; d: LM test for heteroscedasticity.

Stability Tests

The cumulative sum (CUSUM) and the CUSUM of squares (CUSUMSQ) tests are applied to assess the parameter stability (Pesaran and Pesaran, 1997). The cumulative sum test identifies systematic changes in the regression coefficients, while the cumulative sum of squares test detects sudden changes from the constancy of the regression coefficients. Figure 2.13 plots the results for the CUSUM and CUSUMSQ tests.

The results indicate the absence of any instability of the coefficients because the plots of the CUSUM and CUSUMSQ statistics fall inside the critical bands of the 5% confidence intervals of parameter stability. Therefore, there exists stability in the coefficients over the sample period for Sri Lanka.

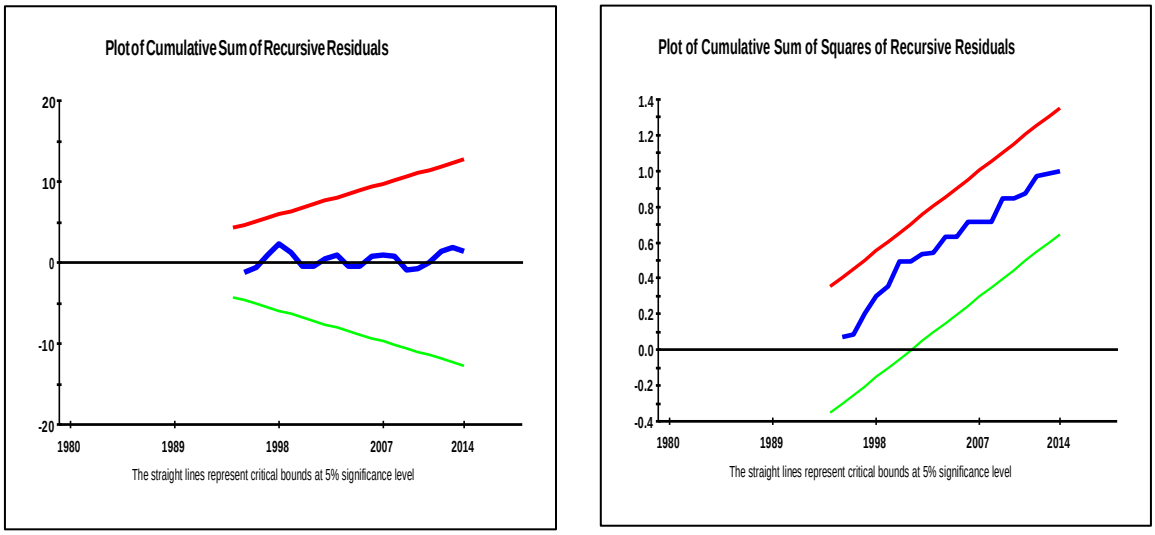


Figure 2.13: CUSUM and CUSUMSQ Tests for Parameter Stability

2.7 Conclusions and Policy Implications

The objective of this study was to develop an empirical framework to identify the determinants of FDI inflows in Sri Lanka by using time series data for the period 1978–2014. Through the review of previous research, this study has identified six important determinants that generally determine FDI inflows. These are market size, openness, infrastructure, labour cost, macroeconomic stability and political instability.

Empirical analysis using the Sri Lankan data reveals that the market size has a positive effect on FDI and is statistically significant. As higher GDPPC leads to larger market size, maintaining the momentum in GDPPC is necessary for Sri Lanka to attract FDI inflows. Openness also positively influences FDI inflows into Sri Lanka and is statistically significant. This implies that greater trade liberalization policies increase FDI inflows into Sri Lanka. Infrastructure has a positive effect on FDI and is statistically significant. This suggests that improved infrastructure is essential for Sri Lanka to attract more FDI into the country. Labour cost in Sri Lanka negatively impacts on FDI and is statistically significant, implying that a low wage rate is crucial for Sri Lanka to increase its FDI inflows. This finding also suggests that the cheap labour-led FDI hypothesis is supported by the Sri Lankan data. Political instability has a negative impact on FDI and is statistically significant; this reveals that higher political instability is associated with lower FDI inflows. Therefore, the Sri Lankan government has to mitigate the political instability. The

rate of inflation has a negative impact on attracting FDI but the impact is not statistically significant.

Finally, it can also be concluded that the major determinants of FDI in Sri Lanka are market size, openness, infrastructure, labour cost and political instability and that there is long-run equilibrium between FDI and these six explanatory variables. The recommendation from this study is that for future FDI policy planning and implementation, the Sri Lankan government needs to consider developing policies to improve the market size, openness, infrastructure, political stability and to maintain cheap labour cost. This will enhance the FDI inflows into Sri Lanka.

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CHAPTER 3

Factors Affecting Economic Growth

3.1 Introduction

In Chapter 2, we investigated the determinants of FDI in relation to Sri Lanka. In this chapter, we investigate the causal relationship between FDI and economic growth and identify the factors that influence economic growth in Sri Lanka. Economic growth is a sustained expansion of the productive potential of the economy. It is an important macroeconomic objective because it can transform a poor nation into a rich one.

FDI has been widely recognized as a growth-enhancing factor in developed and developing countries. Virtually every country in the world today recognizes that FDI can play a significant role in economic growth and development. During the past couple of decades many countries have implemented broad-ranging economic reforms, including the liberalization of domestic market and privatization, which have had an effect on the flow and nature of foreign investment. The rationale for increased efforts to attract more FDI stems from the belief that it leads to several benefits such as productivity gains, infusion of new managerial skills, the introduction of new processes, technology transfers, and training opportunities for employees, access to international production networks, and markets.

Following the East Asian miracle, many developing countries, including Sri Lanka are actively seeking FDI inflows to cause a surge in economic growth. Past decades saw many other developing countries outside the East Asian countries becoming hot spots of economic growth and attracting large volumes of FDI. FDI inflows to the East Asian area increased by 18%, from $258bn in 2014 to $322bn in 2015. Rising FDI in India (22%; from $34bn to $44bn between 2014 and 2015) resulted in South Asian increases (20%, from $41bn in 2014 to $50bn in 2015) (WIR, 2016). Sri Lanka, which has lagged far behind these countries in attracting FDI, continues to present a poor image to foreign investors. The most poignant reason for this has been the conflict between the Sri Lankan

government and Liberation Tigers of Tamil Eelam (LTTE), which embroiled the country until 2009, bringing with it an adverse political climate and macroeconomic instability in the country. After the end of the civil war in 2009, the investment climate for domestic and foreign investors has improved.

The issue of whether, in general, FDI leads to economic growth or not is still a debatable topic. Results from previous studies reveal that the relationship may be significant or insignificant; the results also depend on the country under study, the type of investments, the implementation policy of the recipient country, the methodology used, and the period of study. The purpose of this chapter is to examine the relationship between FDI and economic growth in Sri Lanka in order to identify the factors that influence economic growth. This chapter answers the following questions: (1) Is the FDI-led growth hypothesis supported by the Sri Lankan data? (2) Which other factors that influence economic growth in Sri Lanka? (3) Did the civil war affect the economic growth of Sri Lanka? (4) Is there any causal relationship between FDI and economic growth?

Organisation of the remaining chapter is as follows. Section 3.2 reviews the literature on growth models. Section 3.3 presents a review of the empirical literature on FDI and economic growth for single-country while Section 3.4 presents similar review on cross-country studies. Section 3.5 provides background information on FDI and economic growth in Sri Lanka. Section 3.6 presents the empirical analysis and estimation results. Section 3.7 gives policy implications and concludes the chapter.

3.2 Growth Models: A Review

In this section, we discuss some of the most relevant theoretical literature related to the role of FDI in determining the level of economic growth. The section particularly focuses on two different views, namely, the neoclassical and the endogenous growth models.

Neoclassical Growth Model

The neoclassical growth model, first developed by Solow (1956), the Solow model explains the growth in an economy, breaking down the aggregate output (GDP) into

contributions of growth inputs (labour, capital, and technology). In this model, Solow shows that the output growth results from factors such as increases in labour quality and quantity through population growth and education, increases in capital and progress in technology.

According to the neoclassical approach, the lack of economic growth in many countries is due to the nature of their production, the inability of domestic firms to promote exports, and the technological constraints that inhibit their capacity to obtain the necessary technology required to increase their productivity, thus reducing economic growth. Therefore, in many countries FDI becomes a necessary ingredient for promoting growth strategies capable of maximizing the use of existing productive capabilities and the opportunities for creating new ones. This would translate in the long-run into economic growth. Since FDI is a source of capital to the host country, increases in FDI should raise the overall level of capital stock available for production. According to neoclassical perspective, an increase in the capital stock available in an economy leads to an increase in production, which then corresponds to an increase in the growth rate of output. However, because of diminishing returns to capital, FDI does not influence long-run economic growth. Moreover, the Solow model takes the population growth, rates of saving and technological progress as exogenous. The model assumes that the level of technology is the same in each country in the world. The only change they make is to extend the usual two-factor neoclassical model by allowing for human capital as well as physical capital (Mankiw et al., 1992).

Moran (1985) argues that, from the neoclassical perspective, FDI is beneficial for developing countries because it brings with it new technology, its capital and marketing skills increase the productive capabilities of the economy, it promotes competition and it improves the distribution of income in the economy by bidding up wages and promoting efficiency. In addition, FDI inflows are a solution to fill the saving–investment gap, the foreign exchange gap, and the fiscal gap in host developing countries (Chenery and Strout, 1966; Rostow, 1971; Chenery and Cater, 1973; Papanek, 1973; Mosley, 1980; Bacha,

1990; Todaro, 1997). This positive impact is the major and strongest justification for FDI and for the presence of MNEs in developing countries.

Endogenous Growth Model

The endogenous growth theory was introduced by Romer in 1986. Unlike the neoclassical growth theories, the endogenous growth theories focus on the creation of technological knowledge and its transmission. Innovative and imitative efforts that respond to economic incentives are considered to be a major engine of growth; therefore, this theory emphasizes the roles of research and development (R&D), human capital accumulation, and externalities (Lucas, 1988; Romer, 1990). The endogenous growth theory treats technological advances as an endogenous factor, stimulating research on the path by which FDI accelerates in two ways a country's economic growth in the long run. First, FDI advances new foreign technology or the import of new intermediary goods in the production function and accelerates economic growth by fuelling capital accumulation in capital import countries. Second, FDI enhances economic growth by contributing to the accumulation of human capital through labour training or the absorption of technology, and through new management techniques. In the endogenous growth models, FDI raises growth through technological diffusion from the developed countries to the developing countries.

According to the endogenous growth perspective, the effect of FDI on economic growth is explained through knowledge externalities and the existence of human capital in host developing countries. Lucas (1988, 1990), Romer (1986, 1990) and Mankiw et al. (1992) amended the neoclassical growth model, especially the Solow growth model, by including the growth driving factors of both human capital and physical capital to explain the presence of FDI in developing countries. Moreover, FDI contributes significantly to human capital through managerial skills and R&D.

Using the endogenous framework, Barro (1990) and Barrel and Pain (1997) examine the effect of FDI on economic growth through the diffusion of technology. Romer (1990) and Grossman and Helpman (1991) believe that endogenous technological progress is the main

engine of economic growth. Romer (1990) argues that FDI accelerates economic growth through strengthening human capital, the most essential factor in R&D effort; while Grossman and Helpman (1991) emphasize that an increase in competition and innovation will result in technological progress and increased productivity, thus promoting economic growth in the long run. Helpman (1993) discusses the implications of international capital movements in the context of endogenous growth, focusing on how economies of scale interact with free capital movement. He observes that there may be agglomeration effects in capital accumulation where the externalities come from the capital stock. Technology transfer, along with FDI, is an explicit element in Helpman's discussion: he stresses the need for more thorough treatment of MNEs with respect to growth. Helpman (2004) argues that endogenous growth theory emphasized two critical channels for investment to affect economic growth: firstly, through the impact on the range of available products, and secondly, through the impact on the stock of knowledge accessible for R&D.

With the concept of the endogenous growth model, Baldwin et al. (2005) present a theoretical model in which MNEs play a role in determining the endogenous long-run growth rate through technological spill-overs. They find strong evidence for the spill-overs from 'osmosis' (interaction); beyond the osmosis, FDI leads to knowledge spill-overs. In some manner, this study reveals that FDI stimulates growth by promoting technology transfer.

3.3 A Review of the Literature: Single-Country

During the last three decades, a large number of empirical studies have focused on the role of FDI in stimulating economic growth in both developed and developing countries. But there is no consensus with regard to the relationship and direction of causality: it varies from country to country, depending on country characteristics. This section presents the review of a number of empirical studies on FDI and economic growth in single countries. The next section reviews cross-country studies.

Chakraborty and Basu (2002) examine the link between FDI and economic growth in India over the period 1974–1996. The findings of the study indicate that two long-run

equilibrium relationships exist between FDI, GDP (market opportunities), the unit labour cost (ULC), and the share of import duty in total tax revenue (trade liberalization policy). In order to estimate the short-run dynamics of FDI and growth, a parsimonious vector error correction was used. The results reveal that there are causality runs from GDP to FDI; trade liberalization policy has a positive impact on the FDI inflows, and FDI appears to lower the unit labour cost, suggesting that FDI in India is labour-displacing which means that technology transfer brought in by FDI causes an excess supply of labour, creating downward pressure on ULC.

Liu et al. (2002) examine the causal links between trade, economic growth and FDI in China, using Quarterly data for the period 1981(1)–1997(4). The study finds the existence of a long-run relationship with growth, trade (exports, imports) and FDI, and also reveals bidirectional causality between economic growth, FDI and exports. However, in the short run, only a unidirectional causal link exists from GDP, exports and FDI to imports. The authors suggest that the possible reason for this is that the Chinese government still restricts imports through import planning, tariff and non-tariff barriers.

Kohpaiboon (2002) examines the effect of the trade policy regime on the FDI contribution to economic growth in Thailand for the period 1970–1999. The methodology involved estimating a growth equation, which provides for capturing the impact of FDI interactively with openness on economic growth. This analysis was built on the 'Bhagwati' hypothesis; the findings were consistent with this hypothesis that the impact of FDI tends to be greater on economic growth under an export-promotion trade regime, than one under an import-substitution regime.

Athukorala (2003) investigates the FDI-led growth hypothesis using time series data for the period 1959–2002 in Sri Lanka. The regression result fails to provide any significant support for the view of a robust link between FDI and economic growth. Based on the Granger causality, the study finds the direction of causality from GDP to FDI, but no reverse causation from FDI to GDP. In addition, there is a long-run relationship between the FDI inflows and economic growth. Consequently, the study proposes that the

investment climate in the country must be improved through appropriate measures, such as de-regulating economic activity, developing the transport and telecommunication facilities, creating more transparency in the trade policy, creating more flexible labour markets and setting a suitable regulatory framework and tariff structure.

Balamurali and Bogahawatte (2004) examine the relationship between FDI and economic growth in Sri Lanka for the period 1977–2003. Their results indicate that FDI exerts an independent influence on economic growth and that there is bidirectional causality between FDI and economic growth. They also found that a long-run equilibrium relationship exists between GDP, FDI, domestic investment and openness. The study suggests that, in order to attract higher investment, Sri Lanka needs in the long run to boost its human capital and to improve its labour market, its physical and technological infrastructure and its administrative capabilities.

Ayanwale (2007) investigates the relationship between FDI, economic growth and the determinants of FDI in Nigeria for the period 1970–2002. The findings of the study reveal that the FDI contributes positively to economic growth and that the determinants of FDI are market size, infrastructure development and stable macroeconomic policy. Openness and human capital, however, are not FDI inducing. Moreover, the overall effect of FDI on economic growth is not significant, but FDI in the communication sector has a positive impact on economic growth while FDI in the manufacturing sector has a negative impact on growth.

Using a 12 sectoral[6] Indonesian data set, Khaliq and Noy (2007) investigate the impact of FDI on economic growth for the period 1997–2006. They found that the FDI has a positive effect on economic growth at the aggregate level, but the effects of FDI on economic growth vary across sectors at the sectoral level. When examining different impacts across sectors, estimation results indicate that the composition of FDI matters for

[6] Farm food crops, livestock product, forestry, fishery, mining and quarrying, non-oil and gas industry, electricity, gas and water, construction, retail and wholesale trade, hotels and restaurant, and transport and communications.

its effect on economic growth, with very few sectors showing a positive impact of FDI and one sector (mining and quarrying) even showing a robust negative impact of FDI inflows. Tang et al. (2008) investigate the relationships between FDI, domestic investment and economic growth in China for the period 1988(1)–2003(4). The findings of the study show that FDI plays an important role in China's economic growth, but its influences are less than that of DI. According to the Granger causality test, FDI affects DI and GDP, but not vice versa, whereas the causal links between GDP and domestic investment are bidirectional.

Using an error correction model, Blin and Ouattara (2009) examine the relationships between FDI and economic growth in Mauritius over the period 1975–2000. The long-run estimation results show that FDI, private investment, human capital and financial sector development have a positive and statistically significant effect on economic growth, measured by per capita output. By contrast, public investment and openness were found not to have a significant effect on economic growth. The error correction model estimates indicate that changes in FDI and private investment have a positive and statistically significant effect on the economic growth while the other variables in the model appear to have an insignificant impact.

Asheghian (2011), examining the determinants of economic growth in Canada using data for the period 1976–2008, investigates if there is any support for a FDI-led growth hypothesis in Canada. The study finds that there is no causal relationship between FDI and economic growth. The study also finds that the major determinants of economic growth in Canada are total factor productivity and domestic investment growth. The study suggests that not only does the FDI growth have no significant impact on Canada's economic growth; the FDI has no significant impact on the total factor productivity in Canada.

Deyshappriya (2011) identifies the relationship between FDI and Sri Lankan economic growth for the period of 1990–2009. The findings of the study reveal that FDI is positively related to economic growth, but the magnitude of the contribution is quite low compared to the other determinants of economic growth. The study suggests that infrastructure

facilities and the stability of the economic condition have to be built and maintained in order to enhance the contribution of FDI by getting the optimum benefit of the FDI inflows.

Ray (2012) examines the causal relationship between FDI and economic growth, as well as the impact of FDI on economic growth, for the period 1990–2010 in India. The result suggests that there is a positive relationship between FDI and economic growth. The cointegration test confirms the existence of a long-run relationship between the two variables. The Granger causality test reveals the existence of unidirectional causality running from economic growth to foreign direct investment. Consequently, since FDI influences economic growth, the author recommends that, in order to attract FDI, India should focus on improving infrastructure and human resources, developing local entrepreneurship, and creating a stable macroeconomic framework and conditions favourable for productive investments in order to augment the process of development.

Thilakaweera (2012) analyses the long-run relationship between real GDP per capita, FDI and the level of the infrastructure in Sri Lanka over the period 1980–2011. The study finds that there is a long-run relationship between real GDP per capita, FDI and the level of the infrastructure. The study also confirms the existence of unidirectional causality from the infrastructure level to FDI.

Saqib et al. (2013) examine the impact of FDI on economic growth in Pakistan over the period 1981–2010. They found that Pakistan's economic growth is negatively affected by foreign investment, while its domestic investment has given benefit to its economy. This is because FDI creates monopolies in the industrial sector, which consequently results in under-utilization of domestic resources. In addition, debt, trade and rate of inflation have been found to negatively influence Pakistan's economic growth. The study recommends that developing countries like Pakistan are abundant with many resources that may help capital formation. Domestic investment in this regard would benefit the country's economy, and therefore dependency on foreign investment should remain limited.

Aga (2014) investigates the impact of FDI on economic growth in Turkey over the period 1980–2012. The findings reveal that there is no long-run relationship between FDI, domestic investment, trade liberalization and economic growth in Turkey; there is a statistically insignificant positive impact of FDI on economic growth and a significant positive impact of domestic investment on economic growth; however, trade liberalization negatively and significantly impacts on economic growth. Further, the causality tests results show that there is no causal relationship between FDI and economic growth but there is a relationship between trade liberalization and economic growth.

Velnamby et al. (2014) investigate the impact of FDI on economic growth in Sri Lanka during the period 1990–2011. They found that there is no significant impact of FDI on the economic growth, and that only 4.3% of the variance in the growth has been explained by FDI. The study also finds that there is a long-run equilibrium relationship between FDI and economic growth.

In addition, based on the Granger causality test, the study finds that there is no causality between economic growth and FDI. Moreover, the study suggests that the Sri Lankan government and the Central Bank of Sri Lanka should jointly take the necessary action to focus on infrastructure development through the FDI to get economic growth in the long-term view. However, this study contradicts previous studies in terms of causality and the significance of the impact of FDI on economic growth.

Table 3.1 presents a summary of these single-country studies. As can be seen, most studies reveal that FDI plays a positive role in economic growth (Ayanwale, 2007; Khaliq and Noy, 2007; Tang et al., 2008; Turkcan et al., 2008; Blin and Ouattara, 2009; Deyshappriya, 2011; Ray, 2012). A few studies find an insignificant relationship between FDI and economic growth (Asheghian, 2011; Aga, 2014; Velnamby et al., 2014). However, Saqib et al. (2013) find a negative relationship between FDI and economic growth.

Table 3.1: A Summary of Findings from Single-Country Studies on FDI and Economic Growth

Author(s), Year	Country	Period	Technique	Variables	Results
Aga (2014)	Turkey	1980–2012	Cointegration and causality	Economic growth, FDI, domestic investment and trade liberalization	No significant positive relationship FDI and economic growth; no Granger causal relationship between FDI and economic growth.
Asheghian (2011)	Canada	1976–2008	Granger non causality	Real GDP, physical capital, labour and FDI	Major determinants of economic growth are total factor productivity and domestic investment; FDI has no significant impact on economic growth and TFP.
Athukorala (2003)	Sri Lanka	1959–2002	Cointegration with Vector Error Correction Model (VECM)	GDP, FDI, domestic investment and trade liberalization	No significant support for the view of a robust link between FDI and economic growth; there is only one-way causality from GDP to FDI. There is a long-run relationship between the FDI and economic growth.
Ayanwale (2007)	Nigeria	1970–2002	OLS and 2SLS	GDP per capita, FDI, openness, human capital, political risk, government size, rate of inflation, return on investment and infrastructure development	The determinants of FDI are market size, openness, infrastructure, stable macroeconomic policy, and government size. FDI contributes positively to economic growth.
Balamurali and Bogahawatte (2004)	Sri Lanka	1977–2003	Cointegration and causality	GDP, FDI, domestic investment and openness	FDI exert an independent influence on economic growth; bi directional causality between FDI and economic growth. One long-run equilibrium relationship exists between GDP, FDI, domestic investment and openness.
Blin and Ouattara (2009)	Mauritius	1975–2000	ARDL	Real GDP per capita, public investment, private investment, FDI, human capital, money supply and openness	FDI exerts a highly significant positive impact on economic growth.
Chakraborty and Basu (2002)	India	1974–1996	Co integration with VECM	GDP, FDI, unit of labour cost and import duties in	The causality runs from GDP to FDI; trade liberalization policy of the Indian government had

				tax revenue	some positive short-run impact on the FDI flows.
Deyshappriya (2011)	Sri Lanka	1990–2009	Granger causality test and VAR model	Economic growth, domestic investment, labour, FDI and trade	Though FDI positively related to economic growth, the magnitude of contribution is quite low compared to other determinants of economic growth.
Khaliq and Noy (2007)	Indonesia	1997–2006	OLS	Economic growth, FDI, domestic investment and labour	FDI has a positive effect on economic growth in the aggregate level.
Kohpaiboon (2002)	Thailand	1970–1999	OLS	GDP, labour force, domestic investment, FDI and trade policy	FDI tends to be greater under export-promotion trade regimes compared to import-substitution regimes.
Liu et al. (2002)	China	1981(1)–1997(4)	Cointegration and causality	GDP, FDI, export and import	Existence of long-run relationship between growth, exports, imports and FDI and also reveals that bidirectional causality between economic growth, FDI and exports.
Ray (2012)	India	1990–2010	Co integration with ECM	GDP and FDI	There was positive relationship between FDI and GDP.
Saqib et al. (2013)	Pakistan	1981–2010	OLS and Cointegration	GDP, FDI, debt, rate of inflation and trade	Economic growth is negatively affected by FDI while its domestic investment has benefitted its economy.
Tang et al. (2008)	China	1988(1)–2003(4)	VAR with ECM	GDP, FDI and domestic investment	FDI plays an important role in China's economic growth but its influences are less than that of DI; FDI causes Foreign direct investment, domestic investment and economic growth in China DI and GDP but not the reverse.
Thilakaweera (2012)	Sri Lanka	1980–2011	Cointegration and causality	GDP,FDI and infrastructure	There is a long-run relationship between real per capita GDP, FDI and the level of the infrastructure.
Velnamby et al. (2014)	Sri Lanka	1990–2011	Cointegration and causality	GDP and FDI	There is no significant impact of FDI on the economic growth: long-run equilibrium relationship between FDI and economic growth; there is no causality between two variables.

3.4 A Review of the Literature: Cross-Country

Blomstrom et al. (1992) investigate the effect of FDI on economic growth, for a sample of 78 developing and 23 developed countries, for the period 1960–1985. The results show that the FDI inflows had a significant positive effect on the average growth rate of per capita income. However, when the sample of developing countries was split between two groups, based on level of per capita income, the effect of FDI on the growth of lower income developing countries was not statistically significant although still with a positive effect. Consequently, the study suggests that FDI inflows are a source of more rapid growth only for a country that is already at a relatively high level of development.

Considering Bhagwati's trade strategy hypothesis, Balasubramanyam et al. (1996) examine the relationship between FDI and economic growth in the context of export-promoting and import-substituting trade policy regimes in 46 developing countries over the period I970–1985. The results of the study show that the FDI has a positive effect on economic growth in these host countries which have an export-promotion policy but not in those countries which have an import-substitute policy. This study is interesting, as it focuses on the role which FDI plays in the growth process in the context of developing countries characterised by differing trade policy regimes.

Borensztein et al. (1998) examine the effect of FDI on the economic growth of the FDI flows coming from OECD countries to 69 developing countries during the decades 1970–1979 and 1980–1989. The results indicate that FDI is an important vehicle for the adoption of new technologies, contributing relatively more to economic growth compared with domestic investment. In addition, it reveals that through the relationship between FDI and the level of human capital, FDI has a significant positive effect on economic growth. However, the authors qualify their findings by stating that the higher productivity of FDI holds only if the host country has a minimum threshold stock of human capital. In light of this, the study concludes that minimum threshold stock of human capital is needed for higher productivity of FDI in a host country.

Using panel data for the period 1970–1990, De Mello (1999) examines the impact of FDI on capital accumulation, output and total factor productivity (TFP) in the sample of 16 OECD and 17 non-OECD countries. The results reveal that there is a positive impact of FDI on

output growth in all panels. In the OECD panel, FDI appears to have a positive impact on technological change. However, country-specific factors may have inhibited the elimination of technological gaps between leaders and followers, such that success in technology or knowledge transfers seems to be affected by institutions.

Ericsson and Irandoust **(**2001) investigate the FDI-led growth hypothesis using data from Denmark, Finland, Norway, and Sweden for the period 1970–1997. They found that the causal linkage between FDI and income growth is bidirectional for Sweden; has unidirectional causality running from FDI to income growth, for Norway; and has no causality linkage between FDI growth and income growth for Finland and Denmark. The study argues that a possible reason for the cross-national difference of the causal relationship between FDI and economic growth may be because FDI dynamics and its nature are substantially different in the four countries. Using the bidirectional causality, this study proposes two policy implications: first, by stimulating economic growth, the recipient countries can encourage inflows of FDI; second, FDI can be used to exert a major influence on economic growth.

Zhang (2001) investigates the link between FDI and economic growth for 11 East Asia and Latin American developing countries (Argentina, Brazil, Colombia, Mexico, Hong Kong, Indonesia, Korea, Malaysia, Singapore, Taiwan and Thailand) for the period 1980–1987. The results of this study reveal that FDI promotes economic growth in these countries. The study finds that FDI enhances the host economic growth in five countries only, out of the all countries considered: Hong Kong, Indonesia, Mexico, Singapore and Taiwan. The impact of FDI on host country depends on country specific chartertistics. On the whole, FDI tends to be more likely to promote economic growth when host countries adopt liberalized trade regime, improve education and thereby human capital conditions, encourage export-oriented FDI, and maintain macroeconomic stability. The another outcome noticeable from this study is that patterns of FDI-economic growth links display significant differences between East Asia and Latin America, and the differences probably reflect the enormous cross-sectional diversity in economic structures.

A study by Samad (2011) investigates the direction of the causal link between FDI and economic growth in 19 developing countries of East and South East Asia and Latin America (Argentina, Bangladesh, Bolivia, Brazil, Chile, Columbia, Ecuador, El-Salvador, Guatemala,

Honduras, Indonesia, India, Malaysia, Mexico, Pakistan, Philippines, Singapore, Sri Lanka and Thailand) for the period 1970–2006. The study finds that a long-run relationship exists in 5 countries in Latin America (Argentina, Brazil, Chile, El-Salvador, Guatemala) and in one country in East and South East Asia (Sri Lanka). Seven countries, two from Latin America (Bolivia and Columbia) and five from East and South East Asia (India, Indonesia, Pakistan, Singapore and Thailand) demonstrate bidirectional short-run causal links between GDP and FDI. Three countries, one from Latin America (Ecuador) and two from East and South East Asia (Bangladesh, and Philippines) exhibit short-run causal links running from GDP to FDI.

Carkovic and Levine (2002) reassess the relationship between economic growth and FDI in 72 developed and developing countries over the period 1960–1995. The study finds that FDI does not exert a robust, positive influence on economic growth; FDI remains significantly and positively linked with growth when controlling for rate of inflation or government size. However, the influence of FDI on economic growth becomes insignificant once the researches control for openness, the black market premium, or financial development.

Choe (2003) examines the causal relationships between economic growth, FDI and Gross domestic investment (GDI) in 80 developed and developing countries over the period 1971–1995. The study finds that there is bidirectional causality between FDI and economic growth; however, the effects are rather more apparent from economic growth to FDI than from FDI to economic growth. Also, GDI does not Granger-cause economic growth, but economic growth robustly Granger-causes GDI. These findings suggest a strong positive association between economic growth and FDI inflows.

Of the reviewed studies, two have been carried out on sectors-wise FDI (Alfaro, 2003 and Vu et al., 2006). Alfaro (2003) considers sector-wise analysis (primary, manufacturing, and services sectors) to investigate the impacts of FDI on economic growth. This study looks at the direct effect of different types of FDI on economic growth, with 47 developed and developing countries for the time period 1980–1999. The findings of the study indicate that total FDI exerts an ambiguous effect on economic growth. FDI in the primary sector tends to have a negative effect on economic growth but the effect of FDI on manufacturing is positive.

Evidence of FDI on economic growth via service sector is ambiguous. The second sector-wise study, by Vu et al. (2006), also evaluates the sector-specific impact of FDI on economic

growth, using data from seven sectors of Vietnam for the period 1990–2002 and five sectors of China for 1985–2002. This result suggests that these two developing economies have significant positive effects on economic growth, resulting from FDI through labour productivity. The effect is different across-sectors, with almost all the beneficial impacts limited to the manufacturing sector. Other sectors appear to gain very little growth benefit from FDI.

The relationship between FDI, financial markets and economic growth, using cross-country data from developing and developed countries for the periods of 1975–1995, is examined by Alfaro et al. (2004). This study involves two data sets. The first data set relating to the 'credit market indicators', includes 20 OECD countries and 51 non-OECD countries. The second data set concentrating on 'equity market indicators', consists of 20 OECD countries and 29 non-OECD countries. The empirical evidence suggests that FDI plays an important role in contributing to economic growth. However, countries with well-developed financial markets gain significantly from FDI. Consequently, the study concludes that the lack of development of local financial markets can adversely affect an economy's ability to take advantage of such potential FDI benefits.

Using cross-country data for three decades (1971–1980, 1981–1990, and 1991–2000) Makki and Somwaru (2004) investigate the effects of FDI and trade in promoting economic growth in 62 developing countries. They found that FDI, trade, human capital, and domestic investment are important sources of economic growth for developing countries. In addition, the results reveal that there is a strong positive interaction between FDI and trade in advancing economic growth; that FDI stimulates domestic investment; that the contribution of FDI to economic growth is enhanced by its positive interaction with human capital and sound macroeconomic policies, and institutional stability.

Considering panel data for 84 countries (21 developed and 63 developing), Li and Liu (2005) investigate the impact of FDI on economic growth for the period 1970–1999. This study reveals the existence of a strong complementary connection between FDI and economic growth in both developed and developing countries. Furthermore, FDI not only directly promotes economic growth by itself but also indirectly does so via its interaction terms (human capital, technology gap). There is a strong positive interaction effect of FDI with human capital and a strong negative interaction effect of FDI with the technology gap on

economic growth in developing countries. However, it is interesting to note that the interaction of FDI with the technology gap behaves differently in developed and developing countries. This confirms that in developed countries where the general technology- absorptive capability is high, a larger technology gap would assist FDI in generating more benefits for economic growth. In developing countries, the opposite is observed.

Johnson (2005) investigates whether FDI can affect the host country's economic growth through technology spill-overs and inflows of physical capital. The study uses data from 90 developed and developing countries for the period 1980–2002. The findings reveal that FDI inflows enhance economic growth in developing countries but not in developed countries. Further, in the developing countries the technology spill-overs provide the strongest potential for FDI to enhance economic growth, as foreign MNEs have a technology advantage over domestic firms, and a foreign presence (MNE entry) in the form of FDI results in a positive externality in the form of technology spill-overs from the MNE to domestic firms.

Lumbila (2005) conducts a panel regression (47 African countries and period 1980–2000) in order to analyse the effects of FDI on economic growth. The results indicate that FDI exerts a positive impact on economic growth in Africa. Factors such as trained human capital, an attractive investment climate stemming from a developed infrastructure, lower country risk and a stable macro environment in the host countries, also enhance the impact of FDI on economic growth. Surprisingly, results reveal that corruption does not matter in the case of FDI; countries where corruption is perceived to be high still benefit from a positive impact of FDI on economic growth. This study suggests that increased FDI in Africa will be able to help many countries trapped into poverty because of the spill-over technological effect it involves.

Chowdhury and Mavrotas (2006) focus on the causal relationship between FDI and economic growth for three developing countries (Chile, Malaysia and Thailand) over the period 1969–2000. The results of this study reveal that for Chile the causality is only from economic growth to FDI. For Malaysia and Thailand, there is strong evidence of bidirectional causality between economic growth and FDI.

A panel dataset (23 OECD countries, in 1975–2004) is used by Turkcan et al. (2008) to investigate the relationship between FDI and economic growth. They treat economic growth

and FDI as endogenous variables, and estimate a two simultaneous equation system using the GMM technique. The results of this study suggest that FDI positively affects economic growth and that economic growth positively affects FDI inflows. The study also finds that economic growth stimulates FDI inflows more strongly than FDI inflows stimulate economic growth.

Covering Asia, Africa, Latin America and the Caribbean, Ekanayake et al. (2010) investigate the effects of FDI on the economic growth. The study uses a panel data set of a group of 85 developing countries for the period 1980–2007. The results indicate that FDI has a positive and significant impact on economic growth. When the model was estimated for different regions, FDI still has a positive sign in all four regions indicating that FDI appears to have a favourable effect on economic growth in developing countries. When countries were classified into different income groups (low income, low-middle income, upper-middle income, all countries), the estimation results reveal that the impact on economic growth is positive in three out of the four income groups, but is negative for low-middle income countries.

Srinivasan et al. (2011) investigate the causal nexus between FDI and economic growth for the South Asian Association for Regional Cooperation (SAARC) countries (Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka) using the data for the period 1970–2007. The cointegration result establishes a long-run relationship between FDI and economic growth for six of the following SAARC countries: Bangladesh, India, Maldives, Nepal, Pakistan and Sri Lanka. The result shows a long-run bidirectional causal link between economic growth and FDI for the SAARC countries, except India, for which there is a one-way long-run causal link from economic growth to FDI. The study concludes that for India, the enhanced economic growth performance is needed to attract FDI inflows rather than liberalised FDI-oriented policy efforts.

Sukar et al. (2011) investigate the impact of FDI on economic growth for 12 Sub Saharan African countries over the period 1975–1999. The study indicates that FDI has a marginally significant positive effect on economic growth. Further, the result claims that the domestic economic conditions such as macroeconomic policy, openness, and domestic investment have significant positive effects on economic growth.

Roy and Mandal (2012) examine the causal relationship between FDI and economic growth in 9 Asian countries using the data for the period 1981–2008. The findings indicate that for China, Indonesia, India, Pakistan, Philippines, Singapore and Sri Lanka, the direction of causality runs from economic growth to FDI only, no causality exists between FDI and economic growth for Malaysia and bidirectional causality exists for Thailand only.

More recently, Agrawal (2015) examines the relationship between FDI and economic growth in the five BRICS economies (Brazil, China, India, Russia, and South Africa) over the period 1989–2012. The results reveal that there is a long-run relationship between FDI and economic growth at the panel level. Further, the Granger causality test at panel level confirms the bidirectional causality between FDI and economic growth. Therefore, the study suggests that if economic growth is likely to attract more FDI inflows, then various policies to attract inward FDI could become unnecessary; hence, efforts should also be made to encourage the other potential sources of economic development that would in turn simulate and enhance FDI.

Table 3.2 presents a summary of studies on FDI and economic growth based on the cross-country studies reviewed in this section. As can be seen, most studies reveal that there is a positive relationship between FDI and economic growth (Blomström et al., 1992; Borensztein et al., 1998; De Mello, 1999; Zhang, 2001, Carkovic and Levine, 2002; Choe, 2003; Alfaro et al., 2004; Makki and Somwaru., 2004; Johnson, 2005; Li and Liu, 2005; Lumbila, 2005; Vu et al. 2006; Ekanayake and Ledgerwood, 2010; Sukar et al., 2011).

Figure 3.1 presents the frequency distribution of the factors that influence the GDP, based on the review studies summarised in Tables 3.1 and 3.2. As can be seen, a majority of the studies identify FDI, domestic investment, rate of inflation, trade, human capital, initial GDP and labour force as the dominant determinants that effect GDP.

3.5 FDI and Economic Growth Performance in Sri Lanka

The amount of FDI received in pre-independent Sri Lanka had been up and down because of economic factors rather than political ones. The favourable trend of FDI weakened, along with the changing local and global economic conditions. As discussed in Chapter 2, the second phase of government policy was marked by liberalization.

Table 3.2: A Summary of Findings from Cross-Country Studies on FDI and Economic Growth

Author(s), Year	Country	Period	Technique	Variables	Results
Agrawal (2015)	Brazil, Russia, India, China, and South Africa (BRICS)	1989–2012	Cointegration and causality	GDP and FDI	There is a long-run relationship between FDI and economic growth; bidirectional causality between FDI and economic growth at the panel level.
Alfaro (2003)	47 countries	1980–1999	OLS	Growth of GDP per capita, initial GDP, rate of inflation, government expenditures to GDP, openness, financial, schooling development, FDI and institutional quality	FDI in the primary sector, tend to have a negative effect on economic growth, while FDI in the manufacturing has a positive effect. Evidence from the service sector is ambiguous.
Alfaro et al. (2004)	71 developed and developing countries	1975–1995	OLS	Growth of GDP per capita, initial GDP, rate of inflation, government expenditures to GDP, openness, financial, schooling development, FDI, and institutional quality and population growth	FDI plays an important role in contributing to economic growth.
Balasubramaniyam et al. (1996)	46 developing countries	I970–1985	OLS	Real GDP, labour, domestic capital stock, stock of foreign capital, and exports	FDI has a positive effect on economic growth in host countries which have an export promotion policy but not in countries which have an import substitute policy.
Blomström et al. (1992)	23 developed and 78 developing countries	1960–1985	OLS	Growth of GDP per capita, FDI, education, domestic investment, price index and labour force	FDI have a significant positive effect on the average growth rate of per capita income.
Borensztein et al. (1998)	From OECD countries to 69 developing countries	1970–1979 1980–1989	Seemingly unrelated regression	Economic growth, FDI, stock of human capital, initial GDP per capita, government consumption, black market premium, political instability, rate of inflation and quality of institutions	FDI has a significant positive effect on economic growth.
Carkovic and Levine (2002)	72 developed and developing countries	1960–1995	GMM	Growth of real GDP per capita, FDI, education, rate of inflation, openness, black market premium and private credit	FDI does not exert a robust, positive influence on economic growth.
Choe (2003)	80 countries	1971–1995	panel VAR model	Growth of GDP per capita, FDI and domestic investment	Strong positive associations between economic growth and FDI inflows. Gross domestic investment leads to rapid economic

					growth.
Chowdhury and Mavrotas (2006)	Chile, Malaysia and Thailand	1969–2000	Toda-Yamamoto approach	GDP and FDI	GDP causes FDI in Chile and not vice versa. In the case of both Malaysia and Thailand, there is strong evidence of bidirectional causality between GDP and FDI.
De Mello (1999)	16 OECD and 17 non-OECD countries	1970–1990	Co integration and VAR	Economic growth, FDI and domestic investment	There is a positive impact of FDI on output growth in all panels, with and without country specific terms.
Ekanayake and Ledgerwood (2010)	85 developing countries covering Asia, Africa, Latin America and the Caribbean	1980–2007	OLS	Economic growth, domestic investment, FDI, education, rate of inflation and economic freedom	FDI has positive and significant effect on economic growth.
Ericsson and Irandoust **(**2001)	Denmark, Finland, Norway, and Sweden	1970–1997	Granger non-causality (Toda-Yamamoto)	Growth of real GDP per capita, FDI, total factor productivity and war	The causal linkage between FDI growth and income growth is bidirectional for Sweden. The causality seems to be unidirectional, running from FDI to growth, for Norway. There is no causality linkage between FDI growth and income growth for Finland and Denmark.
Johnson (2005)	90 developed and developing economies	1980–2002	OLS	Economic growth, domestic investment, human capital, labour, FDI, initial GDP and war	FDI enhances economic growth in developing economies but not in developed economies.
Li and Liu (2005)	84 developed and developing countries	1970–1999	OLS	Economic growth, real GDP per capita, population growth, education, gross domestic investment and FDI	There is a strong complementary connection between FDI and economic growth in both developed and developing countries.
Lumbila (2005)	47 African countries	1980–2000	OLS	Real GDP per capita, FDI, human capital, trade, rate of inflation, government consumption, infrastructure, population, money supply, foreign aid and domestic investment	FDI exerts a positive impact on economic growth in Africa.
Makki and Somwaru (2004)	62 developing countries	1971–1980 1981–1990 1991–2000	OLS	Growth of GDP per capita, FDI, trade, human capital, domestic investment and initial GDP	FDI, trade, human capital, and domestic investment are important sources of economic growth.
Roy and Mandal (2012)	9 Asian countries	1981–2008	OLS	GDP per capita, domestic investment, FDI, human capital and infrastructure	Countries like China, India, Indonesia, Pakistan, Philippines, Singapore and Sri Lanka, the direction of causality runs from economic growth to FDI and not vice versa,

					and no causality exists between FDI and economic growth for Malaysia and bidirectional causality exists for Thailand only.
Samad (2011)	19 Developing Countries in East and South East Asia and Latin America	1970–2006	Cointegration and Causality	GDP and FDI	GDP and FDI are independent of each other for three countries; bidirectional relation between GDP and FDI for seven countries; Three countries exhibit unidirectional and positive short-run causal effects from GDP. The long-run causality between GDP and FDI is investigated for the six countries in which GDP and FDI are cointegrated.
Srinivasan et al. (2011)	8 SAARC countries	1970–2007	Cointegration and VECM	GDP and FDI	There is a long-run relationship between FDI and GDP, a long-run bidirectional causal link between GDP and FDI for the selected SAARC nations except India.
Sukar et al. (2011)	Sub-Saharan African countries	1975–1999	OLS	Growth of real GDP per capita, initial GDP, FDI, population growth, domestic investment, rate of inflation, government consumption, openness	FDI has marginally significant positive effect on economic growth.
Turkcan et al. (2008)	23 OECD countries	1975–2004	GMM	Economic growth, FDI and export	FDI and economic growth are important determinants of for each other and export was statistically significant determinant of FDI and economic growth.
Vu et al. (2006)	China and Vietnam	1990–2002 1985–2002	OLS	Growth of value added, FDI, labour, capital, foreign capital, interest rate, human capital, trade and infrastructure	Two developing economies have significant positive effects on economic growth from FDI through labour productivity.
Zhang (2001)	11 developing countries in East Asia and Latin America	1980–1997	Cointegration and ECM	GDP and FDI	FDI tends to be likely to promote economic growth.

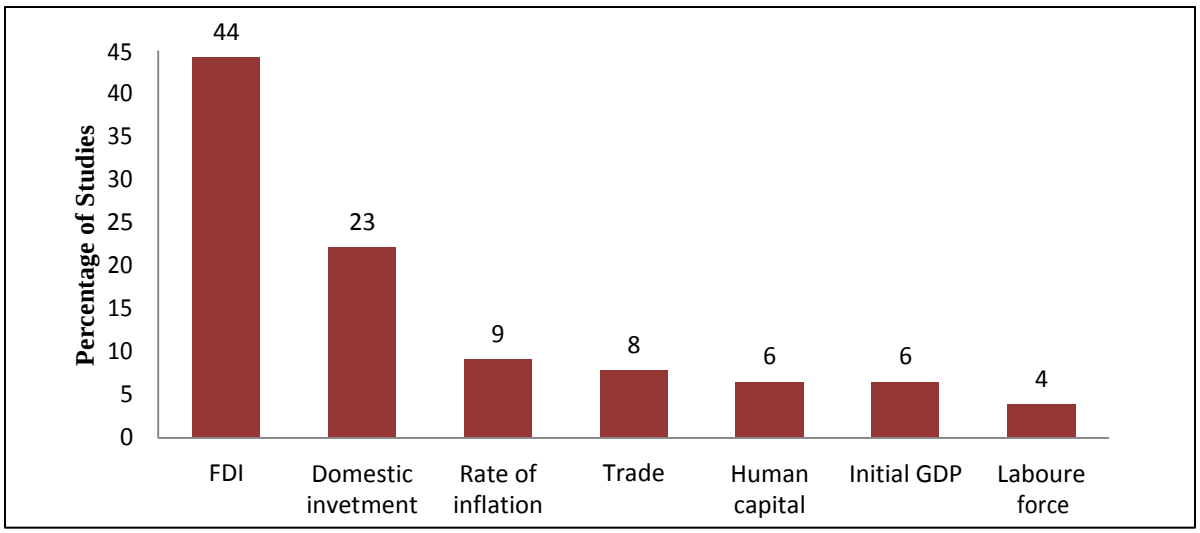


Figure 3.1: Frequency Distribution of Determinations of Economic Growth: Based on Tables 3.1 and 3.2

The poor economic performance of 1971–1977 prompted a policy reorientation in 1977 and policy reforms took several initiatives for promoting exports and export diversification. Among them, attracting foreign investors or FDI became a top priority.

Figure 3.2 presents the time series of FDI and economic growth (in terms of GDP growth rate) in Sri Lanka during the period 1978–2014. As can be seen, in 1978, FDI inflows to Sri Lanka remained less than $2m, increasing to $47m in the following year. Although FDI inflows remained at that level during 1979–1982, it started declining with the unfavorable political environments in the country. Major ethnic riots against the Tamils took place during July 1983 and the start of the civil war between the Sri Lankan government and the Liberalization Tigers of Tamil Ealam (LTTE) from that year made the investment climate less attractive to foreign investors. Since 1983, the FDI inflows have declined during periods of hostilities between the Sri Lankan government forces and the LTTE, and have increased during the time of peace negotiations. During the final phase of the civil war, FDI inflows declined sharply from $752m in 2008 to $404m in 2009 and then FDI inflows reached $944m in 2014.

After the introduction of liberalization policy in 1977, the economy growth rose to 5.7% in 1978. From the 1978 to 2008 period, even though Sri Lanka recorded a -1.5% economic growth in 2001 (the lowest from 1951 to 2013), the annual average economic growth fluctuated around 5%

per annum. However, in 2009, economic growth declined to 3.5% due to the heavy fighting towards the end of the civil war. Since the end of the civil war in 2009, the economy achieved high rates of growth, 8 % in 2010, reached to 7.3 % in 2014.

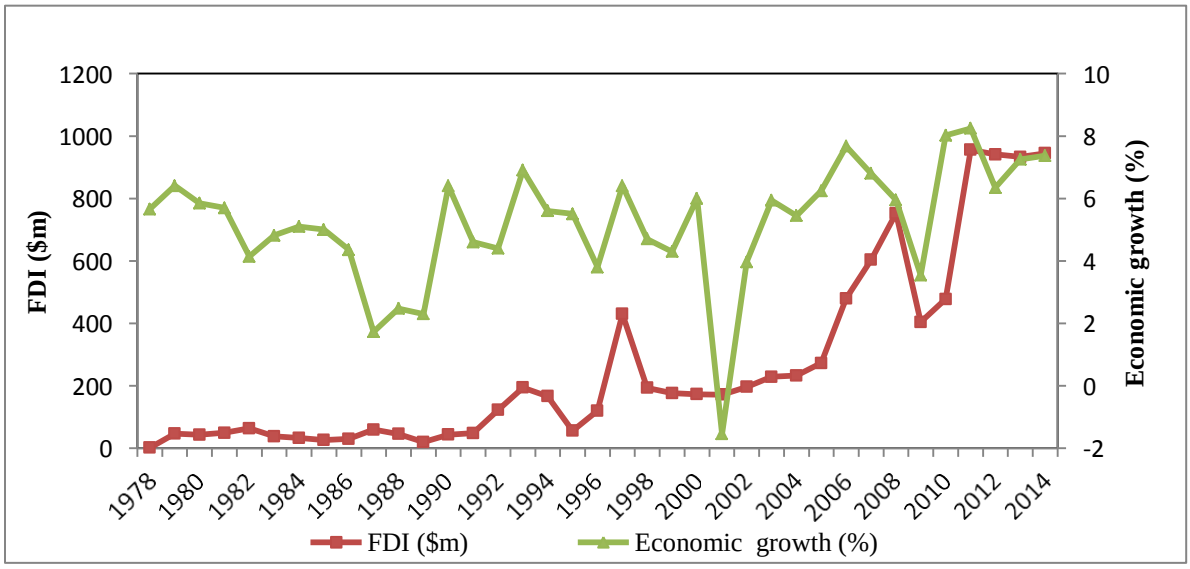


Figure 3.2: FDI and Economic Growth in Sri Lanka, 1978–2014

3.6 Empirical Analysis

In this section, we present the details of the sources of data, then examine the time series properties of the variables of interest, and investigate the relationship between economic growth and its possible determinants.

From the frequency distribution given in Figure 3.1, we identified FDI, domestic investment, rate of inflation, trade, human capital, initial GDP and labour force as the possible dominant determinants that impact on economic growth. We use employment as a proxy for the labour force. Since employment is highly correlated[7] with the remaining determinant variables, we do not include employment in our model to avoid the multicollinearity problem.

[7] (Correlation (Employment, trade) = 0.95, Correlation (Employment, domestic investment) = 0.92, Correlation (Employment, human capital) = 0.94).

Data and Preliminary Analysis

This chapter uses the annual time series data for the period 1978–2014 on GDP per capita, domestic investment, human capital, FDI, trade, rate of inflation and war (civil war) dummy. The GDP per capita (constant 2005 US$) is used as a proxy for economic growth (GDPPC). Gross fixed capital formation (GFCF) is the total investment of the private and public sectors and excludes changes in stock. Domestic investment (DI) is measured by subtracting FDI from GFCF (US$m). Education expenditure (US$) is a proxy for human capital (HC). Trade (TRA) is calculated as exports plus imports (US$); the proxy for the level of macroeconomic instability is the rate of inflation (INF). The data for GDP per capita, gross fixed capital formation, FDI, trade and rate of inflation are from *World Development Indicators* (2015); Education expenditure is from various issues of *Annual Reports* and *Economic and Social Statistics Reports of the Central Bank of Sri Lanka.* We also use a dummy variable (WAR) to capture the effect of the war on economic growth during relevant periods. The WAR variable takes the value 1 for the war years 1983–2009 and 0 otherwise.

Past empirical studies indicate that domestic investment, human capital, FDI and trade, are expected to have a positive impact on economic growth, while rate of inflation and civil war are expected to have a negative impact on economic growth. Figures 3.3 to 3.7 plot GDPPC against (i) domestic investment, (ii) human capital, (iii) FDI, (iv) trade and (v) rate of inflation. We use all the variables in their log form for our analysis, with the exception of the rate of inflation. As can be seen, all four variables, DI, HC, FDI, and trade, have a positive influence on GDPPC, while the rate of inflation has a negative impact, as expected.

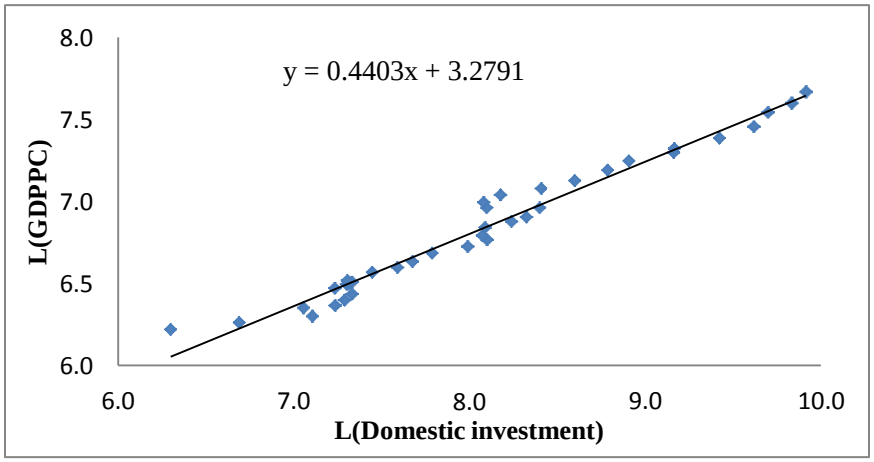


Figure 3.3: GDP per capita vs Domestic Investment

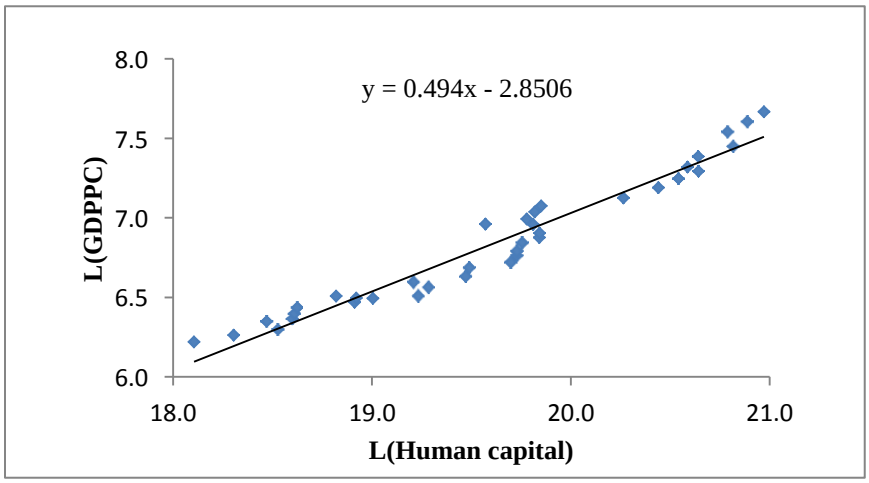


Figure 3.4: GDP per capita vs Human Capital

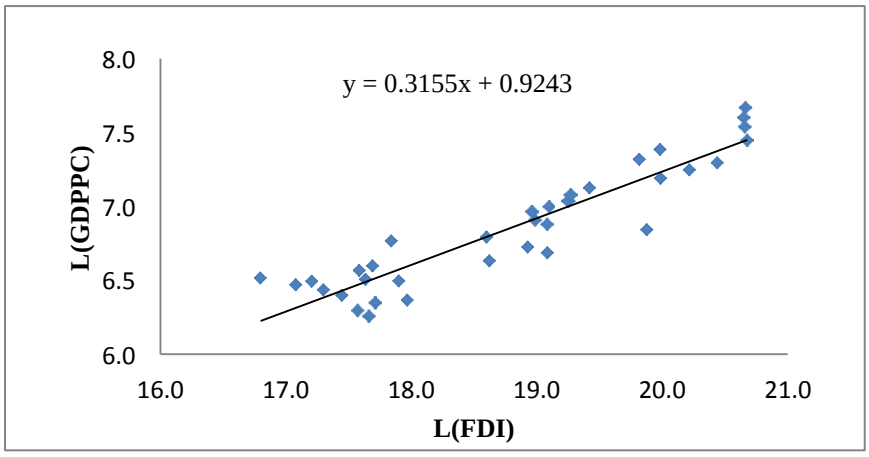


Figure 3.5: GDP per capita vs FDI

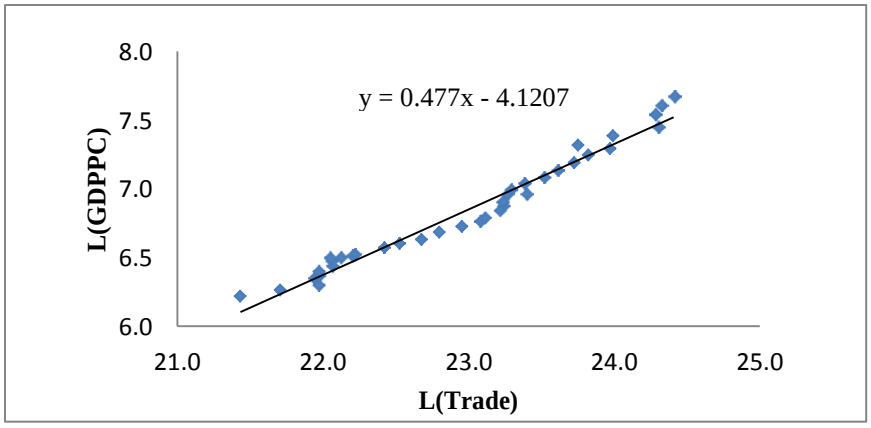


Figure 3.6: GDP per capita vs Trade

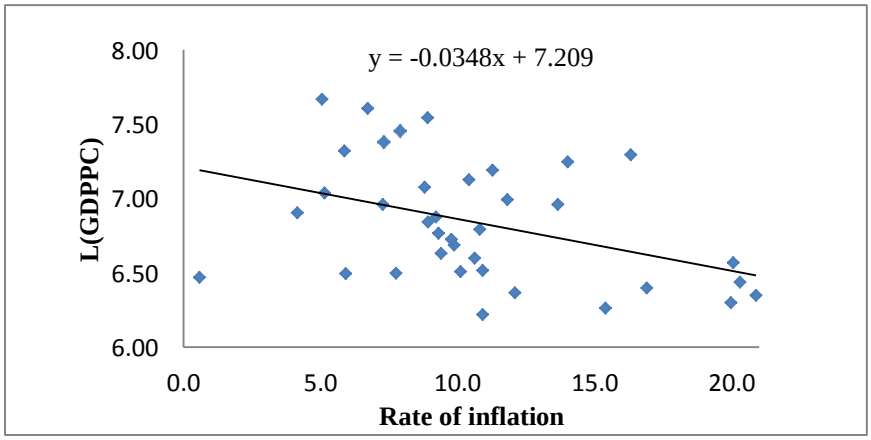


Figure 3.7: GDP per capita vs Rate of Inflation

Model Specification

We consider a production function given by (3.1) that expresses the level of a country's output as a function of domestic investment, human capital, FDI, trade, and rate of inflation (Balasubramanyam et al., 1996; Borensztein et al., 1998; Makki and Somwaru, 2004). We also include a war dummy (WAR), as the war has heavily impacted on Sri Lankan economic growth.

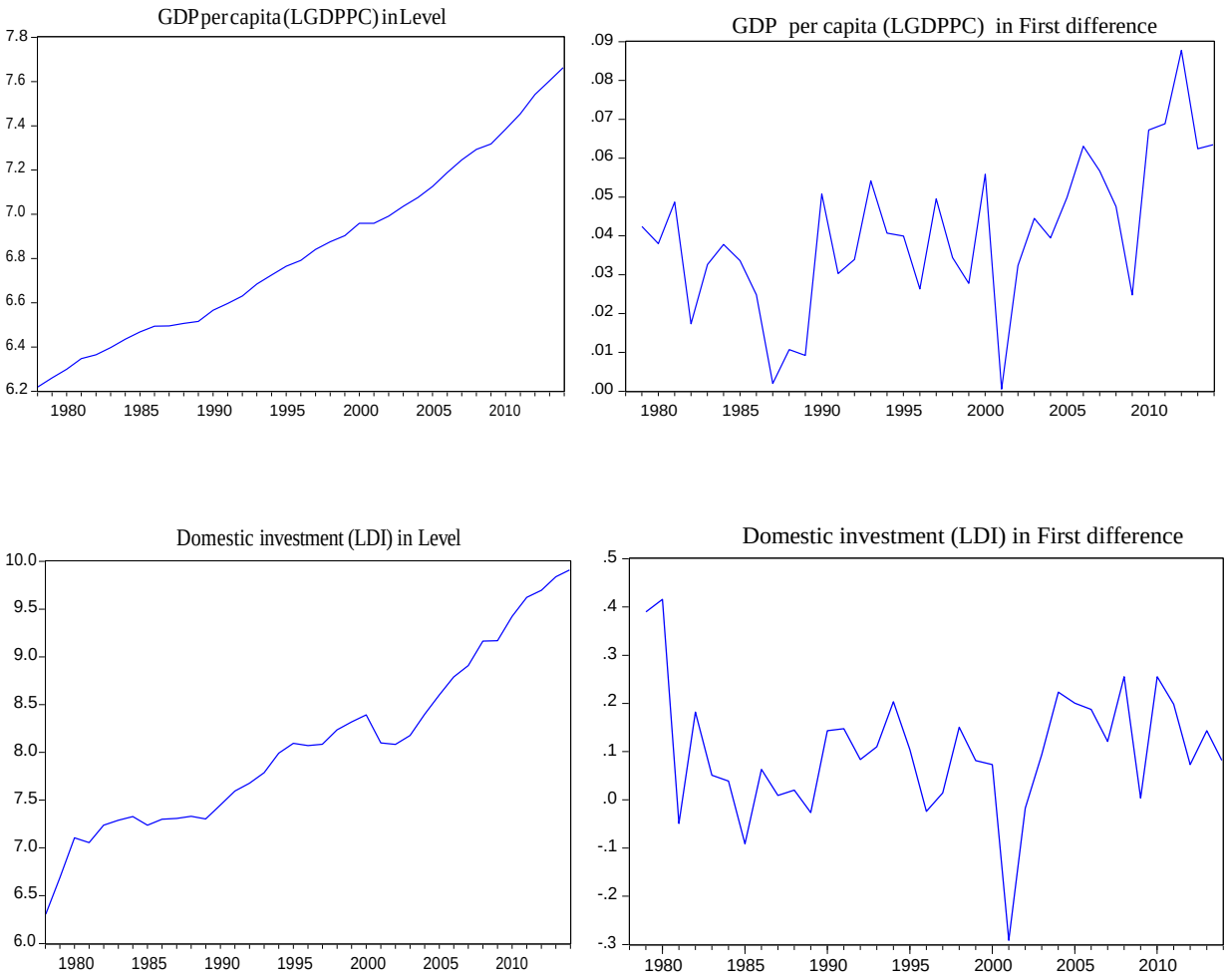
$$GDPPC = f(DI, HC, FDI, TRA, INF, WAR) \quad (3.1)$$

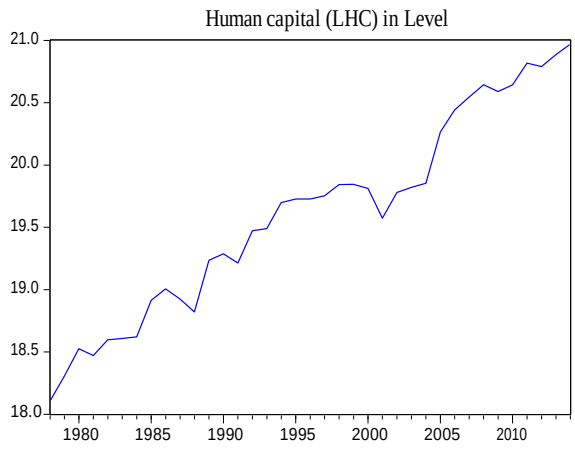
Equation (3.1) with all variables (except rate of inflation and war) in natural log form with a random error term added can be written as:

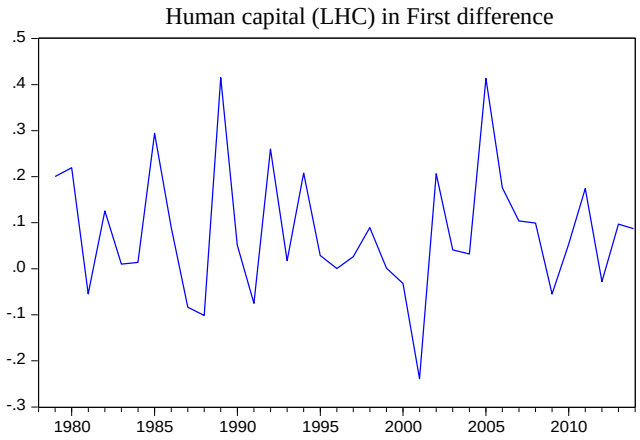
$$LGDPPC = \delta_0 + \delta_1 LDI + \delta_2 LHC + \delta_3 LFDI + \delta_4 LTRA + \delta_5 INF + \delta_6 WAR + \varepsilon \quad (3.2)$$

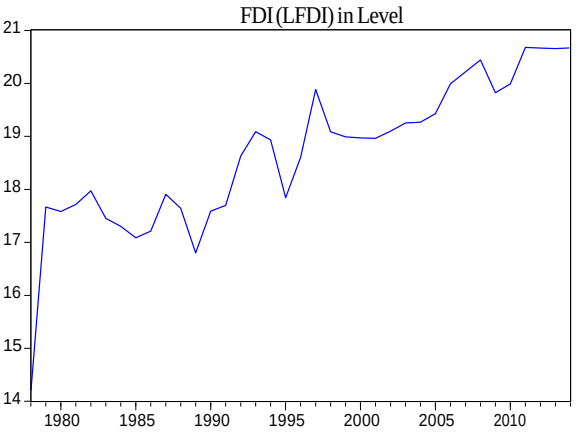
Here, *LGDPPC* represents GDP per capita, *LDI* represents domestic investment, *LHC* denotes human capital, *LFDI* is foreign direct investment; *LTRA* denotes trade and *INF* indicates rate of inflation; *WAR* is the dummy variable as described above and ε is the error term.

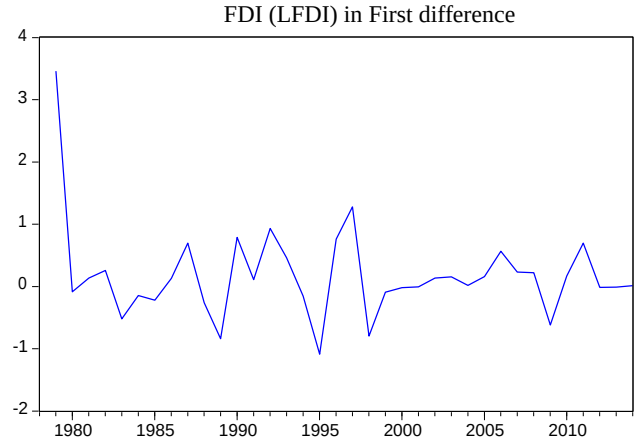
Figure 3.8 shows the time series plots of the variables in their level form and in first difference form. As can be seen, the plots suggest that all the variables in level form appear to be non-stationary, except rate of inflation. However, they may be stationary in their first difference form.

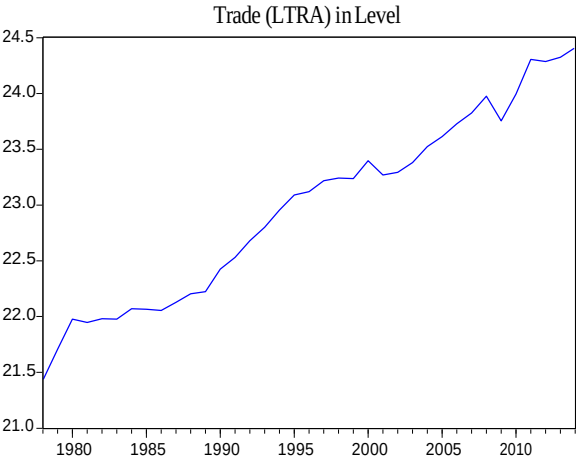


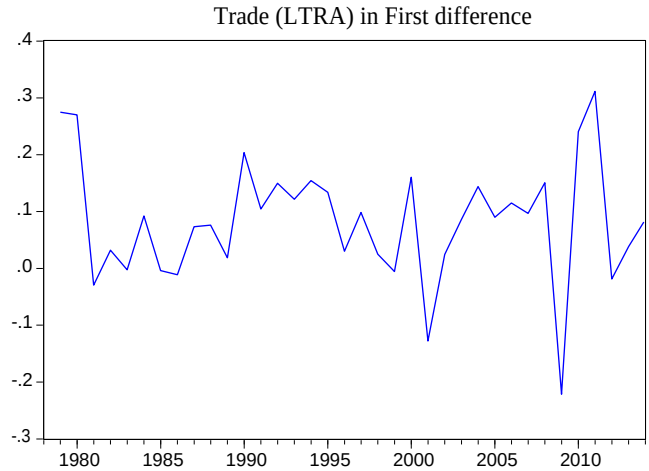

Human capital (LHC) in Level
21.0
20.5
20.0
19.5
19.0
18.5
18.0
1980
1985
1990
1995
2000
2005
2010


Human capital (LHC) in First difference
.5
.4
.3
.2
.1
.0
-.1
-.2
-.3
1980
1985
1990
1995
2000
2005
2010


FDI (LFDI) in Level
21
20
19
18
17
16
15
14
1980
1985
1990
1995
2000
2005
2010


FDI (LFDI) in First difference
4
3
2
1
0
-1
-2
1980
1985
1990
1995
2000
2005
2010


Trade (LTRA) in Level
24.5
24.0
23.5
23.0
22.5
22.0
21.5
21.0
1980
1985
1990
1995
2000
2005
2010


Trade (LTRA) in First difference
.4
.3
.2
.1
.0
-.1
-.2
-.3
1980
1985
1990
1995
2000
2005
2010

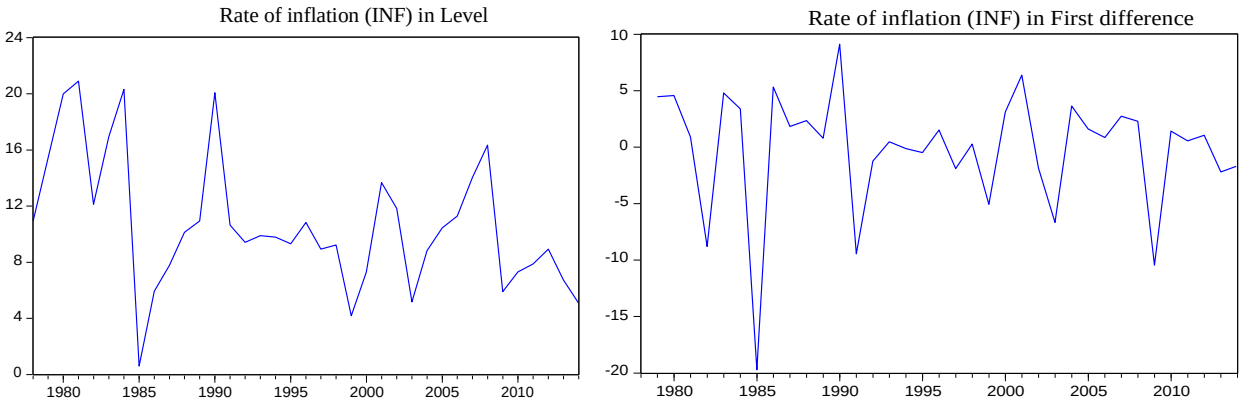


Figure 3.8: Plots of the Six Variables in Level and first Difference form, 1978 – 2014 (continued)

Unit Root Test

In order to avoid spurious regression estimation results of the model (3.2), we investigate the stationary properties of the data series. We use the ADF and PP tests to check the stationary property of the time series. For the two tests, the null hypothesis is that the series has a unit root (i.e., the series is non-stationary), against the alternative hypothesis of no unit root. The results of the unit root tests are presented in Table 3.3. As can be seen, the null hypothesis of a unit root cannot be rejected for all six variables in their level form, except rate of inflation. However, at the first difference, the null hypothesis of the unit root can be rejected for all those five variables which were non-stationary in their level form. Hence, the results confirm that the rate of inflation is integrated of order zero, *I*(0), and all other variables are integrated of order one, *I*(1). As the model 3.2 has *I*(0) and *I*(1) variables, the Auto Regressive Distributed Lag (ARDL) model is appropriate to investigate the relationship between FDI and economic growth.

Table 3.3: Unit Root Test Results

Variables	ADF		PP		Order of Integration
	Levels	First Differences	Levels	First Differences	
LGDPPC	1.379	-3.489**	1.184	-3.564**	I(1)
LDI	-1.587	-4.978***	-2.088	-4.966***	I(1)
LHC	-3.072	-6.719***	-3.160	-6.719***	I(1)
LFDI	-0.782	-5.782***	-0.987	-6.455***	I(1)
LTRADE	-3.0186	-6.367***	-3.229	-6.429***	I(1)
INF	-3.916***	-	-3.940***	-	I(0)

Note: ** and *** indicate statistical significance at the 5% and 1% levels, respectively.

ARDL Model and Estimation Results

We use the ARDL model to investigate the cointegration of the six variables following the procedure introduced by Pesaran et al. (2001). Such a model can be used to form the short-run and long-run relationships between the economic growth and its possible explanatory variables. An unrestricted error correction model (UECM) to reflect the ARDL can be written as:

$$\begin{aligned}\Delta LGDPPC_t = {} & \beta_0 + \beta_1 LGDPPC_{t-1} + \beta_2 LDI_{t-1} + \beta_3 LHC_{t-1} + \beta_4 LFDI_{t-1} + \beta_5 LTRADE_{t-1} + \\ & + \beta_6 INF_{t-1} + \beta_7 WAR_{t-1} + \sum_{i=1}^{f} \alpha_{1i} \Delta LGDPPC_{t-i} + \sum_{i=0}^{g} \alpha_{2i} \Delta LDI_{t-i} + \sum_{i=0}^{h} \alpha_{3i} \Delta LHC_{t-i} \\ & + \sum_{i=0}^{i} \alpha_{4i} \Delta LFDI_{t-i} + \sum_{i=0}^{j} \alpha_{5i} \Delta LTRADE_{t-i} + \sum_{i=0}^{l} \alpha_{6i} \Delta INF_{t-i} + \sum_{i=0}^{m} \alpha_{7i} \Delta WAR_{t-i} + \varepsilon_t\end{aligned} \tag{3.3}$$

where Δ is the first difference operator, β_0 is the drift component, and ε is the white noise. The coefficients β_i (i =1,2,..,7) represent the long-run coefficients, whereas the remaining coefficients within the summation sign α_{ri} (i =1,2,..,7) are the short-run coefficients of the model. The structural lags *f, g, h, i,,j,k l and m* are determined by using the minimum Akaike Information Criterion.

First, we conduct the bound test in order to investigate the existence of the long-run relationship among the variables in the system. The bound test (Pesaran et al., 2001) is based on the F-statistic for the joint significance of the coefficients (β_1, β_2,.., β_7) and follows a non-standard distribution. Under this, the null hypothesis of no cointegration is tested against the alternative of cointegration.

H_0: $\beta_1=\beta_2=\beta_3=\beta_4=\beta_5=\beta_6=\beta_7=0$ (no cointegration or no long-run relationship)

H_1: At least one $\beta_i \neq 0$, $i = 1, 2, \ldots 7$ (cointegration or long-run relationship exists)

According to Pesaran et al. (2001), there are two sets of critical values: I(0) and I(1). If the calculated F statistic falls below the lower bound I(0), the null hypothesis H_0 cannot be rejected, which means that there is no cointegration between the included variables. In contrast, if the F-statistic above the upper bound I(1), H_0 can be rejected, and there is a cointegration for the variables in the long run. If the F-statistic lies between I(0) and I(1) as bounds, the inference

cannot be conclusive. It is worth noting that this test is based on large sample critical values. We shall also use Narayan's (2005) small sample critical values to test the same hypotheses.

Table 3.4 presents the cointegration results. The calculated value of the *F*-statistic, in which the maximum lag length is 3, to test the long-run relationship (above null hypothesis) is 4.67, which is greater than the upper critical bound value of 3.61 at the 5% level of significance. Therefore, we conclude that cointegration exists among those six variables. That is, there is a long-run relationship between economic growth and the six variables in the model (3.2). In addition, we now compare the F-statistics value with the critical values provided by Narayan (2005) for small samples. Since the computed F-statistic 4.67 is greater than the critical values 4.21 (at the 5% significance level) given in Narayan (2005), we conclude again that there exists cointegration among economic growth and the other five variables considered in model (3.2).

Table 3.4: ARDL (2, 0, 3, 2, 3, 1) Estimation Results

Regressor	Parameter	Coefficient	Standard Error	t-Ratio	*p*-value
LGDPPC(-1)	α_{11}	0.608	0.166	3.671	0.002
LGDPPC(-2)	α_{12}	0.188	0.150	1.249	0.230
LDI	α_{20}	0.127	0.031	4.125	0.001
LHC	α_{30}	-0.015	0.017	-0.843	0.412
LHC(-1)	α_{31}	0.025	0.016	1.566	0.137
LHC(-2)	α_{32}	-0.061	0.016	-3.808	0.002
LHC(-3)	α_{33}	0.038	0.019	2.016	0.061
LFDI	α_{40}	0.010	0.006	1.837	0.085
LFDI(-1)	α_{41}	-0.001	0.005	-0.289	0.776
LFDI(-2)	α_{42}	0.013	0.005	2.486	0.024
LTRA	α_{50}	0.108	0.025	4.249	0.001
LTRA(-1)	α_{51}	-0.031	0.029	-1.068	0.301
LTRA(-2)	α_{52}	0.052	0.026	2.017	0.061
LTRA(-3)	α_{53}	-0.059	0.024	-2.460	0.026
INF	α_{60}	-0.000	0.000	-0.155	0.879
INF(-1)	α_{61}	0.000	0.000	2.441	0.027
C		-2.267	0.519	-4.368	0.000
WAR	α_{70}	-0.009	0.007	-1.298	0.213
R^2		0.89	S.E. of Regression	0 .08	
AIC		109.10	SBIC	95.36	
Computed F – statistics		4.67			

Note: The lower and upper bound of the critical values at the 1, 5 and 10% significant levels are (3.15, 4.43), (2.45, 3.61) and (2.12, 3.23), respectively (Pesaran et al., 2001, Table C1 (iii) Case III: Unrestricted intercept and no trend).

Since the cointegration between economic growth and other variables is found, we estimate the long-run model (3.2). The estimated coefficients are given in Table 3.5. As can be seen, the estimated coefficient of the variable DI is positive and highly significant, inferring that domestic investment is an influential factor on economic growth in the Sri Lankan economy. This result is similar to the findings of Blomström et al., (1992), Choe (2003), Balamurali et al., (2004), Li and Liu (2005), Lumbila (2005), Sukar et al., (2011), Saqib et al., (2013), and Aga (2014). The estimated coefficient corresponding to the variable HC is positive and insignificant, suggesting that human capital has some positive impact on the economic growth; however it is statistically insignificant. This result is in line with the results reported in Cooray (2009) and Shah et al. (2015). The coefficient of FDI is positive and insignificant, meaning that FDI has some positive impact on economic growth, however, it is statistically insignificant. Our finding in relation to FDI is in line with the results reported in previous studies such as Asheghian (2011), Aga (2014), and Velnamby et al. (2014).

Table 3.5: Estimated Long-run Coefficients of the ARDL Model

Regressor	Parameter	Coefficient	Standard Error	t-Ratio	*p*-value
LDI	δ_1	0.623	0.128	4.885	0.000***
LHC	δ_2	0.060	0.091	0.665	0.516
LFDI	δ_3	0.219	0.239	0.915	0.373
LTRA	δ_4	0.339	0.102	3.333	0.004***
INF	δ_5	-0.005	0.003	-1.943	0.070*
C	δ_0	-11.081	1.635	-6.779	0.000
WAR	δ_6	-0.031	0.007	-4.100	0.026**

Note: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

The coefficient of TRA is positive and significant, implying that trade liberalisation has a significant impact on the economic growth in Sri Lanka. As trade converge towards a high economic growth, Sri Lanka is able to benefit from greater liberalization of the trade sector. The result is in line with previous studies Athukorala (2003), Balamurali et al. (2004) and Asheghian (2011).

The INF coefficient is negative and significant, indicating that the rate of inflation negatively impacts on economic growth. Hence, Macro instability makes the domestic macroeconomic environment less predictable, lowering the economic growth. Similar results are obtained by

Lumbila (2005), Ekanayake and Ledgerwood (2010), Sukar et al. (2011) and Saqib et al. (2013). In addition, as expected, the WAR coefficient is negative and significant, meaning that civil war negatively influences economic growth. Consequently, war generates an uncertain political and economic environment, creating volatility and thus, negatively affecting the macroeconomic performance of Sri Lanka. The result is consistent with those of Alesina et al. (1996) and Aisen and Veiga (2011).

Next, we estimate the short-run dynamic parameters using an error-correction model of the form:

$$\Delta LGDPPC_t = \alpha_0 + \sum_{i=1}^{f} \alpha_{1i} \Delta LGDPPC_{t-i} + \sum_{i=0}^{g} \alpha_{2i} \Delta LDI_{t-i} + \sum_{i=0}^{h} \alpha_{3i} \Delta LHC_{t-i} + \sum_{i=0}^{i} \alpha_{4i} \Delta LFDI_{t-i} + \sum_{i=0}^{j} \alpha_{5i} \Delta LTRADE_{t-i} + \sum_{i=0}^{k} \alpha_{6i} \Delta INF_{t-i} + \sum_{i=0}^{l} \alpha_{7i} \Delta WAR_{t-i} + \lambda ECT_{t-1} + \varepsilon_t \quad (3.4)$$

where α_s are the short-run dynamic coefficients, λ is the speed of the adjustment parameter and ECT is the error correction term that is derived from the estimated Equation (3.2) in the following form:

$$ECT = LGDPPC - \delta_0 - \delta_1 LDI - \delta_2 LHC - \delta_3 LFDI - \delta_4 LTRA - \delta_5 INF - \delta_6 WAR$$

The ARDL (2, 0, 3, 2, 3, 1) is selected based on AIC, and the results of the short-run dynamic coefficients associated with the long-run relationships are shown in Table 3.6.

Table 3.6: Estimates of the Error Correction Representation

Regressor	Parameter	Coefficient	Standard Error	t-Ratio	*p*-value
ΔLGDPPC(-1)	α_{11}	-0.188	0.150	-1.249	0.226
ΔLDI	α_{20}	0.127	0.031	4.125	0.001
ΔLHC	α_{30}	-0.015	0.017	-0.843	0.409
ΔLHC(-1)	α_{31}	0.023	0.019	1.232	0.232
ΔLHC(-2)	α_{32}	-0.038	0.019	-2.016	0.057
ΔLFDI	α_{40}	0.010	0.005	1.837	0.081
ΔLFDI(-1)	α_{41}	0.013	0.005	2.486	0.022
ΔLTRA	α_{50}	0.108	0.025	4.249	0.000
ΔLTRA(-1)	α_{51}	0.007	0.025	0.277	0.785
ΔLTRA(-2)	α_{52}	0.059	0.024	2.460	0.023
ΔINF	α_{60}	-0.000	0.000	-0.155	0.879
ΔWAR	α_{70}	-0.009	0.007	-1.2982	0.209
ECT(-1)	λ	-0.205	0.067	-3.0335	0.007

The error-correction coefficient ECT is -0.21, which has the expected negative sign and is significant at 1% level. The absolute value of the coefficient (i.e. -0.21) implies that about 21% of the disequilibrium of the previous year's shock adjusts back to the long-run equilibrium in the current year. Hence, there is a slow adjustment process.

Endogeneity

In the literature of FDI and economic growth, many researchers have dealt with the endogeneity problem. It is expected that there may be a possible simultaneity between FDI and economic growth which could result in reverse causation. We found in Chapter 2 that economic growth has a significant positive impact on FDI. However, in this chapter, we have noticed that FDI does not have a significant impact on economic growth. From these findings, it can be concluded that there is no bidirectional causality between FDI and economic growth. For further clarification, a pairwise Granger causality test is used to check whether there is a possibility of two-way causality between economic growth and FDI. The result is reported in Table 3.7.

Table 3.7: Granger Causality Test Results

Null Hypothesis	F-Statistic	*P*-value	Decision
FDI does not Granger cause economic growth	0.297	0.745	No
Economic growth does not Granger cause FDI	7.856	0.002***	Yes

Note: *** indicates statistical significance at the 1%, level.

As can be seen, FDI does not Granger cause GDP per capita while GDP per capita Granger causes FDI; that is, there is a one-way causality from GDP per capita to FDI. This causality result is consistent with the findings of the determinants of FDI in Chapter 2 and the determinants of economic growth in Chapter 3 (this chapter). Therefore, endogeneity does not appear to be an issue in this study.

Diagnostic Tests

In order to check the performance of the model, three diagnostic tests, namely, serial correlation, functional form and heteroscedasticity, have been conducted. The results are given in Table 3.8.

As can be seen, residuals are serially uncorrelated, normally distributed and homoscedastic and the functional form is acceptable. Therefore, there is no evidence of diagnostic problem with the estimation results and the model.

Table 3.8: Diagnostic Tests Results

Tests	F-Statistic	*P*-value
Serial Correlation (a)	0.85	0.37
Functional Form (b)	1.36	0.26
Normality (c)	0.35	0.84
Heteroscedasticity (d)	0.39	0.54

Note: Null hypothesis in a = No serial correlation; b= Functional specification is correct, c = Residuals are normal, and 4 = Residuals are homoscedastic.

Stability Tests

In the final stage, the cumulative sum (CUSUM) and the CUSUM of squares (CUSUMSQ) tests have been employed to examine the stability of the long-run coefficients. The graphical presentation of these tests is presented in Figure 3.9. Since the plots of CUSUM and CUSUMSQ statistic are within the critical lines at the 5% significance level, there exists stability in the coefficients over the sample period for Sri Lanka.

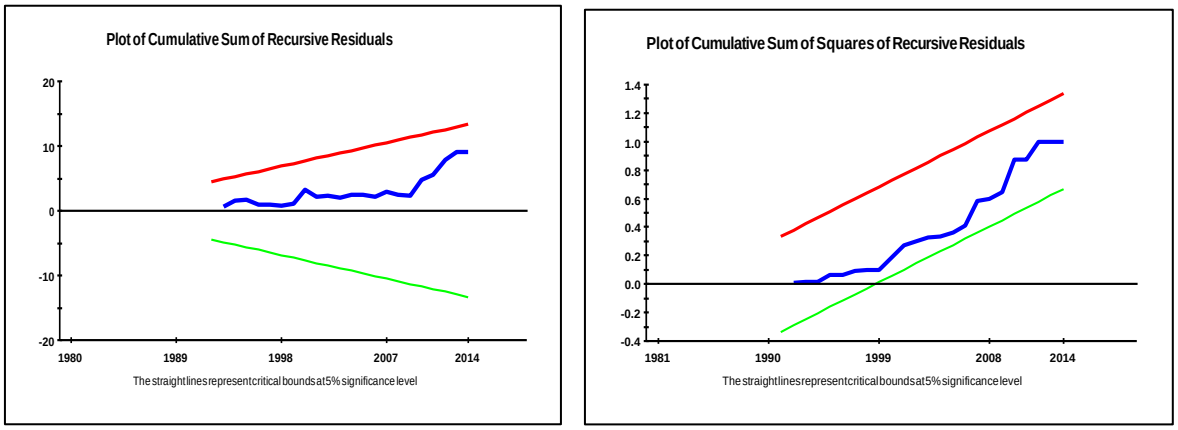


Figure 3.9: CUSUM and CUSUMSQ Tests for Parameter Stability

3.7 Conclusions and Policy Implications

The objective of this study was to develop an empirical framework to identify the determinants of economic growth in Sri Lanka by using time series data for the period 1978–2014. Based on the review of previous research, we identified six important determinants that generally

determine economic growth: domestic investment, human capital, FDI, trade liberalization, macroeconomic stability and political stability. We then modelled economic growth using these six variables and estimated that model with Sri Lankan data.

The results indicate that domestic investment has a positive effect on Sri Lankan economic growth and is statistically significant. As larger amounts of domestic investment lead to higher economic growth, increasing the level of domestic investment is necessary for Sri Lanka to maintain sustainable economic growth. Trade has a positive influence on economic growth in Sri Lanka and is statistically significant. This implies that implementing greater trade liberalization policies enhances economic growth in Sri Lanka. Macroeconomic instability proxied by rate of inflation has a negative impact on economic growth and is statistically significant. This means that the rate of inflation creates distortions in economic performance, such as the profitability of investment projects and the country's international competitiveness. Therefore, Sri Lanka should adopt an appropriate monetary and fiscal policy to control the rate of inflation. In addition, political instability (war) has a negative impact on economic growth and is statistically significant, implying that political instability is associated with greater uncertainty regarding future economic policy, and that it adversely affects investment climate and, consequently economic growth. Since higher political instability is associated with lower economic growth, the Sri Lankan government should take action to ease the political instability in the country that is mainly due to the ethnic tension.

We also found that FDI has some positive impact on economic growth in Sri Lanka, but it is not statistically significant. Sri Lanka receives FDI which is less than 2% of GDP. This small percentage of FDI could be the reason for its positive but insignificant impact on economic growth. Thus, the Sri Lankan government has to seek policies to attract increased amount of FDI, which will result in higher economic growth. Along with that, human capital also impacts positively and insignificantly on economic growth. This may be due to government spending on education, which amounts to 2% of GDP, or less in Sri Lanka, which is lower than that of other SAARC countries. In order to make a positive and significant relationship between education expenditure and economic growth, Sri Lankan authorities should allocate a greater amount of resources to education (human capital), especially to higher education, which will have important

contributions to the economic growth process of Sri Lanka, in terms of reducing poverty and boosting the economic growth through human capital development.

Finally, it can be concluded that there is long-run equilibrium between economic growth and the six explanatory variables considered in this study. The major determinants of economic growth in Sri Lanka are domestic investment, trade liberalisation, macroeconomic instability and political instability. From the policy perspective, the findings of this study recommend that for future economic growth, policy planning, and implementation, the Sri Lankan government has to consider developing policies to improve the domestic investment, trade liberalisation, macroeconomic stability and political stability. Moreover, the Sri Lankan government should initiate optimal tax policies whose focus is on increasing FDI inflows that would increase economic growth.

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CHAPTER 4

The Relationship between Foreign Direct Investment and Tourism

4.1 Introduction

Tourism has become one of the important industries in most countries for a number of reasons. In recent times, many countries have looked to tourism as a means of earning export revenue, creating jobs, promoting economic diversification and enhancing the performance of the service sector. Investment in the tourism industry is extremely capital intensive as it involves the construction of resorts, hotels, motels, restaurants, shopping centres, places of amusement, guesthouses and equipment. In most developing countries, a shortage of capital is a major obstacle to developing the tourism sector. Consequently, these countries are increasingly looking for foreign investors to provide the capital required to help the development of the tourism industry. FDI has been the most important source of dynamism in the tourism industry. In many countries, tourism had strong growth during recent decades, which led to a construction boom in hotels, resorts and villas, mainly driven by FDI (UNCTAD, 2013). MNEs involved in the tourism sector have often had a positive impact on host destinations. Apart from investing capital, foreign MNEs can help host economies by, among other things, diversifying the supply of tourism products and improving the local service standard. Furthermore, global data on Greenfield investments in foreign hotels indicate that there is some reorientation of FDI in tourism towards developing countries. It is likely that the investment of MNEs in the tourism industry will continue, to expand their activities in both absolute and relative terms throughout the developing countries.

With growing international competition between tourism destinations and the higher contestability of investment projects, effective promotion is crucial in order to attract investors in the sector. FDI in the tourism industry aims not only to attract financial capital from abroad, but also to attract human capital, such as entrepreneurs, hospitality and travel managers, as well as international franchises to market and develop local attractions (UNCTAD, 2010). However, the impact of FDI in the tourism sector is more nuanced than in some other sectors of the economy, so most countries approach it with a combination of hope and fear. FDI is valued because of

what it can provide, but it is also feared for its impact upon economic and cultural independence, and its potential damage to the communities and the environment. In some countries, efforts to attract FDI in tourism sit uneasily alongside complaints that there is already too much FDI, or that foreign investors dominate the sector and do not pass the benefits of tourism on to the domestic economy (UNCTAD, 2007).

Even though the relationship between FDI and tourism has been investigated, tourism has not been addressed explicitly by any of the FDI theories. In their analysis on the international hotel industry, few researchers (Dunning and McQueen, 1981; Dunning and Kundu, 1995; Kundu and Contractor, 1999) found that rates of tourism growth, expressly business tourism, are significant determinants of FDI. However, in the economic sense, it has been argued that tourism can be considered a key location-specific determinant of FDI. That is, more tourists would increase the demand for hotels, and consequently more investment would be required to expand the hotel industry (Tang et al., 2007). As part of globalization, the international hotel industry is becoming more global, where international hotel chains spread hotel brands all over the world. Therefore, FDI encounters a growing tourism demand, especially for international tourism.

There is a moderate amount of research literature on the relationship between FDI and tourism in developing and developed countries, particularly from an empirical perspective. The purpose of this chapter is to analyse the dynamic relationship between FDI and tourism, as a case study of Sri Lanka.

This chapter makes two major contributions to the existing literature on FDI and tourism in relation to Sri Lanka. First, this is the first study to use the multivariate approach to explain the relationship between FDI and tourism in Sri Lanka. While most of the existing studies in this area employ a bivariate framework (for example, see Sanford and Dong, 2000; Salih, 2011; Salleh et al., 2011; Samimi et al., 2013), very few studies use a trivariate model (Othman et al., 2012 and Jeyaraman et al., 2014). However, the exclusion of relevant variable(s) not only makes the estimates spurious and inconsistent, but also causality arises from the neglected variables (Lutkepohl, 1982). It is also possible that the inclusion of more variables in the causality framework may change not only the direction of causality but also the magnitude of the

estimates (Loizides and Vamvoukas, 2005). Hence, investigating the dynamic relationships among FDI, tourism, exchange rate, and tourism price will contribute significantly to the literature on FDI and tourism. Second, none of the previous studies consider the impact of policy regime change on the relationship between FDI and tourism in Sri Lanka. Therefore, investigating the dynamic relationship using a more generalized multivariate model would provide robust and reliable results. These findings would help policy-makers to adopt appropriate strategies and policies for the tourism industry in Sri Lanka.

The chapter is organised as follows. A review of the literature on FDI and tourism is provided in Section 4.2. The historical evolution of FDI and tourism in Sri Lanka is discussed in Section 4.3. Section 4.4 examines the causal link between tourism and FDI. Section 4.5 investigates the determinants of tourism. Section 4.6 presents policy implications and conclusions.

4.2 FDI and Tourism: A Review of the Literature

A number of studies have analysed the relationship between FDI inflows and tourism, in the context of a single-country as well as cross-country. This section presents a summary review of such previous studies.

Using pooled data (17 developed countries and 13 industries over 10 years, 1988–1997), Sanford and Dong (2000) examine the influence of tourism on FDI in the US. The study, which finds a positive and significant relationship between tourism and FDI, suggests that increasing tourism can improve a country's attractiveness to foreign investors, as tourism gives potential investors the opportunity to obtain first-hand knowledge of the environment of the country being visited. As a result, investment possibilities could be identified and then tourism could stimulate FDI in a wide variety of industries, which means that tourism remains a broad influence on all industries.

Sadi and Henderson (2001) observe the changing role of FDI in Vietnam's tourism industry in the late twentieth century. The study identifies the problems facing a country such as Vietnam as it struggles to establish itself as a tourist destination, and the dangers of over-dependence on FDI, as well as some of the constraints that affect investors. The study concludes that a successful investment program depends on the government policies that create macroeconomic stability in

the country, which would encourage confidence amongst financial markets and investors, as well as tourists. Tang et al. (2007) investigate the causal link between FDI and tourism in China for the period 1985(1) to 2001(3). The study finds that there is a one-way causality running from FDI to tourism. The study suggests that appropriate policies to explore tourism resources and plans to develop new tourist venues and facilities may need to be considered in order to meet the increasing demand for tourism facilities.

Cragigwell and Moore (2008) investigate the relationship between FDI and tourism in 21 small island developing states (SIDS) for the period 1980–2004. The results show that there is a bidirectional relationship between FDI and tourism in 7 out of the 21 countries studied. For the most part, the causal relationship usually runs from FDI to tourism, suggesting that FDI provides much needed capacity for SIDS and therefore allows the country to expand its tourism facilities. The lack of a bidirectional causal relationship between the two variables may also indicate that some SIDS may need to improve marketing their tourism product to attract more foreign investment.

The study by UNCTAD (2008) presents a synthesis of country case studies of the impact of FDI on the tourism industry for five East and Southern African countries, namely Botswana, Kenya, Mauritius, Uganda and the United Republic of Tanzania. The findings of the case study reveal that, most importantly, TFDI (FDI in tourism) inflows have contributed to a sustained increase in both arrivals and revenue from tourism by enhancing the service delivery and supply capacity (especially accommodation provided by international hotel chains) of these countries. The impact of TFDI was mixed, contributing to significant linkages in some countries (Botswana, Uganda and the United Republic of Tanzania) and not in others (Kenya and Mauritius). The impact appears to be sensitive to the organisational structure and level of development of a particular country, among other factors, although most of these countries have incentive policies to attract TFDI.

Considering the services sector, Williams and Deslandes (2008) identify the factors that motivate FDI in the tourism industry in Jamaica. The study uses data gathered through face-to-face interviews with hotel managers, government policy makers and ambassadors. The findings

indicate that Jamaica is chosen as a location because of its proximity to the US market and also its level of infrastructure development. However, because of the service-oriented nature of these multinational enterprises, the investors opted for FDI instead of other entry modes. These FDIs have reshaped the structure of the tourism industry (made it a more attractive location) in Jamaica and have led to increased levels of competition in the industry from other destinations within the Caribbean region, such as Cuba and Dominican Republic.

Salih (2011) investigates the long-run equilibrium relationship and direction of causality between international tourism and FDI in Turkey for the period 1970–2005. The findings of the study reveal that there is a long-run relationship between FDI and tourism, with a unidirectional causation from tourism to FDI. Therefore, tourism is a catalyst for FDI in the long-run for the Turkish economy.

Salleh et al. (2011) examine the relationship between FDI and tourism in China, Hong Kong, Malaysia, Singapore and Thailand for the period 1978–2008. The findings of the study indicate that there is a long-run relationship between FDI and tourism for all five countries. However, in the short run, the authors found a bidirectional relationship between tourism and FDI for Hong Kong; a unidirectional relationship from tourism to FDI for Malaysia and Thailand; and no relationship between these two variables for China and Singapore. The study concludes that, in order to stimulate sustainable economic growth, tourism development that brings in arrivals must occur, as it has the potential to improve the economy as well as attracting investments from abroad.

Othman et al. (2012) investigate the relationship between tourism, economic growth and FDI in 18 major international tourism destinations. The results show that there is a long-run relationship between tourism, economic growth and FDI. A bidirectional relationship between tourism and FDI exists in China, France, Hong Kong and Mexico, while a bidirectional relationship between FDI and economic growth exists in Austria and Mexico. Overall, the study concludes that there is a strong relationship between the two variables, tourism and GDP, as compared to the relationship between the variables, tourism and FDI, and the relationship between the FDI and GDP variables.

Using quarterly time series data, Selvanathan et al. (2012) investigate the causal link between FDI and tourism in India for the period 1995–2007. The finding of the study reveals that there is only a one-way causal relationship from FDI to tourism. That is, FDI has a causal effect on the number of foreign tourist arrivals in India. The study concludes that appropriate policy to exploit tourism resources, as well as plans to develop new tourist venues and facilities, may need to be considered in order to meet the increasing demand for tourism in India, expected as a result of continued strong FDI.

Samimi et al. (2013) investigate the direction of causality and the long-run relationship between FDI and the number of tourist arrivals in 20 developing countries for the period 1995–2008. The findings of the study reveal that there is a long-run relationship between tourism-related FDI (FDI in hotels and restaurants) and tourism growth in the long run; there is bidirectional long-run causality between tourism-related FDI and tourism development, but there is no short-run causality between FDI and tourism variables. Moreover, the study concludes that the significant impact of tourism-related FDI on tourism growth in developing countries justifies the necessity for government intervention in policy making. Various policies, including "soft" policies such as government support for trade fairs and maintenance of tourism internet sites like cultural and heritage sites, and "hard" policies such as government providing incentives to foreign investors in order to bring their established or potential tourist sources, need to be implemented in these countries.

Using panel data for a sample of 24 OECD countries, Fereidouni and Al-mulali (2014) investigate the link between FDI in the real estate sector and tourism, over the period 1995–2009. The variables used in this study are FDI in real estate (sum of inflows and outflows of FDI), FDI inflows to real estate, FDI outflows to real estate, the number of tourist arrivals and tourist departures. The results show the existence of the long-run equilibrium between the variables, and of bidirectional causal relationships between FDI in real estate and tourism, FDI inflows to real estate and tourists, and between FDI outflows to real estate and tourist departure.

More recently, Jayaraman et al. (2014) investigate the long-run impact of FDI on the tourism sector in Fiji for the period 1980–2011. The study finds that cointegration exists between the

variables (real tourism earnings, FDI and nominal exchange rate), and that the relationship between tourism earnings and FDI is positive. An increase in FDI by 10% leads to an increase in tourism earnings of around 0.49%. The study suggests that Fiji government has to continue to promote FDI in tourism-related activities, as this enhances the tourism development.

In summary, based on the review of previous studies, it can be concluded that there is a positive relationship between FDI and tourism, but that the direction of the causal relationship between FDI and tourism has been rather mixed. While the majority of the studies confirm the direction of the causality running from FDI to tourism, some other studies indicate the causality is in the opposite direction. It is also noted that another group of studies reveal bidirectional causality between these variables. Table 4.1 presents a summary of this review of the previous studies on FDI inflows and tourism.

4.3 Historical Evolution of FDI and Tourism in Sri Lanka

Traditionally, the Sri Lankan economy depended on agricultural exports such as tea, rubber, coconuts and other spices for its foreign exchange earnings. Tourism was not considered as a main component of the development strategy until the mid-1960s. However, the Sri Lanka Tourist Board (the primary agency in charge of promotional and organizational responsibilities of the tourist industry in Sri Lanka) was established in 1966 and the government's new tourism policy was initiated, after which, initiation international tourist arrivals to Sri Lanka increased at a faster rate.

The slow growth of the tourism industry in the late sixties and seventies can be attributed to the restrictive practices of the state, such as the trade and exchange rate policy and the lack of incentives for foreign investment. After the introduction of the trade and exchange rate liberalization policies in 1977, institutional publicity promoting tourism in Sri Lanka in countries abroad led to a sharp increase in tourist arrivals to Sri Lanka from 1980.

Table 4.1: FDI Inflows and Tourism: A Summary Review

Author(s), Year	Country	Period	Technique	Variables	Direction of Causality	Findings
Fereidouni and Al-Mulali (2014)	24 OECD countries	1995–2009	Panel cointegration and panel Granger causality	FDI in real estate, tourist arrivals and tourist departure	FDI ⇔TOUR	Long-run equilibrium exists between the variables.
Cragigwell and Moore (2008)	Small Island developing States	1980–2004	Panel causality tests	FDI and tourist arrivals	FDI ⇔TOUR FDI ⇒ TOUR	Bidirectional causality between FDI and tourism in a majority of countries.
Jayaraman et al. (2014)	Fiji	1980–2011	ARDL	FDI, tourism earnings, and exchange rate		The relationship between tourism earnings and FDI is positive.
Othman et al. (2012)	18 major international tourism industry		ARDL	FDI, GDP and tourist arrivals		Long-run relationship between the three variables. There exists multi directional relationship between all three variables.
Sadi and Henderson (2001)	Vietnam	Late 20th century	Descriptive methods			Vietnam is struggling to establish itself as a tourist destination and it is also over-dependent on FDI.
Salleh et al. (2011)	China, Hong Kong, Malaysia, Singapore and Thailand	1978–2008	ARDL	FDI and tourist arrivals	FDI ⇔TOUR TOUR ⇒ FDI No causality	Long-run relationships exist between the variables for all countries.
Salih (2011)	Turkey	1970–2005	ARDL and VECM	FDI and tourist arrivals	TOUR ⇒ FDI	Long-run relationship exists between the variables.
Samimi et al. (2013)	20 developing countries	1995–2008	VECM	FDI and tourist arrivals	FDI ⇔TOUR	Bidirectional long-run causality between tourism related FDI and tourism development, while there is no short-run causality between FDI and tourism.
Sanford and Dong (2000)	17 developed countries	1988–1997	TOBIT analysis	FDI and tourist arrivals		A positive and significant relationship between tourism and FDI.
Selvanathan et al. (2012)	India	Quarterly data 1995(2) – 2007(2)	Granger causality test under a VAR framework	FDI and tourist arrivals	FDI ⇒ TOUR	Unidirectional causality running from FDI to tourism.
Tang et al. (2007)	China	Quarterly data 1985(1) – 2001(3)	Granger causality test under a VAR framework	FDI and tourist arrivals	FDI ⇒ TOUR	Only one way direction is found from FDI to tourism.
UNCTAD (2008)	Botswana, Kenya Mauritius, Tanzania, and Uganda	2007	Country-wise case study			FDI positively influences the tourism in the host countries.
Williams and Deslandes (2008)	Jamaica	2006	Case study			FDI has positive and negative impact on the structure of Jamaica's tourism industry.

With the open economic policy, FDI is one of the channels through which Sri Lanka has achieved tourism, but due to the civil war the growth of tourism declined until 2009, as expected. The Sri Lankan government has identified the tourism sector as a key growth area in the post-conflict development. Since 2009, the tourism industry has experienced an impressive growth, in terms of both tourist arrivals and the tourism revenue. For example, the tourism industry performed very well in 2014: the number of tourist arrival exceeded the target number of 1.5 million tourists set for the year (SLTDA, 2015).

Figure 4.1 plots the number of tourist arrivals during 1970–2014. As can be seen, the number of tourist arrivals has steadily increased from 1970 to 1982. Due to a major anti-Tamil riot which took place in 1983 and the start of civil war between the Sri Lankan government and the Liberation Tigers of Tamil Eelam (LTTE) (Eelam War 1) in 1984, the numbers of tourist arrivals took a down turn from 1983 till 1989. A peace pact signed between the Indian government and the Sri Lankan government in 1989 returned some level of normalcy in 1990, when tourist arrivals began to increase. However, this was disturbed again due to Eelam War 2 and again by another major offensive by the Sri Lankan Government against the LTTE which commenced in 1995 (Eelam War 3, 1995–2000). In 1994, after 17 years in power, the United National Party (UNP) government lost power in the general elections and the People Alliance (PA) government came to power.

The new government initiated peace talks with the LTTE in 1994 and tourist arrivals marginally increased. However, this trend did not continue, due to the LTTE attacked on the Kolonnawa oil refinery and Central Bank bombing in late 1995 and 1996. Later, in 2001, LTTE attacked the Colombo international airport again, which affected the tourism sector badly. The economy recorded a negative economic growth for the first time after three decades. Nevertheless, in 2002, the Sri Lankan government and LTTE signed a cease-fire agreement (CFA), with peace brokered by Norway. Between 2002 and 2006, with the six rounds of peace talks with the LTTE, tourist arrivals increased sharply, with the exception of the Asian tsunami event in 2004. With the beginning of Eelam War 4 in 2006, again the numbers of tourist arrivals decreased until the civil war ended in 2009. From then onwards, tourist arrivals have increased at a much faster rate.

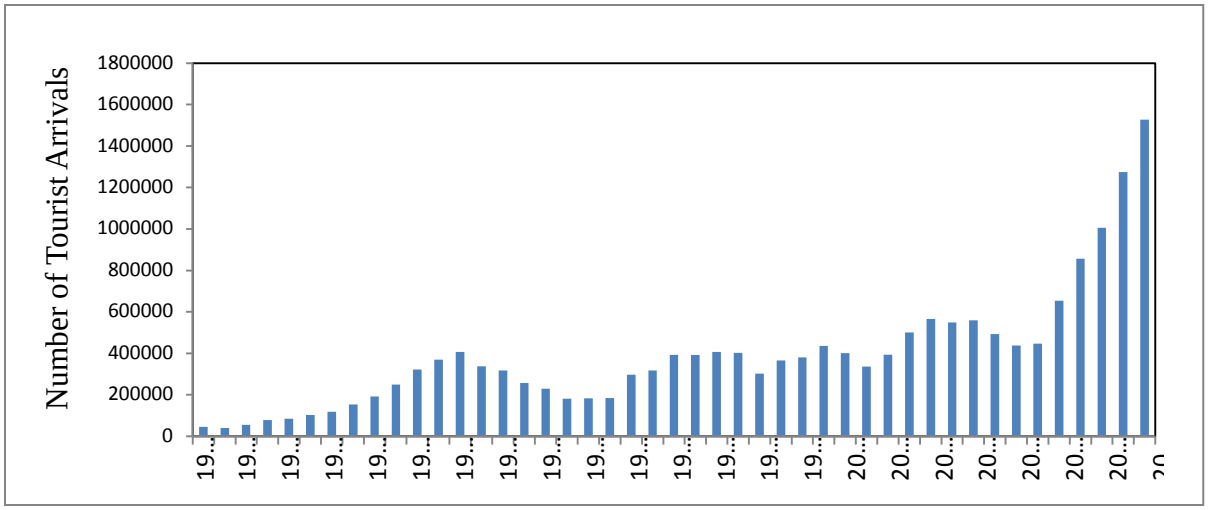

Figure 4.1: Number of Tourist Arrivals to Sri Lanka, 1970–2014

Figure 4.2 plots the FDI inflows and the numbers of tourist arrivals to Sri Lanka during 1970 to 2014. By looking at the plot, one could see some similarities in the movement of both series. Continuing the post-civil war growth momentum, the Sri Lankan government recognised the multiplier effect of tourism development. In the hotel industry, several regional and international hotel chains expressed a strong interest in developing tourism-related activities in Sri Lanka. Foreign companies that have already committed major investments in hotels and some international hotel brands have signed management agreements with local hotel companies (BOI, 2014).

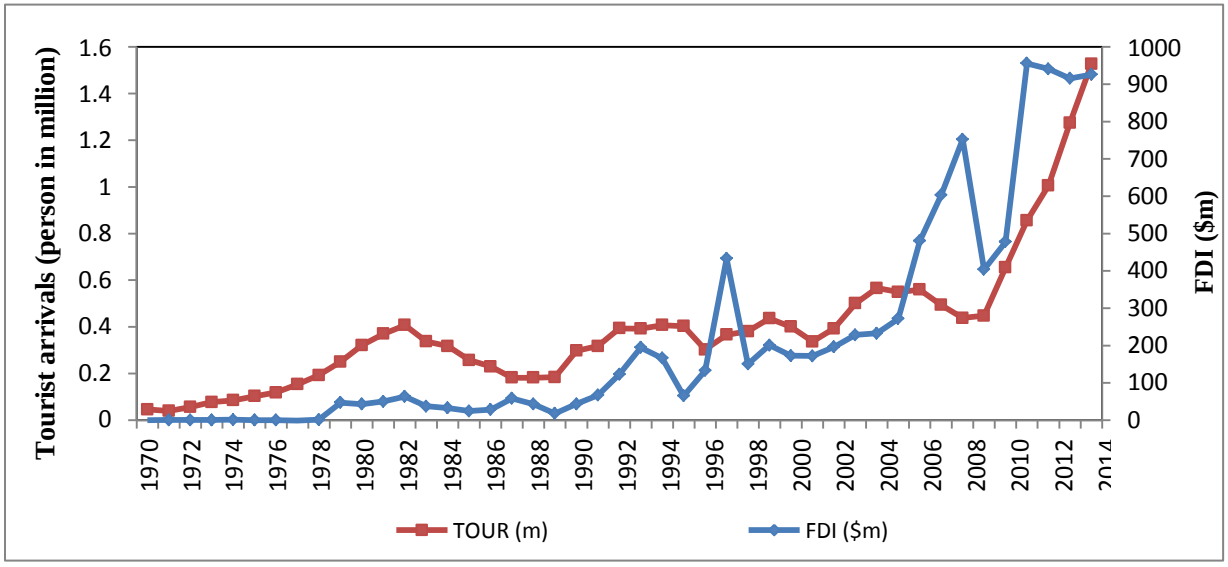

Figure 4.2: FDI net Inflows and Tourist Arrivals to Sri Lanka, 1970–2014

4.4 Causal Link between Tourism and FDI

In this section, we analyse the causal direction between tourism and FDI. The number of tourist arrivals is used to represent the tourism variable, and FDI as the FDI net inflows (US$m) into Sri Lanka. The annual data for the period 1970–2014 are obtained from *World Development Indicators* (2015) and the *Sri Lanka Tourism Development Authority* (SLTDA, 2015). However, due to the unavailability of sector-wise FDI data, the present study uses the aggregate FDI.

As a preliminary investigation, in Figure 4.3, we plot tourist arrival against FDI inflows. As can be seen, a positive linear relationship appears to exist between the number of tourist arrivals and the FDI inflows in Sri Lanka.

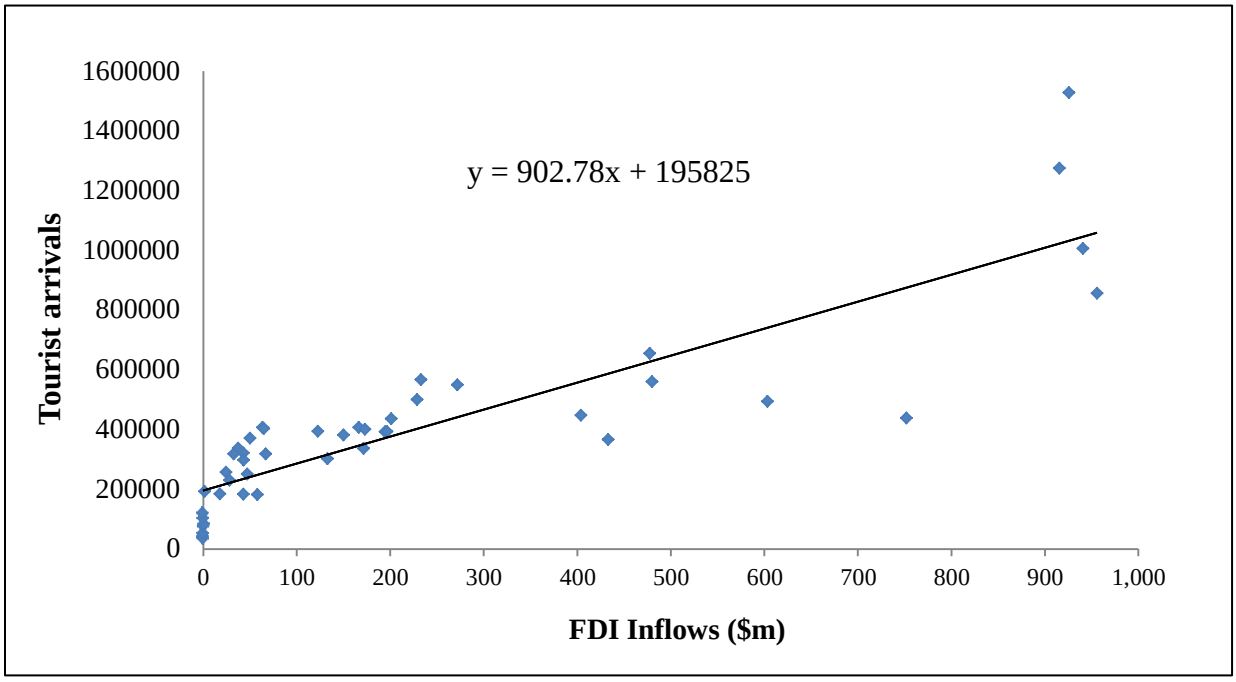

Figure 4.3: Number of Tourist Arrivals vs FDI Inflows in Sri Lanka, 1970–2014

Figure 4.4 plots the two variables in their level form and first difference form. As can be seen, the plots suggest that the two variables in level form may be non-stationary and may become stationary in their first difference form.

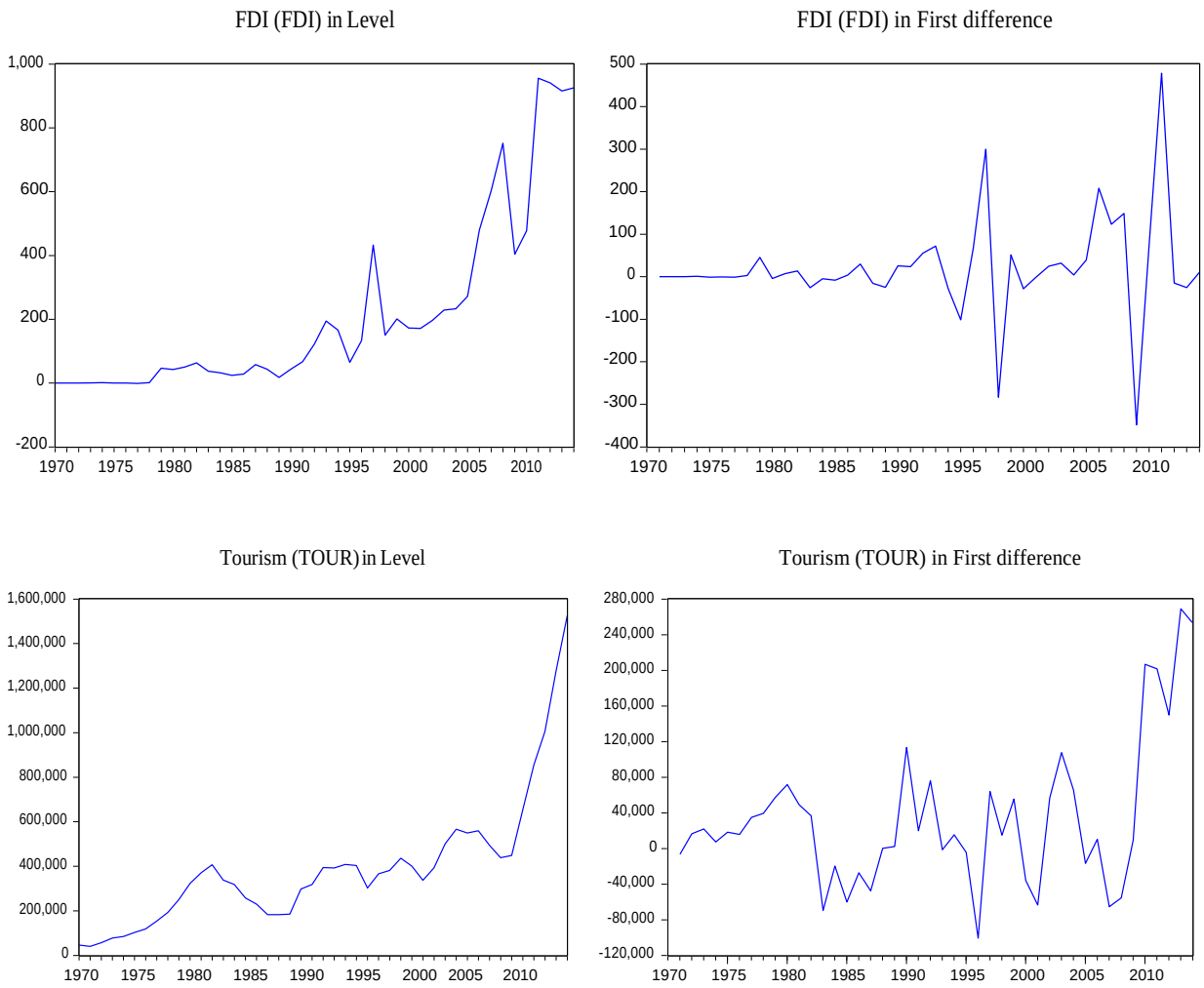

Figure 4.4: Time Series Plots of the Two Variables in Level and First Difference form, 1970–2014

Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root test are performed to test stationary of the two time-series variables, the results are presented in Table 4.2. As can be seen, both series TOUR and FDI are non-stationary in level form but are stationary in their first differences and hence they are I(1).

Table 4.2: Unit Root Test Results

Variables	**ADF**		**PP**		**Order of integration**
	Levels	First Differences	Levels	First Differences	
TOUR	-0.16	-1.90*	1.21	-1.90*	I(1)
FDI	-2.37	-7.35***	-1.88	-8.71***	I(1)

Note: * and *** indicate statistical significance at the 10%, and 1% levels, respectively.

Cointegration Test

Even if TOUR and FDI are both I(1), if the two variables are cointegrated, it is possible to estimate a long-run equilibrium relationship which is not spurious. In the next step, we investigate whether the two variables are cointegrated or not (i.e., does a long-run equilibrium relationship exist between tourism and FDI?). This is accomplished by using Johansen (1988) and Johansen and Juselius (1990) techniques, which determine the number of cointegrating vectors for any set of I(1) variables, based on the Trace and Maximum Eigen values tests.

The Johansen (1991) cointegration tests are based on reduced rank regression in which the maximum likelihood estimates are computed in the multivariate cointegration model with Gaussian errors. One of the advantages of this technique is that it allows a conclusion to be drawn about the number of cointegrating relationships among the observed variables. Another advantage is not requiring priori assumptions of endogeneity or exogeneity of the variables. Johansen proposes two different likelihood ratio tests to check the significance of these canonical correlations. They are determined by the following formulas:

$$\lambda_{trace} = -T\sum_{i=r+1}^{n}\ln(1-\hat{\lambda}_i) \qquad r = 0, 1, 2,\ldots, n\text{-}1$$

$$\lambda_{\max} = -T\ln(1-\hat{\lambda}_{r+1}) \qquad r = 0, 1, 2,\ldots, n\text{-}1$$

where T is the number of observations, $\hat{\lambda}_i$ is the ith eigen value and n is the number of endogenous variables. One lag has been chosen, based on Akaike information criterion (AIC) and SBIC. Table 4.3 presents the Johansen cointegration results.

Table 4.3: Johansen Test for Bivariate Model

		Trace Value			**Maximum Eigen Value**	
H_0	**H_1**	Test statistic	*p*-value	**H_1**	Test statistic	*p*-value
r = 0	r ≥ 1	21.939***	0.00	r = 1	20.540***	0.00
r ≤ 2	r ≥ 2	1.398	0.24	r = 2	1.398	0.24

Note: *** indicates statistical significance at the 1% level.

Results of both Trace and Maximum Eigenvalue suggest the existence of one cointegrating relationship among the variables, which means that there is a long-run relationship among the

variables FDI and TOUR for Sri Lanka. Since the series are cointegrated, the Granger causality test is carries out to investigate the causal relationship and its direction between tourism and FDI in the first differences with an error correction term.

Causality Test

To investigate the direction of causality between FDI and tourism, as the variables are I(1) and cointegrated, we utilise the following vector error correction (VEC) model given by Equations (4.1) and (4.2) in the standard Granger causality (Engle and Granger, 1987) procedure, with the variables in first differenced form.

$$\Delta TOUR_t = \phi_0 + \sum_{i=1}^{p} \phi_{1i} \Delta TOUR_{t-i} + \sum_{j=1}^{q} \phi_{2j} \Delta FDI_{t-j} + \gamma_1 \hat{e}_{t-1} + \varepsilon_t \quad (4.1)$$

$$\Delta FDI_t = \lambda_0 + \sum_{i=1}^{r} \lambda_{1i} \Delta FDI_{t-i} + \sum_{j=1}^{s} \lambda_{2j} \Delta TOUR_{t-j} + \gamma_2 \hat{e}_{t-1} + \nu_t \quad (4.2)$$

where Δ is first difference operator, ε_t and ν_t are white noise terms, *p,q,r* and *s* are optimum lag level and $\hat{e}_t$ is the error correction terms, which are the residuals from the long-run relationships of the form, $TOUR_t = \eta_0 + \eta_1 FDI_t + e_t$.

Based on Equation (4.1), it can be tested whether FDI does not cause TOUR in the long run by testing the null hypothesis H_o: $\gamma_1 = 0$, and whether FDI does not cause TOUR in the short run by testing the null hypothesis H_o: $\phi_{21} = \phi_{22} = ... = \phi_{2q} = 0$. Similarly, based on Eq. (4.2) it can also be tested whether TOUR does not cause FDI in the long-run by testing the null hypothesis H_o: $\gamma_2 = 0$, and whether TOUR does not cause FDI in the short run by testing the null hypothesis H_o: $\lambda_{21} = \lambda_{22} = ... = \lambda_{2s} = 0$.

The results of the causality test are reported in Table 4.4. Based on these test results, it can be concluded that FDI Granger causes TOUR in both the short run and the long run at the 1% significance level, and TOUR does not Granger causes FDI in both the short run and the long run.

Table 4.4: Granger Causality Test Results Based on VECM

Null Hypothesis	Short-run Causality		Conclusion	Long-run Causality		Conclusion
	$\chi 2$ Wald statistics	Decision		t-statistics	Decision	
H_o: FDI does not Granger cause TOUR	15.280***	Reject H_o	FDI $\Rightarrow$ TOUR	-3.953***	Reject H_o	FDI $\Rightarrow$ TOUR
H_o: TOUR does not Granger cause FDI	0.814	Do not Reject H_o	TOUR $\neq>$ FDI	1.526	Do not Reject H_o	TOUR $\neq>$ FDI

Note: *** indicates statistical significance at the 1% level.

Hence, it is revealed that there is a unidirectional causality that runs from FDI to tourism arrivals in the short run as well as in the long run for Sri Lanka.

4.5 Tourism and Its Determinants

In the last section, the causal direction of the relationship between tourism and FDI was investigated. In this section, the determinants of tourism are investigated. For this purpose, we express the tourism variable as a function of some other important relevant variables (Lim and McAleer, 2001; Eilat and Einav, 2004; Selvanathan, 2007; Fernando et al., 2013). The variables included in the model are as follows: real exchange rate, tourism price index, policy regime and political instability. Real exchange rate is calculated as domestic currency units per foreign currency unit (Sri Lankan Rupees per US$) multiplied by the ratio of consumer price index for the US to consumer price index for Sri Lanka. Real exchange rate is expressed as domestic currency units per foreign currency unit, so a rise in exchange rate means appreciation of the US currency.[8] The tourism price index consists of three items (accommodation, food and transport). A dummy variable P1977 (1 for 1977–2014 and 0 otherwise) is used to take into account the open economic policy introduced by the Sri Lankan government in 1977. In order to measure the political instability, another dummy variable WAR is used to capture the effect of the war during the relevant periods. The WAR variable takes the value of 1 for the periods of 1983–2009 and 0

[8] Some literature uses the alternative presentation of the exchange rate as the number of foreign currency units per domestic currency units, where exchange rate rises means an appreciation of the domestic currency.

otherwise. In our model, these two dummies are considered as exogenous variables. To incorporate the variables into the model, our new model takes the following form:

$$TOUR_t = \beta_0 + \beta_1 FDI_t + \beta_2 REXCH_t + \beta_3 TPI_t + \beta_4 P1977_t + \beta_5 WAR_t + \varepsilon \quad (4.3)$$

Before estimation, as in the other chapters, the unit root test is performed by using ADF and PP tests. The tests examine the null hypothesis of the common unit root process against the alternative hypothesis of no unit root and the results are presented in Table 4.5. The results show that the null hypothesis of a unit root cannot be rejected for all four variables. However, at first difference, the null hypothesis of unit root should be rejected for all four variables. This indicates that all the four variables are integrated of order I(1).

Table 4.5: Unit Root Test Results

Variables	**ADF**		**PP**		**Order of Integration**
	Levels	First Differences	Levels	First Differences	
TOUR	-0.16	-1.90*	1.21	-1.90*	I(1)
FDI	-2.37	-7.35***	-1.88	-8.71***	I(1)
REXCH	-1.14	-5.58***	-1.17	-5.74***	I(1)
TPI	-1.63	-3.93**	-1.25	-4.87***	I(1)

Note: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

As noted earlier, since all variables are I(1), we further investigate whether these variables are cointegrated or not by using the Johansen (1988) and Johansen and Juselius (1990) multivariate cointegration techniques. The cointegration results are reported in Table 4.6.

Table 4.6: Johansen Test for Cointegration

H_0	H_1	**Trace value**		H^1 –	**Maximum Eigen Value**	
		Test statistic	*p*-value		Test statistic	*p*-value
r = 0	r ≥1	62.01***	0.00	r = 1	36.56***	0.00
r ≤ 1	r ≥2	25.44	0.15	r = 2	16.78	0.18

Note: *** indicates test statistics are significance at the 1% level.

As can be seen, the null hypothesis of no cointegration relationship is rejected against at least one cointegrating vector, in both the Trace and Max Eigen value tests. This suggests that at least one cointegrating vector exists in the model. However, the null hypothesis of one coinegrating vector is not rejected against the alternative hypothesis that there exist at least 2 cointegrating vectors. This implies that a cointegrating vector exists in the model. Therefore, it can be concluded that there is a cointegrating relationship among the six variables.

In order to detect the direction of the Granger causality, the VECM is employed with the inclusion of variables. Hence the model, Equation 4.3, can be rewritten in VECM form as follows.

$$\Delta TOUR_t = \alpha_1 + \sum_{i=1}^{m} \alpha_{11i} \Delta TOUR_{t-i} + \sum_{j=1}^{n} \alpha_{12j} \Delta FDI_{t-j} + \sum_{j=1}^{p} \alpha_{13j} \Delta REXCH_{t-j} + \sum_{j=1}^{q} \alpha_{14j} \Delta TPI_{t-j} + \phi_1 P1977_t + \gamma_1 WAR_t + \lambda_1 ECT_{t-1} + u_{1t} \quad (4.4)$$

$$\Delta FDI_t = \alpha_2 + \sum_{i=1}^{m} \alpha_{21i} \Delta TOUR_{t-i} + \sum_{j=1}^{n} \alpha_{22j} \Delta FDI_{t-j} + \sum_{j=1}^{p} \alpha_{23j} \Delta REXCH_{t-j} + \sum_{j=1}^{q} \alpha_{24j} \Delta TPI_{t-j} + \phi_2 P1977_t + \gamma_2 WAR_t + \lambda_2 ECT_{t-1} + u_{2t} \quad (4.5)$$

$$\Delta REXCH_t = \alpha_3 + \sum_{i=1}^{m} \alpha_{31i} \Delta TOUR_{t-i} + \sum_{j=1}^{n} \alpha_{32j} \Delta FDI_{t-j} + \sum_{j=1}^{p} \alpha_{33j} \Delta REXCH_{t-j} + \sum_{j=1}^{q} \alpha_{34j} \Delta TPI_{t-j} + \phi_3 P1977_t + \gamma_3 WAR_t + \lambda_3 ECT_{t-1} + u_{3t} \quad (4.6)$$

$$\Delta TPI_t = \alpha_4 + \sum_{i=1}^{m} \alpha_{41i} \Delta TOUR_{t-i} + \sum_{j=1}^{n} \alpha_{42j} \Delta FDI_{t-j} + \sum_{j=1}^{p} \alpha_{43j} \Delta REXCH_{t-j} + \sum_{j=1}^{q} \alpha_{44j} \Delta TPI_{t-j} + \phi_4 P1977_t + \gamma_4 WAR_t + \lambda_4 ECT_{t-1} + u_{4t} \quad (4.7)$$

where Δ denotes the first differences operator and m, n, p and q are the optimal (one) lag length determined by the AIC and SBIC. ECT is the error correction term and u_{1t}, $u_{2t,}$ u_{3t} and u_{4t} are serially uncorrelated random error terms with mean zero.

The estimation results are reported in Table 4.7. The coefficients of ECT with TOUR and REXCH as dependent variables are significant at the 5% level and the 10% level, and their signs are negative (correct), implying that there is a mechanism to converge such short-run dynamics into a long-run equilibrium. Here, all six variables interact in a dynamic way to return a long-run equilibrium.

Table 4.7: VECM Estimation Results

Variables	**Δ(TOUR) Equation (4.4)**	**Δ(FDI) Equation (4.5)**	**Δ(REXCH) Equation (4.6)**	**Δ(TPI) Equation (4.7)**
Δ(TOUR(-1))	0.371	0.000	-0.000	0.000
	(2.499)	(0.013)	(-0.708)	(0.483)
Δ(FDI(-1))	327.814	0.090	0.021	-0.496
	(3.947)	(0.468)	(1.088)	(-1.128)
Δ(REXCH(-1))	-859.917	-1.393	-0.001	-2.272
	(-1.170)	(-0.815)	(-0.006)	(-0.584)
Δ(TPI(-1))	73.670	0.009	0.000	0.283
	(1.981)	(0.110)	(0.006)	(1.443)
C	88320.78	-146.817	-4.749	-16.216
	(2.856)	(-2.045)	(-0.659)	(-0.099)
P1977	2290.23	198.411**	12.618**	140.432
	(0.062)	(2.340)	(1.984)	(0.727)
WAR	-110517.8***	-13.669	-7.663	9.107
	(-4.425)	(-0.236)	(-1.315)	(0.068)
ECT(-1)	-0.149***	0.000	-0.001**	0.000
	(-3.527)	(2.971)	(-1.880)	(0.221)
R^2	0.699	0.252	0.182	0.158
F-statistic	11.613	1.687	1.117	0.936
AIC	24.632	12.501	7.905	14.148
SBIC	24.960	12.829	8.233	14.475

Note: ** and *** indicate test statistics are significance at the 5% and 1% levels, respectively.
The values in brackets are t-statistics.

However, the coefficients of ECT, with FDI and TPI as dependent variables, are insignificant. Moreover, open economy policy regime dummy significantly and positively influences FDI and

exchange rate. Political instability dummy significantly and negatively influences TOUR, as expected, which means that international tourists are more concerned about the political stability.

In Table 4.8, short-run causality (joint χ^2 Wald test for the lagged explanatory variables), long-run causality (*t*-statistics for the coefficients of the ECTs) and strong causality (joint χ^2 Wald test for the ECTs and the explanatory variables) are provided. For the short-run causality, using the system of equations, there is unidirectional causality running from FDI and TPI to TOUR in the Equation (4.4) and no causality in the Equations (4.5), (4.6) and (4.7). Looking at the long-run causality, in the Equation (4.4) FDI, REXCH and TPI cause TOUR. Similarly, in the Equations (4.6) TOUR, FDI and TPI cause REXCH; however, no long-run causality is in the function of FDI and TPI (Equations (4.5) and (4.7)). Observing the strong causality (ECTs with TOUR, FDI, REXCH and TPI as dependent variables), in Equation (4.4) FDI, REXCH and TPI cause TOUR. This means that three variables bear the burden of the short-run adjustment to the long-run equilibrium in the TOUR, given a shock to the system. Similarly, in the Eq. (4.5) TOUR, REXCH and TPI bear the burden to return its long-run equilibrium in the FDI. Therefore, there exists a bidirectional causal relationship between TOUR and FDI. Further, there is no strong causality in the REXCH and TPI equations. Figure 4.5 summarizes the Granger causality results of Table 4.8.

Table 4.8: Granger Causality Test Results Based on VECM

	Short-run Causality				**Long-run Causality**	**Strong Causality**			
	ΔTOUR	ΔFDI	ΔREXCH	ΔTPI	ECT	ΔTOUR, ECT	ΔFDI, ECT	ΔREXCH, ECT	ΔTPI ECT
Dependent variable		**χ2 Wald statistics**			**t-statistics**		**χ2 Wald statistics**		
ΔTOUR	-	15.578***	1.369	3.927**	-3.527***	-	18.470***	14.590***	15.115***
ΔFDI	0.001	-	0.667	0.012	2.973	8.843**	-	9.160**	9.000**
ΔREXCH	0.501	1.183	-	0.000	-1. 879*	3.952	3.547	-	3.573
ΔTPI	0.234	1.273	0.342	-	-0.221	3.952	2.198	0.372	-

Note: ** and *** denote rejection of null hypothesis of no Granger causality at the 5% and 1% significance levels, respectively.

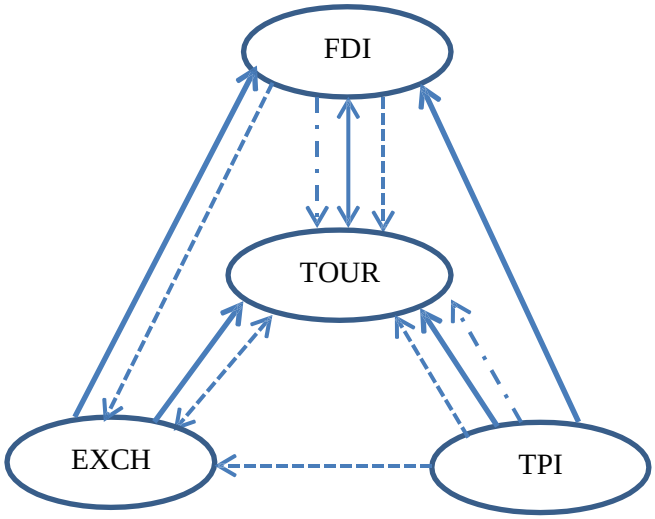

Figure 4.5: Causal Relationship among FDI, Tourism, Exchange rate and Tourism Price

Strong ⟶ Long-run ⋯⟶ Short-run - · -⟶

From the VECM, it can be concluded that there is a significant dynamic causal relationship among the tourism, FDI, exchange rate, tourism price, policy regime change and political instability of the country. Further, the results also reveal that there exists a unidirectional causal relationship from FDI to tourism in both the long run and the short run. Similar results are also obtained by Tang et al., (2007), Cragigwell and Moore, (2008) and Selvanathan et al., (2012).

Diagnostic Tests

Lastly, for diagnostic purposes, normality, serial-correlation and heteroskedasticity tests are conducted for the system equations. Table 4.9 presents the diagnostic test results. As can be seen, the tests results show no evidence of serial correlation, heteroscedasticity and non-normality in the models.

Table 4.9: Diagnostic Tests Results

Tests	TOUR Equation (4.4)	FDI Equation (4.5)	REXCH Equation (4.6)	TPI Equation (4.7)
	P-value			
Normality (Jarque-Bera)	0.16	0.06	0.06	0.06
Serial Correlation (Breusch-Godfrey)	0.47	0.06	0.16	0.26
Hetroskedasticity (ARCH)	0.55	0.67	0.11	0.49

In addition, the parameter stability is assessed through the cumulative sum (CUSUM) of recursive residuals and the CUSUM of squares (CUSUMSQ) tests. Figure 4.6 shows the plots of CUSUM and CUSUMSQ of the recursive residuals. The results reveal an absence of any instability of the coefficients in the function of tourism because the plots of the CUSUM and CUSUMSQ statistics fall inside the critical bands at the 5% level. Therefore, stability exists in our main model, equation (4.4) over the sample period for Sri Lanka.

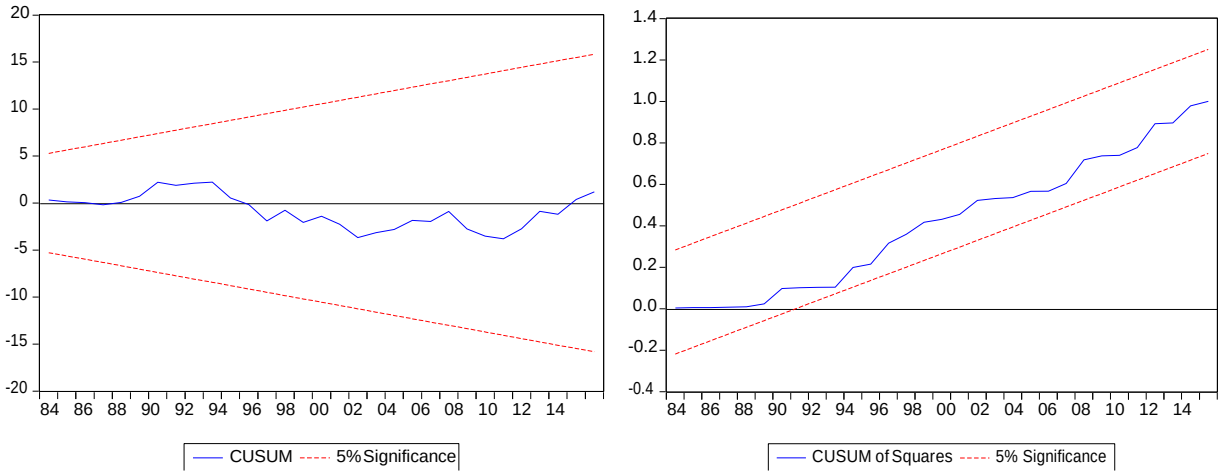

Figure 4.6: CUSUM and CUSUMSQ Tests for Parameter Stability

Considering the diagnostic and stability tests, our main model Equation (4.4) has the desired econometric properties, in that residuals are serially uncorrelated, normally distributed, homoscedastic and stable. Therefore, the results are valid for meaningful interpretation.

4.6 Conclusions and Policy Implications

In this chapter, the causal relationship between the FDI and tourism is empirically investigated in Sri Lanka, using time series data for the period 1970 to 2014. The estimation results show that there is a long-run relationship among tourism, FDI, exchange rate, tourism price, policy regime change and political instability of the country. The results also reveal that there is a unidirectional causal relationship between FDI and tourism in the direction of FDI to tourism, in both the long-run and the short run. These results suggest that a greater amount of FDI inflows could increase the number of tourist arrivals.

The results further confirm that the open economy policy regime significantly and positively influences FDI. This implies that greater open economy policies increase FDI inflows into Sri Lanka. Political instability significantly and negatively influences tourism, which means that international tourists are more concerned about the political stability. Therefore, policy makers in Sri Lanka should develop and introduce policies that attract more FDI and mitigate the political instability, which can then influence the higher number of tourist arrivals.

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CHAPTER 5

Contribution of Tourism to Economic Growth

5.1 Introduction

The contribution of tourism to an economy has long been a subject of great interest from a policy perspective. Tourism has proven to be a strong and resilient economic activity that generates billions of dollars in exports and that creates millions of jobs. According to the World Tourism Barometer (May, 2016), international tourism grew faster than world merchandise trade raising tourism's share in world exports to 7% in 2015. The total export values from international tourism amounted to $1.4 trillion. Further, among the worldwide export category, tourism has been ranked fourth after fuels, chemicals and, food and automotive products. In many countries, tourism is used as a tool to increase foreign exchange income, government revenue, employment level (both direct and indirect) and socio-economic status (particularly in developing countries). With these benefits in mind, the World Tourism Organization (WTO, 2014) calls upon governments to set up national strategies that support the tourism sector and to deliver on their commitment to fair and sustainable growth.

Many research studies found that inbound tourism positively contributes to a country's economic growth. Although the relationship between tourism and economic growth has been studied extensively, there is no agreement on whether tourism causes economic growth (tourism-led growth or TLG) or whether economic growth causes tourism (growth-led tourism or GLT), or whether the causality is in both directions. This issue is paramount, in the sense that establishing the causality between tourism and economic growth has many policy implications, with respect to policy makers adopting correct strategies and policies for economic growth and development. However, the causal link between tourism and economic growth still remains the subject of debate. These empirical results are very sensitive to the country's characteristics, the selection of model specification and the econometric techniques, and the data set used.

A number of studies analyse the relationship between tourism and economic growth under the trade and Endogenous growth models (for example, see Lanza and Pigliaru, 2000; Khan and Lin, 2002; Zhang and Jensen, 2007; Adamou and Clerides, 2010; Toit et al., 2010; Seetanah, 2011). These studies use comparative advantage theory and the Heckscher–Ohlin (H–O) theorem to explain the nexus between tourism and economic growth. Ricardo's comparative advantage theory, which asserts that, if country 1 is more efficient in absolute terms in producing certain goods than country 2, then trade can be gained if country 1 specializes in the production and export of these goods. In this case, country 1 produces relatively more efficiently than country 2, which is called a comparative advantage for country 1. Ricardian theory is useful in indicating the gains which countries can make from international tourism if they are relatively efficient in tourism production as it points to the importance of increasing production efficiency (Stabler et al., 2010).

The H–O theorem, which describes the pattern of trade between countries in terms of relative differences in their factor endowments, postulates that a country's endowments of factors of production (labour, capital and land/natural resources), rather than its relative efficiencies of production, determine its comparative advantage. The availability of accessible natural resources becomes a comparative advantage in the tourism production function and explains why destinations with these elements have often specialised in tourism (Stabler et al., 2010). Accordingly, the role of the different resource endowments of each country helps to explain international tourism; that is, the country with a relative abundance of the natural resource will specialize in tourism. Therefore, countries like Sri Lanka, which have a large supply of labour and land, as well as plentiful natural resources such as wildlife, rain forest, mountains and beaches and heritage sites, would appear to have a comparative advantage in tourism.

The second strand of theoretical literature is based on the Endogenous growth theory, which focuses on investment in human capital, innovation, and knowledge, significant contributors to economic growth. The Endogenous growth model establishes the links between long-run growth and technological progress, and provides a framework in which trade can increase the rate of growth through technology transfer, positive externalities and spill-over effects (Lucas, 1988;

Romer, 1990). Some researchers have used the Lucas Endogenous growth model (1988) to explain the tourism (Lanza and Pigliaru, 1995; Gokovali and Bahar, 2006; Parrilla et al., 2007; Seetanah, 2011). The inclusion of tourism (tourism specialization), as a third input in the production function, helps countries increase their economic growth. According to Lanza and Pigliaru (1995), as productivity is a major component of growth, if technological progress is higher in the manufacturing sector than in the tourism sector, tourism specialization is growth enhancing if, and only if, the change in the terms of trade between tourism and manufacturing goods more than balances the technological gap of the tourism sector (Seetanah, 2011).

The objective of this chapter is to analyse the role tourism plays in the economic growth of a developing country such as Sri Lanka. While this chapter analyses the relationship between tourism and economic growth in Sri Lanka, it also aims to find answers to the following research questions: (i) What is the causal direction of any relationship, if one exists between tourism and economic growth? (ii) Is the tourism-led economic growth hypothesis supported by the Sri Lankan data?

The remainder of this chapter is organized as follows. Section 5.2 reviews the related empirical literature on tourism and economic growth in single-country studies while Section 5.3 focuses on cross-country studies. Section 5.4 presents an overview of the tourism industry in Sri Lanka. Section 5.5 discusses the data used, the methodology and the empirical results. Section 5.6 gives the conclusion and policy implications.

5.2 A Review of the Literature: Single-Country

Balaguer and Cantavella-Jorda (2002) investigate the role of tourism in economic growth in Spain for the period 1975(Q1)–1997(Q1). The findings of their study reveal that there is a cointegrating relationship between tourism and economic growth. The Granger causality test shows that tourism affects Spain's economic growth unidirectionally. Therefore, the empirical results support the tourism-led growth (TLG) hypothesis. Moreover, this study is particularly interesting, as it was the pioneer study to analyse the tourism-led growth hypothesis.

Using quarterly data, Oh (2005) investigates the causal relationship between tourism and economic growth in Korea for the period 1975–2001. The findings of the study indicate that there is no long-run equilibrium relationship between tourism and economic growth. However, there is a one-way causal relationship from economic growth to tourism. Therefore, the tourism-led economic growth hypothesis is not held in the Korean economy. In conclusion, the study suggests that appropriate tourism policies should be adopted to meet the demand created by the increase in travellers for tourism-related industries.

Wickremasinghe and Ihalanayake (2007) examine the causal relationship between tourism and economic growth in Sri Lanka for the period 1960 to 2000. This result shows that there is a significant causal relationship from tourism to GDP; there is also a long-run relationship between GDP and tourism. While the relationship is positive, an additional 1% increase in tourism appears to result in a more than proportionate increase in GDP. They argue that economic policies should be directed at improving the tourism industry to produce a higher economic growth rate.

Khalil et al. (2007) examine the causal relationship between tourism and economic growth in Pakistan for the period 1960–2005. The findings of the study reveal that there is a long-run relationship among tourism and economic growth; bidirectional causality exists between economic growth and tourism in the short run. The authors claim that the significant impact of tourism on the Pakistan economy justifies the necessity of public intervention aimed, on one hand, at promoting and increasing the tourism demand and, on the other, at providing and fostering the development of tourism supply. Moreover, the economic expansion in a country affects tourism, as reflected by the development in infrastructure and tourism resorts.

Lee and Chien (2008) examine whether regime changes have broken down the stability of the long-run relationship between tourism development and economic growth in Taiwan for the period 1959–2003. The findings of the study reveal that the causality between tourism and economic growth is bidirectional. Further, international and cross-strait political change, economic shocks, and the relaxing of some tourism control and policies would break down the stability of the relationship between tourism development and economic growth.

Belloumi (2010) examines the causal relationship between tourism and economic growth in Tunisia for the period of 1970–2007. The results reveal that there is a cointegrating relationship among the variables. In addition, the results for the Granger causality test indicate that tourism has a positive impact on GDP growth unidirectionally. External competitiveness proxied by exchange rate increases tourism growth in the short run and the combination of results point to a one-way causality from tourism to economic growth in the long-run. Therefore, as they expected, the revenues generated from international tourism have a positive impact on the Tunisian economic growth and the TLG hypothesis is held in the Tunisian economy.

Using monthly data, Lean and Tang (2010) investigate the tourism-led growth hypothesis in Malaysia for the period January 1989 to February 2009. The results indicate that there is a bilateral causal relationship between tourism and economic growth. Therefore, the authors conclude that the tourism-led growth hypothesis is empirically valid for Malaysia. Moreover, the tourism-led growth hypothesis is supported by the rolling sub-sample Granger causality test which affirms the validity and stability of the hypothesis. The stability of causal relationship is important to provide some insight into the effectiveness of the tourism-led growth policy.

Brida et al. (2011) investigate the impact of international tourism on long-run growth in Brazil. Two distinct data sets and two different econometric methodologies have been used in this study: i) annual data from 1965 to 2007 for Brazil as a whole are used for a cointegration analysis to look for the long-run relationship between real GDP per capita (economic growth), international tourism receipts and the real exchange rate; ii) data for the 27 Brazilian states for a period from 1990 to 2005 are employed for a dynamic panel data model. The study finds that there exists long-run equilibrium among the variables and the long-run elasticities amongst real GDP per capita with respect to tourism receipts; the rate of exchange is 0.13 and 0.30, respectively.

Katircioglu (2011) investigates the tourism-led growth hypothesis in Singapore from 1960 to 2007. The results reveal that there is a long-run relationship between international tourism and real GDP (economic growth): long-run causality runs from international tourism and real exchange rates to real GDP; causality runs from real exchange rates to tourist arrivals in the short

run. In this study, the TLG hypothesis is confirmed for Singapore, as unidirectional causality runs from tourist arrivals to economic growth in the long run.

Kibara et al. (2012) examine the relationship between tourism development and economic growth in Kenya for the period 1983–2010. The results of the study reveal that there is a unidirectional causality from tourism development to economic growth. As well, tourism Granger causes trade, while trade Granger causes economic growth. Further, the authors admit that, in order to address the weakness associated with the bivariate causality models, they include trade as the third important variable between economic growth and tourism.

Srinivasan et al. (2012) examine the impact of tourism on economic growth in Sri Lanka for the period 1969 to 2009. This result reveals that tourism has a positive impact on economic growth in both the short run and the long run. They suggest that, due to the civil conflict and the influence of other politically motivated violent events on tourism arrivals, the positive impact of tourism was extremely lower in the short run compared to the long run. Therefore, in order to attract more tourist arrivals and to enhance its economic growth, the Sri Lankan government has to achieve stability by focusing on political solutions for a sustainable long-term conflict resolution.

Tang et al. (2012) investigate the relationship between tourism and economic growth in the Chinese economy for the period 1999(1)–2005(4). The findings of the study indicate that there is a bidirectional causal relationship between tourism and economic growth; only a one-way directional causality runs from the exchange rate to economic growth. Therefore, the study concludes that the tourism-led growth hypothesis has been held in the Chinese economy and the real exchange rate has had an impact on China's economic growth. Moreover, the authors suggest that, since tourism is a natural resource leading growth, the Chinese government might consider a greater emphasis and utilization of tourism to form the basis for a long-run competitive advantage, hence fostering economic growth.

Corrie et al. (2013) examine whether tourism has promoted economic growth in Australia during the period 2000(3)–2010(2). Using Granger causality analysis the authors explore the

relationship between (i) tourism expenditure and gross domestic product and (ii) tourism expenditure and expenditure on other factors known to be associated with tourism demand. The results reveal that there is a bidirectional causal relationship between tourism expenditure and economic growth. Accommodation does not have a causal effect on any other variable. In addition, there is a unidirectional relationship between tourism expenditure and food. This suggests that in the short run, extra tourism generates growth in restaurant revenues. In the long run, growth in the restaurant sector may help to generate growth in the tourism sector.

Georgantopoulos (2013) investigates the causality between economic growth and tourism expenditure in India during the period 1988–2011. Results for the aggregated model indicate that all variables return to their long-run equilibrium relationships; there is no causality between total tourism expenditure and output. However, the disaggregated model implies bidirectional causal links between economic growth, leisure travel and tourism expenditures (LTS) in the long run, and unidirectional causal links from LTS, business travel, tourism expenditures (BTS) to growth. Finally, the author focuses a forecast for the period 2012–2016: total tourism expenditure compared to the previous half-decade will grow at a similar pace. Also, optimistic forecasts are generated for the case of LTS, BTS and GDP. Moreover, it is interesting, as the author precedes a disaggregated analysis by dividing total tourism expenditure into leisure and business spending, in order for policy makers to focus more on the tourism sector.

Ghartey (2013) examines the causal relationships among tourism, economic growth, real exchange rate, structural changes and hurricanes in Jamaica from 1963 to 2008. The findings of the study show that in the short run and the long run, an increase in tourism (both arrivals and real expenditures) causes expansion in economic growth. Additionally, hurricanes negatively impact on tourist expenditure and tourist arrivals. The study suggests that as a tourism-led growth hypothesis exists, it can be worthwhile to extend incentives to promote Jamaica as a tourist destination.

Jayathilake (2013) investigates the role of tourism in the economic growth of Sri Lanka for the period 1967–2011. The results reveal the existence of the cointegration between the variables; there is tourism-led growth hypothesis, since there is a unidirectional causality running from

tourism to economic growth, which means tourism has a positive impact of economic growth on the Sri Lankan economy. Therefore, the findings validate the necessity of government interventions in promoting and increasing tourism demand by providing the mandatory facilities which encourage and attract more tourists to the country.

Using China's 30 provinces data, Deng et al. (2014) investigate a tourism-led growth hypothesis for the period 1987 to 2010. This study finds that tourism has a positive impact on economic growth. The study also reveals that when the degree of tourism specialization (DTS) is lower than 1.80%, tourism has a significantly positive impact on economic growth; when DTS is between 1.80% and 2.04%, the magnitude of the impact of tourism on economic growth becomes weaker; when DTS exceeds 2.04%, a negative relationship exists between tourism and economic growth. However, the relationship is insignificant. From these results, the study suggests that the tourism-led growth hypothesis is valid only when tourism specialization satisfies certain 'threshold' (that is, tourism-led growth may not be sustained at high levels of tourism specialization).

Suresh and Senthilnathan (2014) examine the causal relationship between economic growth and tourism in Sri Lanka for the period 1977–2012. The results reveal that these two variables are cointegrated; the Granger causality test shows that there is unidirectional causality between economic growth and tourism earning, where economic growth causes to tourism earnings. Hence, this study does not provide empirical support for the tourism-led growth hypothesis in Sri Lanka.

Trang et al. (2014) examine the tourism-led growth hypothesis in Vietnam for the period 1992–2011. This study finds that there exists a long-run relationship between tourism and economic growth. The study also reveals that unidirectional causality runs from tourism to economic growth. However, the authors suggest that the contribution of the hotel and restaurant sector is relatively low, compared to its potential.

Using the Solow growth theory, Tang and Tan (2015) investigate the impact of tourism on the economic growth of Malaysia over the period 1975–2011. The findings reveal that there exists cointegration among the variables; and that tourism has a positive impact on Malaysia's economic growth both, in the short run and in the long run. The results of the Granger causality

test in the VECM framework show that tourism Granger-causes economic growth both in the short run and long run. Therefore, they conclude that all this provides the empirical support for the tourism-led growth hypothesis in Malaysia.

Table 5.1 presents a summary review of a selected number of single-country studies by listing the data period, country of study, and type of methodology used, as well as the findings. As can be seen, results from most of the empirical studies on Table 5.1 reveal that tourism plays a positive role and enhance economic growth (Brida et al., 2011; Srinivasan et al., 2012; Deng et al., 2014; Tang and Tan, 2015). While some of the studies (Balaguer and Cantavella-Jorda, 2002; Wickremasinghe and Ihalanayake, 2007; Chen and Chiou-Wei, 2009; Belloumi, 2010; Lean and Tang, 2010; Katircioglu, 2011; Ghartey, 2013; Jayathilake, 2013; Trang et al., 2014; Tang and Tan, 2015), confirm the direction of the causality from tourism to economic growth, two studies (Oh, 2005; Suresh and Senthilnathan, 2014) find the causality is in the opposite direction. In the meantime, another group of studies (Khalil et al., 2007; Chen and Chiou-Wei, 2009; Tang et al., 2012; Corrie et al., 2013) reveal bidirectional causality between tourism and economic growth. However, Georgantopoulos (2013) fails to support the causal links between tourism and economic growth.

In the analysis of the role of tourism in the economic growth, this research differs from previous Sri Lankan studies (Wickremasinghe and Ihalanayake, 2007; Srinivasan et al., 2012; Jayathilake, 2013; Suresh and Senthilnathan, 2014) in the following three ways: (1) this is the first study to consider the effect of the open economy policy and the civil war in testing the tourism-led-growth hypothesis, including the post-civil war period (after 2009), (2) this research employs the Johansen multivariate cointegration and the VECM to find the cointegration and causality relationships among the variables. Even though previous studies also used Johansen cointegration and VECM, this study analyses the variance decomposition and impulse response function. Both these analyses are useful in assessing how shocks to variables affect the system; (3) this study uses the most recent data and a relatively larger sample size (1968–2014).

Table 5.1: A Summary of Findings From Single-Country Studies on Tourism and Economic Growth

Author(s), Year	Period	Country	Technique	Variables	Findings
Balaguer and Cantavella-Jorda (2002)	1975(1) – 1997(1)	Spain	Cointegration Granger Causality	GDP, tourism receipts and exchange rate	Tourism ⇒ Growth
Belloumi (2010)	1970–2007	Tunisia	Cointegration VECM	GDP, tourism receipts and exchange rate	Tourism ⇒ Growth
Brida et al. (2011)	1965–2007	Brazil	VAR	GDP per capita, tourism receipts and exchange rate	Tourism impacts on economic growth – long-run relationship among the variables.
Corrie et al. (2013)	2000(3) – 2010(2)	Australia	Cointegration VECM	GDP, tourism expenditure, exchange rate and consumer price index	Tourism ⇔ Growth
Deng et al. (2014)	1987–2010	China's 30 provinces	Panel threshold regression	GDPPC growth, tourism receipts, GDPPC, domestic investment, government consumption, FDI and education	Tourism impacts on economic growth, but the relationship not statically significant.
Georgantopoulos (2013)	1988–2011	India	Cointegration VECM	GDP, tourism expenditure and exchange rate	No causal relationship between tourism and economic growth
Ghartey (2013)	1963–2008	Jamaica	Cointegration ARDL	GDP, tourist arrival, tourist expenditure, exchange rate, consumer price index and hurricane	Tourism ⇒ Growth
Jayathilake (2013)	1967–2011	Sri Lanka	Cointegration VECM	GDP, tourist arrivals and exchange rate	Tourism ⇒ Growth
Katircioglu (2011)	1960–2007	Singapore	ARDL	GDP, tourist arrivals and exchange rate	Tourism ⇒ Growth
Khalil et al. (2007)	1960–2005	Pakistan	Cointegration Granger Causality	GDP and tourism receipts	Tourism ⇔ Growth

Author(s), Year	Period	Country	Technique	Variables	Findings
Kibara et al. (2012)	1983–2010	Kenya	ARDL	GDP, tourist arrival and trade	Tourism ⇒ Growth Tourism ⇒ Trade
Lean and Tang (2010)	1989–2009	Malaysia	VAR	Industrial production index and tourist arrivals	Tourism ⇒ Growth
Lee and Chien (2008)	1959–2003	Taiwan	Cointegration Granger causality	GDP, tourism development, tourism receipts, tourist arrivals and exchange rate	Tourism ⇔ Growth
Oh (2005)	1975–2001	Korea	VAR	GDP and tourist arrivals	Growth ⇒ Tourism
Srinivasan et al. (2012)	1969–2009	Sri Lanka	ARDL	GDP and tourism receipts	Tourism impacts on economic growth
Suresh and Senthilnathan (2014)	1977–2012	Sri Lanka	Cointegration Granger Causality	GDP and tourism receipts	Growth ⇒ Tourism
Tang and Tan, (2015)	1975–2011	Malaysia	Cointegration VECM	GNP per capita, tourism receipts per capita, polity2, gross national savings per capita population growth, technical progress growth and depreciation of capital stock	Tourism ⇒ Growth
Tang et al. (2012)	1999(1) – 2005(4)	China	Cointegration VECM	GDP, tourist arrivals and exchange rate	Tourism ⇔ Growth
Trang et al. (2014)	1992–2011	Vietnam	Cointegration Granger Causality	GDP, tourism receipts and exchange rate	Tourism ⇒ Growth
Wickremasinghe and Ihalanayake (2007)	1966–2000	Sri Lanka	Cointegration VECM	GDP and tourism receipts	Tourism ⇒ Growth

5.3 A Review of the Literature: Cross-Country

Eugenio-Martín et al. (2004) investigate the relationship between tourism and economic growth in 21 Latin American countries for the period 1985–1998, using panel data. The study finds that tourism development contributes to the economic growth for 3 low-income countries and for 11 medium income countries, while such a relationship is not supported by 7 developed countries. With these results in mind, variations in the degree of economic development in different regions are considered, to determine if tourism development and the growth relationship varies for developed and developing economies.

Employing the concept of conditional convergence, Proenca and Soukiazis (2008) examine the impact of tourism on the standard of living in Southern European countries, namely Greece, Italy, Portugal and Spain, for the period 1990 to 2004. The findings of the study show that tourism contributes significantly to the improvement of the standard of living in these countries and acts as a factor of convergence. This is an interesting result, from the point of view of the European cohesion policy, stressing that tourism can also be viewed as a factor of convergence, thus reducing the asymmetries between countries.

Using panel data of 42 African countries, Fayissa et al. (2008) investigate the contribution of tourism to the economic growth for the period 1995–2004. The findings of the study show that the tourism industry contributes significantly to the economic growth of sub-Saharan African countries. Therefore, they suggest that African countries could enhance their economic growth, not only by investing in the traditional sources of growth, such as investment in physical and human capital, trade and FDI, but also by linking the tourism industry and improving their governance performance.

Considering both OECD and non-OECD countries (including those in Asia, Latin America and Sub-Sahara Africa), Lee and Chang (2008) reinvestigate the long-run co-movements and causal relationships between tourism development and economic growth in 33 selected countries for the period 1990–2002. The results reveal that a cointegrated relationship between economic growth

and tourism development is substantiated: tourism development has a greater impact on economic growth in non OECD countries than in OECD countries. Additionally, the real effective exchange rate has significant effects on economic growth. Finally, the panel causality test shows that, in the long run, no matter if the tourism variable is the value of international tourism real receipts per capita or the number of international tourist arrivals per capita, unidirectional causality relationships exist from tourism growth to economic development in OECD countries, but bidirectional causality relationships are found between the two variables in non OECD countries. Hence, the authors suggest that all governments should commit to helping their tourism industry expand as much as possible, and at the same time, focus their attention on long-run policies.

Using cross-sectional data, Po and Huang (2008) investigate tourism development and economic growth in 88 countries, divided into three groups according to the percentage value of their tourism receipts, with respect to the GDP, for the period 1995–2005. The authors use the degree of tourism specialization (defined as receipts from international tourism as a percentage of GDP) as a threshold variable. The results of the regression show that when this variable is below 4.05% (regime 1, 57 countries) or above 4.73% (regime 3, 23 countries), there exists a significantly positive relationship between tourism growth and economic growth. However, when the variable is above 4.05% and below 4.73% (regime 2, 8 countries), there is no evidence for such a significant relationship due to the relatively low ratios of the value added of the service industry to GDP, and the forested area per country area.

Based on the UNESCO World Heritage list, Arezki et al. (2009) investigate whether tourism is a feasible strategy for development to a cross-section of 127 countries (developed and developing) for the period 1980–2002. The findings of the study indicate that there is a positive relationship between tourism and economic growth. An increase of one standard deviation in the share of tourism in exports leads to about 0.5 percentage point in additional annual growth. In addition, the authors' opinion is that, due to the features of the tourism industry (relies on a limited set of services), there is less opportunity for expansion and labour reallocation. Therefore, a tourism based strategy cannot make a wonder in an economy.

In two Asian countries (Taiwan and South Korea), Chen and Chiou-Wei (2009) examine the causal relationship between tourism expansion and economic growth over the period 1975(1)–2007(1). The findings of the study indicate that the tourism-led growth hypothesis is supported for Taiwan, while a bidirectional causal relationship is found for South Korea. The authors admit that more resources should be allocated to the travel and tourism industry, prior to other sectors, if the tourism-led growth hypothesis is supported. On the other hand, if evidence of economy-driven tourism growth exists, then it suggests more resources should be allocated to leading industries rather than to the travel and tourism industry, which would make the tourism industry in turn benefit from the resulting overall economic growth.

Using a panel data set, Adamou and Clerides (2010) investigate the relationship between tourism specialization and economic growth covering 162 countries over the period 1980–2005. The findings of this study show that specialization in tourism stimulates economic growth but it does so at a diminishing rate. This means that the contribution of tourism to economic growth becomes minimal at high levels of specialization, and tourism can even become a hindrance to further growth. The turning point is estimated to be at a 20.8% level of specialization (measured as tourism receipts at a percentage of GDP). After this point, tourism can still contribute to economic growth, but at a smaller rate, and countries may be better off diverting their resources to other areas of economic activity. The general message of this study is that specialization in tourism can yield large dividends to countries at relatively early stages of development.

Narayan et al. (2010) investigate the contribution of the tourism industry to economic growth in four Pacific Island countries (PICs), Fiji, Papua New Guinea, Tonga and the Solomon Islands for the period 1988–2004. This study employs the panel data to test the long-run relationship between real GDP and real tourism exports (tourism receipts). The findings of the study reveal that there exists a cointegration among the variables: tourism exports have a positive and statistically significant effect on real GDP for all the four PICs, and the range is from 0.55 to 0.92. Further, panel results suggest that a 1% increase in tourism exports increases GDP by 0.72% in the long-run and 0.24% in the short run. Therefore, the study suggests that the impact of tourism exports on GDP for the panel of PICs is smaller in the short run compared to the long run.

Samimi et al. (2011) examine the causality and long-run relationship between economic growth and tourism development in 20 developing countries during the period 1995–2009. The findings of the study show that there is bidirectional causality and a long-run relationship between economic growth and tourism development. Moreover, the authors claim that the significant impact of tourism expanding on developing countries' economy justifies the necessity of government intervention aimed at promoting and increasing tourism demand by providing the tourism facilities. Also, the economic expansion in developing countries affects the tourism growth, which is reflected by the development in infrastructure and tourism resorts.

Seetanah (2011) investigates the empirical relationship between tourism development and economic growth using panel data of 19 island economies for the years 1990–2007. Results from the study reveal that tourism development significantly contributes to the economic growth of island economies. Moreover, the panel Granger causality test shows a bidirectional relationship between tourism and economic growth. Further, a comparative analysis with samples of developing and developed countries reveals that tourism plays a relatively more important role in explaining the growth of island economies, confirming the fact that tourism development on island economies may have comparatively higher growth effects.

Antonakakis et al. (2015) use monthly data of ten European countries (Austria, Cyprus, Germany, Greece, Italy, Portugal, Spain, Sweden, the Netherlands, and the UK) to examine the dynamic relationship between tourism growth and economic growth for the period 1995–2012. This study reveals that the tourism-led growth relationship is not stable over time, in terms of both magnitude and direction, which means that the changing nature of causality is observed between tourism and economic growth. For example, since the Great recession and the Eurozone debt crisis, economic growth became the key transmitter of shocks to the tourism sector (i.e. economic-driven tourism growth is identified) in Austria, Germany, Greece and Portugal, while reverse causality is identified in Italy and Spain (i.e. tourism-led growth is observed, considering that the net transmitter is tourism growth during this period).

Table 5.2 presents a summary review of a selected number of cross-country studies. As can be seen, results from most of the empirical studies also reveal that tourism plays a positive role and

enhances economic growth (Fayissa et al., 2008; Lee and Chang, 2008; Po and Huang, 2008; Proenca and Soukiazis, 2008; Arezki et al., 2009; Adamou and Clerides, 2010; Narayan et al., 2010). Table 5.2 also shows the test results of the TLG hypothesis in terms of the extent to which development would have an influence. Eugenio-Martín et al. (2004) find that tourism development contributes to the economic growth for low and medium income countries. A similar result is obtained by Lee and Chang (2008) for non-OECD countries and Seetanah (2011) for 19 island economies. These results appear to be in favour of tourism fostering growth to a greater degree in countries with a lower income level.

5.4 Tourism Industry in Sri Lanka: An Overview

In Sri Lanka, prior to the Second World War, the effort to develop tourism with the establishment of the 'Tourist Bureau' was first made by the British colonial government in 1937. Even though the Bureau was established to provide facilities and services for passengers who sailed between the West and the East through the port of Colombo on passenger ships, the Tourist Bureau ceased its operations in 1940 due to the start of the Second World War (SLTDA, 2014). After gaining independence from Britain, in 1948, the new government decided to recommence tourist activities by setting up the 'Government Tourist Bureau', later with a name change to 'Ceylon Tourist Board' in 1966. Since then, the tourism industry has expanded rapidly.

In 2005, under a new Act of Parliament, the Ceylon Tourist Board became the 'Sri Lanka Tourism Development Authority' (SLTDA), which is committed towards transforming Sri Lanka into Asia's leading tourism destination (motto: Sri Lanka–Wonder of Asia). The SLTDA strives to develop diverse, unique and quality tourism services and products that would make Sri Lanka a unique destination globally. According to the New York Times (2010), Sri Lanka has been listed as a number one destination to travel, among 31 places in 2010. In addition, in 2015, Sri Lanka's capital city Colombo has been placed on top of 10 fastest growing cities for travellers in the world, by the MasterCard Global Destination Cities Index (Hedrick-Wong and Choong, 2015).

Table 5.2: A Summary of findings from Cross-Country Studies on Tourism and Economic Growth

Author(s), Year	Period	Country	Technique	Variables	Findings
Arezki et al. (2009)	1980–2002	127 countries	OLS	Economic growth, tourism receipts, GDP per capita, education, distance, relative price of capital and consumption goods, openness and quality of institutions	Tourism impacts on economic growth.
Adamou and Clerides (2010)	1980–2005	162 countries	OLS	GDP per capita growth, tourism receipts, tourism arrivals, lagged of GDP, openness, investment, government size, life expectancy, fertility rate and rate of inflation	Tourism impacts on economic growth, but the relationship is not statistically significant.
Antonakakis et al. (2015)	1995–2012	10 European countries	VAR	industrial production and tourist arrivals	The causal relationship between tourism and economic growth is not stable over time.
Chen and Chiou-Wei (2009)	1975(1)–2007(1)	Taiwan and South Korea	Generalized Autoregressive Conditional Heteroscedasticity(GARCH)	GDP, tourism receipts and exchange rate	Tourism ⇒ Growth (Taiwan) Tourism ⇔ Growth (South Korea)
Eugenio-Martín et al. (2004)	1985–1998	21 Latin American countries	GMM	GDP, tourist arrivals, domestic investment, government consumption, education, political	Tourism impacts on economic growth in medium or low-income countries but not in the developed countries.

Author(s), Year	Period	Country	Technique	Variables	Findings
				stability and corruption	
Fayissa et al. (2008)	1995–2004	42 African countries	GMM	GDP per capita, tourism receipts, investment, economic freedom, education, FDI, terms of trade and household consumption	Tourism impacts on economic growth.
Lee and Chang (2008)	1990–2002	OECD and non OECD countries	Cointegration	GDP per capita, tourism receipts, tourist arrivals and exchange rate	Tourism impacts on economic growth in non OECD than in OECD countries, long-run relationship among the variables.
Narayan et al. (2010)	1988–2004	Fiji, Papua New Guinea, Tonga and the Solomon Islands	ARDL	GDP and tourism receipts	Tourism impacts on economic growth for all countries, Long-run relationship among the variables.
Po and Huang (2008)	1995–2005	88 countries	OLS	Economic growth, GDP, initial income, and tourism receipts	Tourism impacts on economic growth in 80 countries.
Proenca and Soukiazis (2008)	1990–2004	Greece, Italy, Portugal and Spain	OLS	GDP Per capita and tourism receipts	Tourism impacts on economic growth in all countries.
Samimi et al. (2011)	1995–2008	Developing countries	VAR	GDP and tourist arrival	Tourism ⇔ Growth
Seetanah (2011)	1990–2007	19 island countries	GMM	GDP per capita, investment, education, openness, economic freedom, tourist arrivals and tourism receipts	Tourism impacts on economic growth in island countries. Tourism ⇔ Growth

Figure 5.1 shows the number of tourist arrivals (right axis) and tourism receipts (left axis) in Sri Lanka over the period 1968–2014. Since the end of the civil war in May 2009, there has been a boom in the tourism industry. Tourist arrivals have increased from 447,890 in 2009 to 654,476 in 2010 (an increase of 46%). While Sri Lanka had set a target of 1.5 million tourist arrivals in 2014, the number reached 1.52 million, above the targeted level (SLTDA, Annual Statistics Report, 2015).

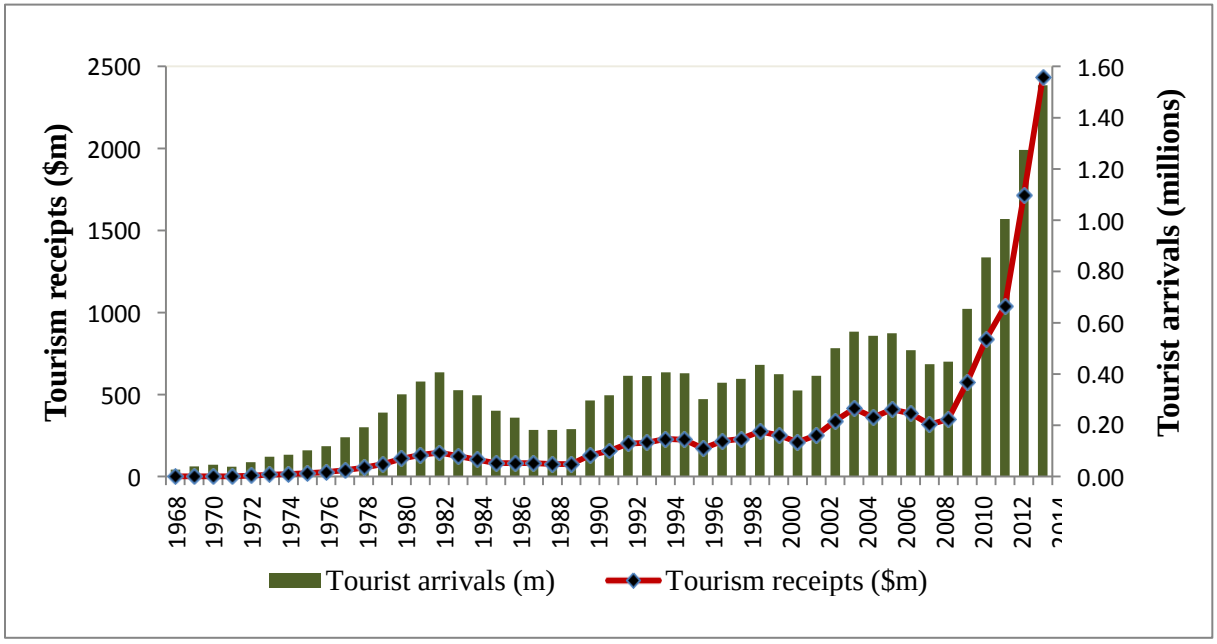


Figure 5.1: Tourist Arrivals and Tourism Receipts in Sri Lanka, 1968–2014

Tourism is one of the main sources of foreign exchange for Sri Lanka. Tourism has moved from fifth place in 2012 to fourth place in 2013, as the major source of foreign exchange for the Sri Lankan economy. The tourism contribution to total foreign exchange earnings in 2013 was 7.9% (SLTDA, Annual Statistics Report, 2014). The line graph in Figure 5.1 represents Sri Lanka's tourism receipts from 1968 to 2014. The fluctuations in tourism receipts are similar to those of tourist arrivals. The tourism receipts continued to increase until 2009 with some fall in civil war years and then increased dramatically from 2009, at the end of the civil war. In 2014, tourism receipts have increased by 41.7%, compared to 2013. Figure 5.1 also clearly indicates that the tourism arrivals have again been on the increase since the end of the civil war in 2009.

The Sri Lankan government recognises the multiplier effect of tourism development on its economy, and the importance of prioritising the tourism sector as one of the important source of income. The new tourism development strategy for Sri Lanka was released for the period 2011 to 2016. Under this strategy, the key objectives are i) Positioning Sri Lanka as one of the most sought after tourist destinations; ii) To reach an annual tourist arrivals target of 2.5 million by 2016; iii) Increase the annual foreign exchange earnings to US$ 2.75 billion by 2016; iv) Attract US$ 3 billion FDI within next 5 years; v) Create 500,000 tourism related employment by 2016 (Ministry of Economic Development, 2011).

5.5 Data and Methodology

Data Source and Definitions of Variables

We use annual time series data for the period 1968–2014 on economic growth, tourism and exchange rate for estimation. GDP per capita (constant 2005 US$) is used as proxy for economic growth. The tourism receipts (US$m) are used to represent the tourism variable. In order to deal with potentially overlooked variable problems and to account for external competitiveness, many researchers have included the real exchange rate in the tourism and economic growth model (Balaguer and Cantavella-Jorda, 2002; Oh, 2005; Lee and Chien, 2008; Chen and Chiou-Wei, 2009; Belloumi, 2010). As noted in the previous chapter, the real exchange rate is calculated as domestic currency units per foreign currency.

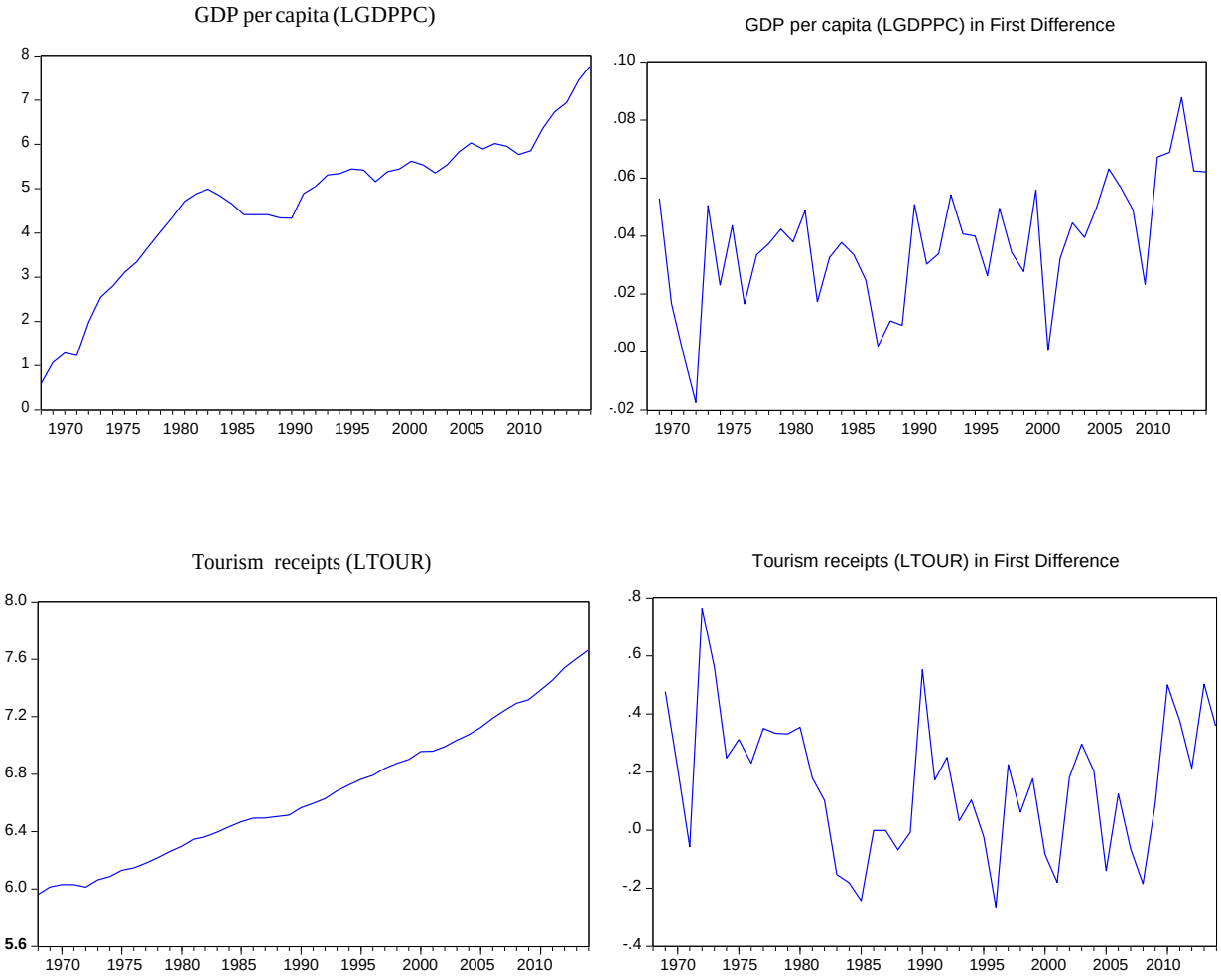
These data for GDP per capita and exchange rate and CPI's are obtained from the *World Development Indicators* (WDI) *Database* published by the World Bank (2015) and the data for tourism receipts are from *Annual statistical report* published by Sri *Lanka Tourism Development Authority* (2015). A dummy variable P1977 (1 for 1977–2014 and 0 otherwise) is take into account for the open economic policy introduced by the Sri Lankan government in 1977. Another dummy variable is also used (WAR) to capture the effect of the war during relevant periods. The WAR variable takes the value 1 for the war years 1983–2009 and 0 otherwise.

The following model is used to analyse the relationship between economic growth and tourism receipts.

$$LGDPPC=\beta_0+\beta_1 LTOUR+\beta_2 LREXCH+\beta_3 P1977+\beta_4 WAR+\varepsilon \quad (5.1)$$

Here, LGDPPC represents real GDP per capita, LTOUR represents tourism receipts, LREXCH is real exchange rate, P1977 and WAR are the dummy variables as described above and ε is the error term. All variables except P1977 and WAR are in natural logarithm.

Figure 5.2 shows the time series plots of the three variables LGDPPC, LTOUR and LREXCH variables in their level form and in first difference form. As can be seen, the plots suggest that the three variables in level form appear to be non-stationary while they may be stationary in their first difference form.



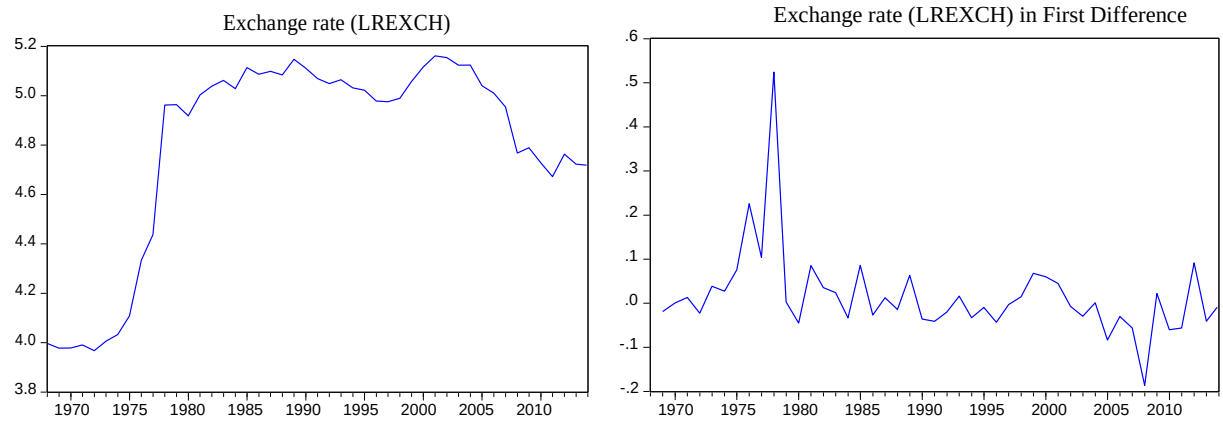


Figure 5.2: Plots of the Three Variables in Level and First Difference form, 1968–2014

Unit Root Test

In order to avoid spurious regression estimation results of the model, in the first step stationary property of GDP per capita, tourism receipts and real exchange rate variables have been investigated. The unit root test is performed by using ADF and PP tests. These tests examine the null hypothesis of the unit root process against the alternative hypothesis of no unit root. The results of these two unit root tests are presented in Table 5.3. As can be seen, the null hypothesis of a unit root cannot be rejected for all three variables in their level form. However, at the first difference, the null hypothesis of unit root can be rejected for all three variables. Hence, the results confirm that all three variables have a unit root in level form and are stationary in their first difference form. This indicates that all these variables are integrated of order one, that is I (1).

Table 5.3: Unit Root Test Results

Variables	ADF		PP		Order of Integration
	Levels	First Differences	Levels	First Differences	
LGDPPC	1.05	-4.34***	1.19	-4.42***	I(1)
LTOUR	-2.37	-4.30***	-2.59	-4.30***	I(1)
LREXCH	-0.84	-5.33***	-1.02	-554***	I(1)

Note: *** indicates statistical significance at the 1% level.

Cointegration Test

Having tested for the stationarity of each time series and found that all of them are I(1), the next step is to examine whether there exists a long-run relationship between the variables in our model. The cointegrating relationship has been tested using the tests proposed by Johansen (1988) and Johansen and Juselius (1990).

The cointegration results are reported in Table 5.4. The optimum 2 lags have been selected, based on AIC. As can be seen, the null hypothesis of no cointegration relationship is rejected against at least one cointegrating vector at the 1% significance level. This suggests that at least one cointegrating vector exists in the model. When the null hypothesis of one coinegrating vector is tested against the alternative hypothesis of at least 2 cointegrating vectors, there is no support for the alternative hypothesis. Therefore, we conclude that there is only one cointegrating relationship among the four variables.

Table 5.4: Johansen Test for Cointegration

H_0	H_1	Trace value		H_1	Maximum Eigen Value	
		Test statistic	p-value		Test statistic	p-value
r = 0	r ≥1	41.29***	0.00	r = 1	29.04**	0.02
r ≤ 1	r ≥2	15.76	0.06	r = 2	11.21	0.06

Note: ** and *** indicate statistical significance at the 5% and 1% levels, respectively.

If the variables are cointegrated, then it implies that causality must exist at least in one direction (Engle and Granger, 1987). The direction of the Granger causality can be detected through the VECM derived from the long-run cointegrating vectors.

Vector Error Correction Model Estimation

When the variables of a vector autoregression are cointegrated, a VECM econometric framework is used for dealing with the multiple time series (Engle and Granger, 1987). The VECM consists of five variables: GDP per capita, tourism receipts and real exchange rate are endogenous variables; P1977 and WAR are exogenous variables. The VECM has cointegration relations built into the specification so that it restricts the long-run behaviour of the variables to converge to

their cointegrating relationships, while allowing for short-run adjustment dynamics. VECM representation would have the following form:

$$\begin{aligned}\Delta LGDPPC_t &= \alpha_1 + \eta_{11}\Delta LGDPPC_{t-1} + \eta_{12}\Delta LTOUR_{t-1} + \eta_{13}\Delta LREXCH_{t-1} \\ &+ \phi_{11}\Delta LGDPPC_{t-2} + \phi_{12}\Delta LTOUR_{t-2} + \phi_{13}\Delta LREXCH_{t-2} \\ &+ \delta_{11}P1977_t + \delta_{12}WAR_t + \lambda_1 ECT_{t-1} + u_{1t}\end{aligned} \quad (5.2)$$

$$\begin{aligned}\Delta LTOUR_t &= \alpha_2 + \eta_{21}\Delta LGDPPC_{t-1} + \eta_{22}\Delta LTOUR_{t-1} + \eta_{23}\Delta LREXCH_{t-1} \\ &+ \phi_{21}\Delta LGDPPC_{t-2} + \phi_{22}\Delta LTOUR_{t-2} + \phi_{23}\Delta LREXCH_{t-2} \\ &+ \delta_{21}P1977_t + \delta_{22}WAR_t + \lambda_2 ECT_{t-1} + u_{2t}\end{aligned} \quad (5.3)$$

$$\begin{aligned}\Delta LREXCH_t &= \alpha_3 + \eta_{31}\Delta LGDPPC_{t-1} + \eta_{32}\Delta LTOUR_{t-1} + \eta_{33}\Delta LREXCH_{t-1} \\ &+ \phi_{31}\Delta LGDPPC_{t-2} + \phi_{32}\Delta LTOUR_{t-2} + \phi_{33}\Delta LREXCH_{t-2} \\ &+ \delta_{31}P1977_t + \delta_{32}WAR_t + \lambda_3 ECT_{t-1} + u_{3t}\end{aligned} \quad (5.4)$$

where Δ denotes first difference operator and u_{1t}, $u_{2t,}$ and $u_{3t,}$ are serially uncorrelated random error terms with mean zero. The error correction term is the lagged ECTs derived from the long-run cointegrating relationship. The coefficients λ_i's, of the ECTs represent the deviation of the dependent variables from the long-run equilibrium.

The system of equations allows us to test for both the short-run and long-run causality between the variables. The Granger causality procedure involves testing for the significance of the coefficients η_{ij} and ϕ_{ij} conditional on the optimum lags. This can be implemented using a standard χ^2 Wald test. Through the ECT, an error correction model offers an alternative test of causality (or weak exogeneity of the dependent variable). The significance of λ_i's indicates that the long-run equilibrium relationship is directly driving the dependent variable.

The Granger causality of the dependent variables can be tested in the following three ways (Belloumi, 2010): (i) simple *t*-test of the λ_i's; (ii) joint χ^2 Wald test for testing the significance of the sum of the lags of each of the explanatory variables; and (iii) joint χ^2 Wald test of the significance of the ECTs and lags of each of the explanatory variables (for example, in Equation

(5.2): $\lambda_1 = 0$, $\eta_{12} = 0$, $\phi_{12} = 0$; $\lambda_1 = 0$, $\eta_{13} = 0$, $\phi_{13} = 0$). The error correction models given by Equations (5.2)–(5.4) depicting the relationship between the economic growth, tourism receipts and real exchange rate are estimated and the results are presented in Table 5.5.

In conjunction with the coefficients on the lagged ECT, there exists a long-run relationship among the variables in the equations of economic growth and exchange rate (Equations 5.2 and 5.4), as the ECT have the correct (negative) sign and are statistically significant at the 1% and 10% levels, respectively, implying that there is a mechanism to converge such short-run dynamics into long-run equilibrium.

Table 5.5: VECM Estimation Results

Variables	**Δ(LGDPPC) Equation (5.2)**	**Δ(LTOUR) Equation (5.3)**	**Δ(LREXCH) Equation (5.4)**
Δ(LGDPPC(-1))	0.039	1.832	-1.111
	(0.244)	(1.000)	(-1.398)
Δ(LGDPPC(-2))	0.1670	-1.080	-1.617
	(1.054)	(-0.600)	(-2.058)
Δ(LTOUR(-1))	0.036	0.134	-0.104
	(2.317)	(0.756)	(-1.350)
Δ(LTOUR(-2))	-0.009	-0.100	-0.021
	(-0.580)	(-0.595)	(-0.287)
Δ(LREXCH(-1))	-0.016	-0.186	0.098
	(-0.544)	(-0.548)	(0.664)
Δ(LREXCH(-2))	-0.047	-0.131	0.167
	(-1.687)	(-0.415)	(1.218)
C	-0.003	0.494	-0.005
	(-0.270)	(3.952)	(-0.101)
P1977	0.036***	0.021	0.138**
	(2.798)	(0.146)	(2.199)
WAR	-0.002	-0.421***	0.024
	(-0.164)	(-3.771)	(0.495)
ECT(-1)	-0.038***	0.048	-0.113*
	(-3.921)	(0.340)	(-1.862)
R^2	0.480	0.484	0.460
F-statistic	3.490	3.552	3.217
AIC	-5.124	-0.263	-1.932
SBIC	-4.718	-0.142	-1.527

Note: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.
The values in brackets are t-statistics.

Moreover, the dummy variable coefficient for the open economy policy, P1977, is significant at the 1% and 5% levels in the equations of economic growth and exchange rate, which means that the open economy policy positively influences economic growth (open-led growth hypothesis: see Ravinthirakumaran, 2014) and exchange rate. Additionally the coefficient of WAR dummy is negative in economic growth and tourism equations. The coefficient is statistically significant at the 1% level in the equation of tourism but insignificant in the growth equation. This means that the civil war negatively influences economic growth and tourism.

The existence of a long-run cointegration relationship among economic growth, tourism and exchange rate suggests that there must be Granger causality in at least one direction. The VECM Granger causality results are reported in Table 5.6. The short-run causality suggests a unidirectional causality from tourism to economic growth and from economic growth to exchange rate. For long-run causality, the coefficients of the ECT are significant in both economic growth and exchange rate equations, implying that there are two long-run causality links that run from tourism and exchange rate to economic growth, and from economic growth and tourism to exchange rate. Therefore, there is also a bidirectional causal relationship between economic growth and exchange rate. The joint Wald and t-statistics indicate that there exists a strong one-way causality running from tourism to economic growth and from economic growth and tourism to exchange rate. Figure 5.3 summarizes the Granger causality results of Table 5.6.

Table 5.6: Granger Causality Test Results Based on VECM

	Short-run Causality			**Long-run causality**	**Strong Causality**		
	ΔLGDPPC	ΔLTOUR	ΔLREXCH	ECT	ΔLGDPPC, ECT	ΔLTOUR, ECT	ΔLREXCH, ECT
Dependent variable	**χ2 Wald statistics**			**t-statistics**	**χ2 Wald statistics**		
ΔLGDPPC	--	5.535*	3.208	-3.921***	--	8.843**	4.777
ΔLTOUR	1.483	--	0.487	0.340	3.771	--	1.521
ΔLREXCH	6.798**	1.972	--	-1.862*	18.656***	16.710***	--

Note: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Overall, the results on short-run and long-run causality suggest that there is a significant dynamic causal relationship between economic growth and tourism. An alternative explanation is that tourism causes economic growth in both the short-run and the long-run, and this gives support for the TLG hypothesis in Sri Lanka. Our results is in line with the results reported in previous studies, such as Balaguer and Cantavella-Jorda (2002), Wickremasinghe and Ihalanayake (2007), Chen and Chiou-Wei (2009), Belloumi (2010), Lean and Tang (2010), Katircioglu (2011), Ghartey (2013), Jayathilake (2013), Trang et al., (2014), and Tang and Tan, (2015).

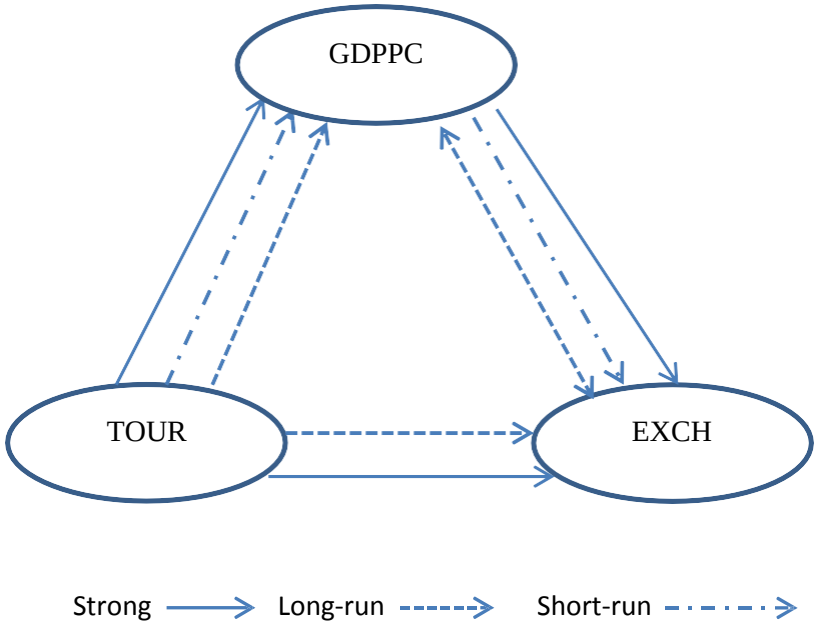


Figure 5.3: Causal Relationships among Growth, Tourism and Exchange rate

Impulse Response Functions and Variance Decompositions

In addition, the causal analyses can be extended to provide more insight into how each shock affects the dynamic path of the system variables, by looking at the impulse response functions and variance decompositions. Impulse response functions measure the dynamic marginal effects of each shock on all of the variables over time. Variance decompositions examine how important each of the shocks is as a component of the overall (unpredictable) variance of each of the variables over time.

The graphs in Figure 5.4(a)–(i) show the impulse responses of the variables for a ten-year period. As can be seen, a standard deviation positive shock to LGDPPC causes an increase in LGDPPC for 5 years, followed by no change in the rest of the years (as in Figure 5.4(a)). A shock to LTOUR leads to a positive impact on LGDPPC for the first two years, but the results do not change much in the latter years (as in Figure 5.4(b)).

A positive shock to LREXCH results in a negative response of LGDPPC for the first three years but then positively impacts for the rest of the period (as in Figure 5.4(c)). The response of LTOUR to LGDPPC negatively impacts for the first eight years, but then results in no change in the behaviour of LTOUR (as in Figure 5.4(d).

A positive shock to LTOUR causes an increase for a year in LTOUR followed by a decrease for three years, eventually reaching a steady level (as in Figure 5.4(e)). A positive shock to LREXCH leads to a positive impact on LTOUR for the first five years, and then there is no change in the rest of the years (as in Figure 5.4(f)).

Moreover, a one standard deviation shock to LGDPPC leads to a negative impact on LREXCH for the first three years, but then positively impacts afterwards (as in Figure 5.4(g)). A shock to LTOUR leads to a positive impact on LEXCH for the first six years, but then there is no change in the behaviour of LEXCH after that (as in Figure 5.4(h)).

LREXCH's own positive shock to itself negatively impacts for six years, followed by a gradual steady state (as in Figure 5.4(h)). In summary, the results indicate that economic growth positively responds in the initial years due to a shock in tourism (Figure 5.4(b)), but the same response exists in later years due to a shock in exchange rate (Figure 5.4(c)).

The graphs in Figure 5.5(a) – (i) depict the corresponding Cholesky variance decompositions of the relationship among LGDPPC, LTOUR and LREXCH in Sri Lanka. The results indicate that, in addition to the innovations itself, a shock to LGDPPC has the strongest explanatory power over the forecast error variance of the LGDPPC (as in Figure 5.5(a)).

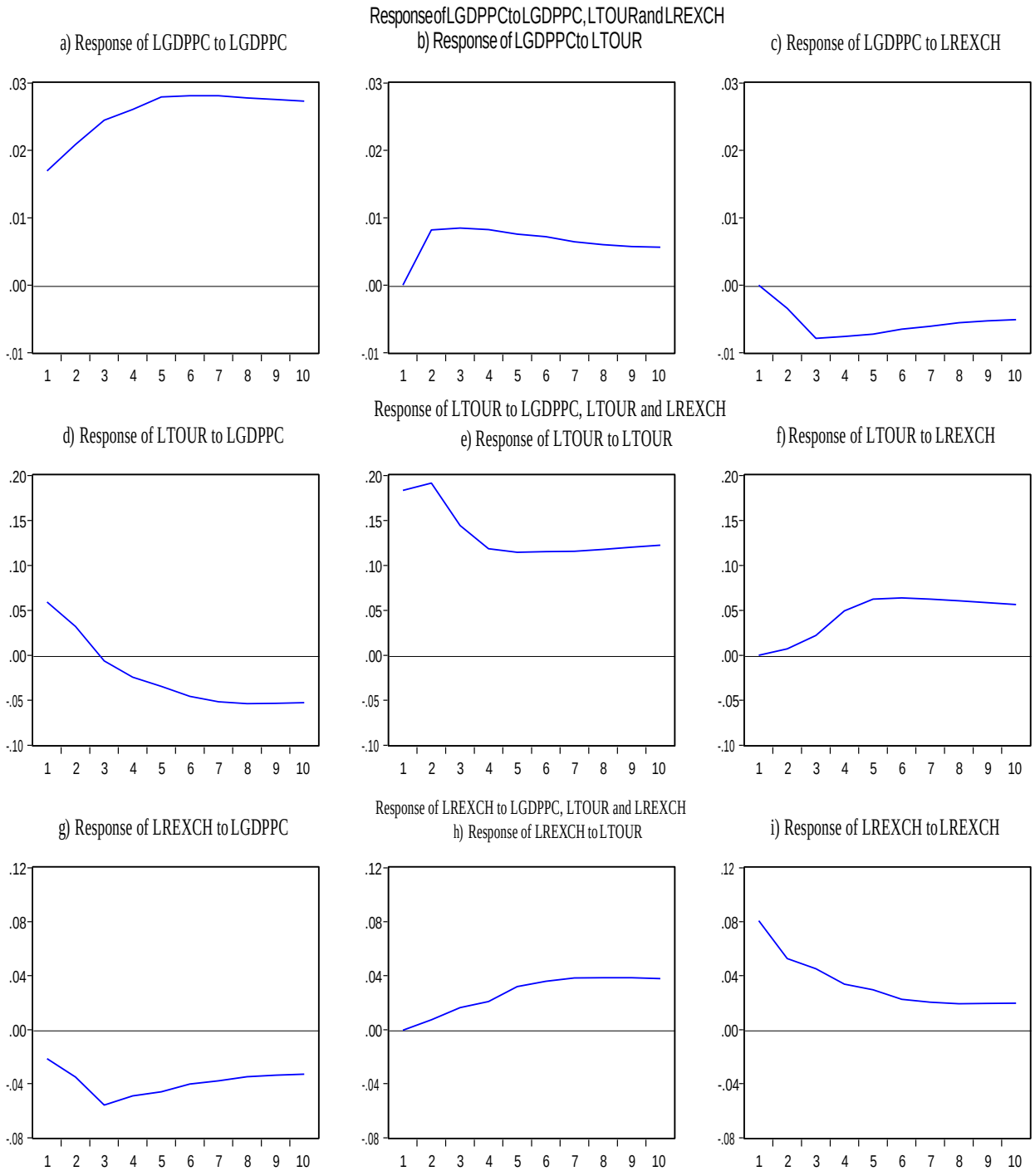


Figure 5.4: Impulse Responses to one Standard Deviation Innovation in VECM

A shock to LTOUR has a moderate explanatory power (as in Figure 5.5(b)), whereas a shock to LREXCH produces a low explanatory power over the forecast error variance of the LGDPPC (as

in Figure 5.5(c)). A shock to LGDPPC tends to contribute less to the forecast error variance of the LTOUR (as in Figure 5.5(d)).

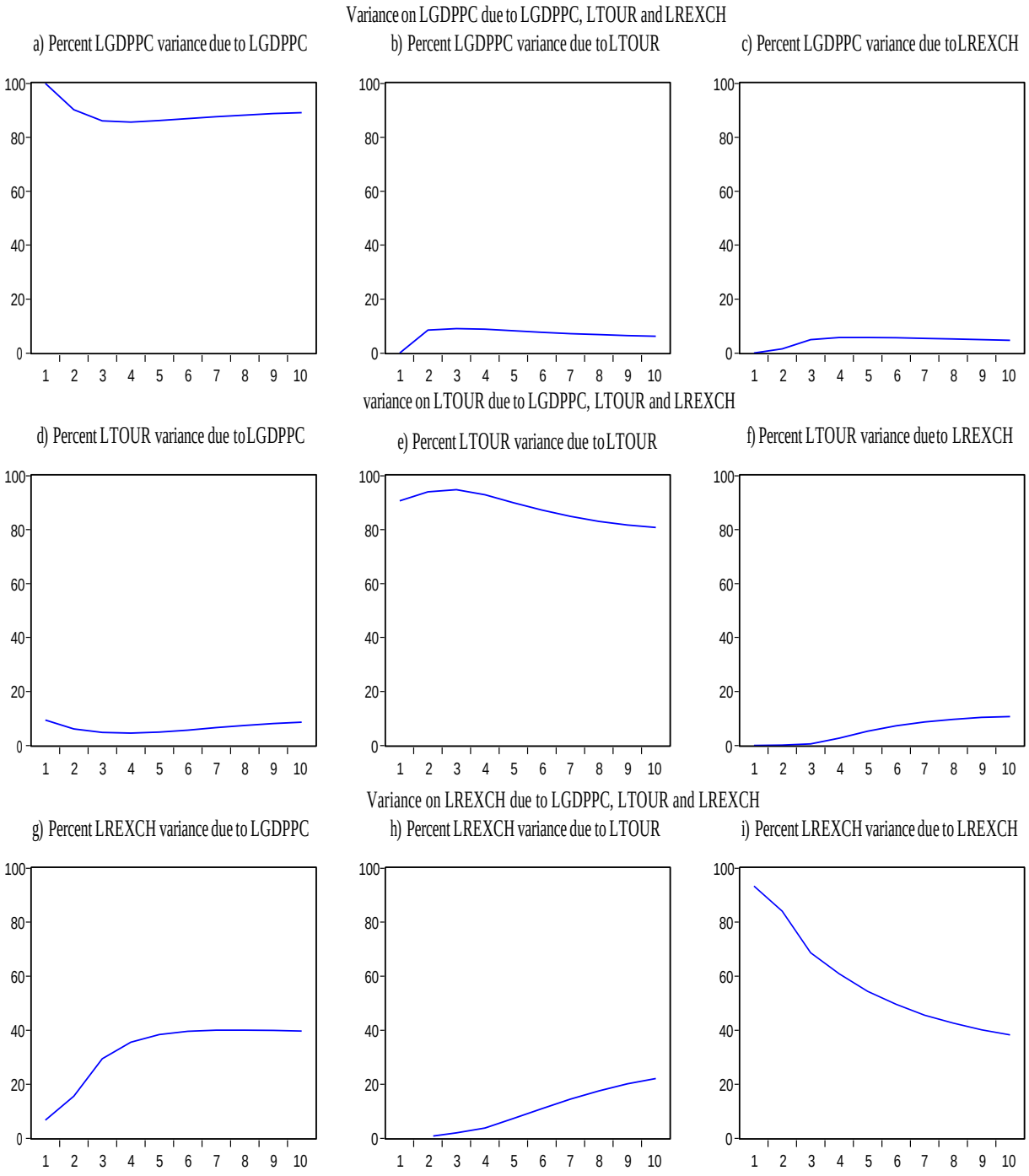


Figure 5.5: Variance Decomposition in VECM

A shock to LTOUR contributes more to the forecast error variance itself (see Figure 5.5(e)). A shock to LREXCH contributes less to the forecast error variance of the LTOUR (see Figure 5.5(f)). The shock to LGDPPC, it has a moderate explanatory power over the forecast error variance of the LREXCH (as in Figure 5(g)). A shock to LTOUR has a low explanatory power over the forecast error variance of the LREXCH (as in Figure 5.5(h)). A shock to LEXCH has more explanatory power over the forecast error variance of the LEXCH (as in Figure 5.5(i)). In summary, the results indicate that, a shock in tourism (5.5(b)) contributes more to the forecast error variance of the economic growth than to a shock in exchange rate (5.5(c)).

Diagnostic Tests

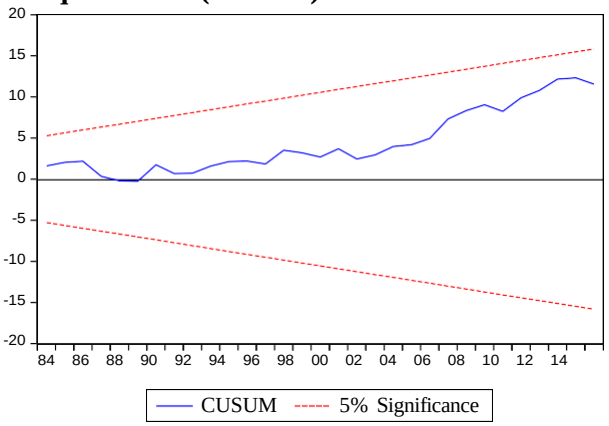
Lastly, for diagnostic purposes, normality, serial-correlation and heteroskedasticity tests of the models are conducted. Table 5.7 presents the diagnostic test results. As can be seen, the tests results show no evidence for serial correlation, heteroscedasticity and non-normality in the model.

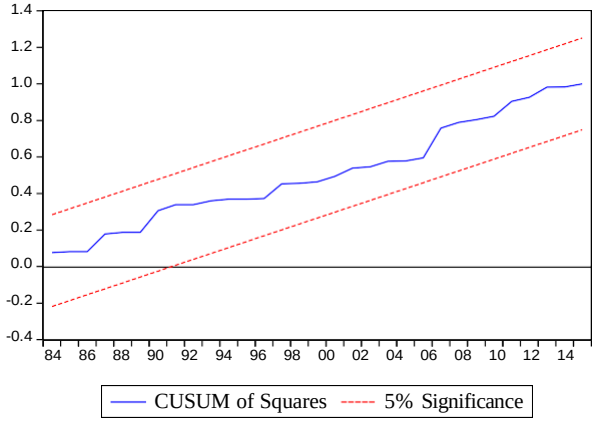
Table 5.7: Diagnostic Tests Results

Tests	**GDPPC**	**TOUR**	**EXCH**
	Equation (5.2)	**Equation (5.3)**	**Equation (5.4)**
		P-value	
Normality (Jarque-Bera)	0.56	0.94	0.06
Serial Correlation (Breusch-Godfrey)	0.21	0.57	0.13
Hetroskedasticity (ARCH)	0.93	0.38	0.83

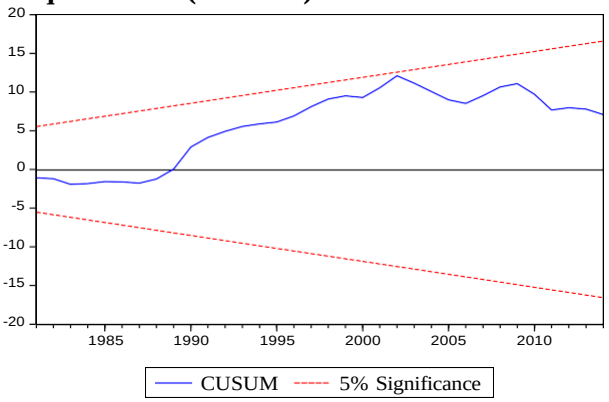
In addition, the structural stability of the estimated Equations (5.2)–(5.4) can be seen in the plots of CUSUM and CUSUM of squares (CUSUMSQ) of recursive residuals, given in Figure 5.6. These plots show that the parameters and error terms of the estimated model are stable as the respective plots do not cross the 5% critical bounds. Hence, the models with three dependent variables do not have any structural instability during the sample period.

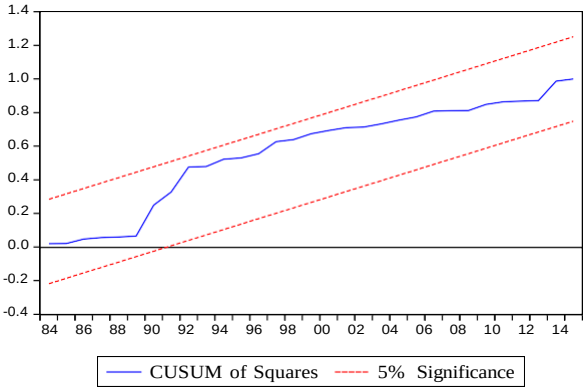
Equation 5.2 (GDPPC)



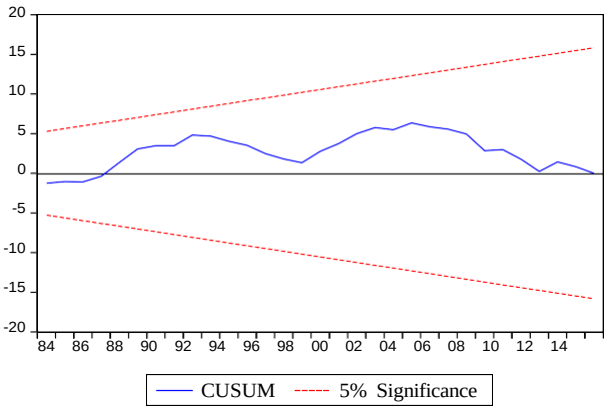


Equation 5.3 (Tourism)





Equation 5.4(Exchange rate)



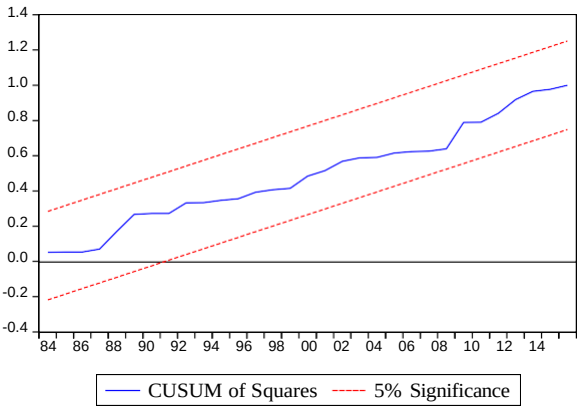


Figure 5.6: CUSUM and CUSUMSQ Tests for Parameter Stability

5.6 Conclusions and Policy Implications

This chapter analysed the causal relationship between economic growth, tourism and exchange rate and examined the tourism-led growth hypothesis in Sri Lanka using data for the period 1968–2014, in a vector error correction framework. The Johansen multivariate cointegration was performed. The results suggest that a significant long-run equilibrium relationship exists among economic growth, tourism receipts, exchange rate, policy regime change and civil war. Hence, all of these variables share a common trend in the long-run. In addition, results from both the long-run and short-run Granger causality tests suggest that there exists a unidirectional causality relationship from tourism to economic growth. This supports the tourism-led growth hypothesis in Sri Lanka. Additionally, as the open economy policy positively influences economic growth, it confirms the validity of an open-led growth hypothesis for Sri Lanka.

The policy implications of this study are straightforward. The Sri Lankan government should continue to promote tourism-related activities, focusing on elevating and modernizing, as well as maintaining a stable political and economic environment. Policymakers should also attempt to maintain a competitive exchange rate.

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CHAPTER 6

Spill-over Effect of Foreign Direct Investment

6.1 Introduction

Over the last three decades, in many developing countries, FDI has been considered to be an important element of a development strategy. Most countries today recognize that FDI can play a significant role in economic growth and development. It is widely believed that the inflows of FDI are beneficial to host countries in terms of providing additional capital, creating jobs and financing the saving gap. In addition, many countries rely to a large extent on the argument that FDI generates externalities in the host country. According to UNCTAD (Enderwick, 2005), developing countries have used FDI to supplement investment resources, transfer much needed technology and organizational and managerial skills, upgrade quality and productivity, and to gain improved access to world markets. Generally, a foreign presence in any sector is associated with good technical knowledge and managerial know-how that not only improves the productivity but also creates spill-over into the economy. Therefore, an understanding of the possible channels of the spreading out of the spill-over effects of FDI is very significant in an economy.

Productivity spill-overs take place through contacts between MNEs and domestic firms. Both the neoclassical and endogenous growth models support the proposition that FDI can generate positive spill-overs to domestic firms in the host country. Since MNEs are an important part of international capital and technology their entry into a country can facilitate the transfer of technical and business know-how. MNEs can also provide training for staff and managers, and technical assistance to local suppliers, leading to improved productivity and competitiveness in the local firms in the host country. According to Crespo and Fontoura (2007), FDI spill-overs can occur through five main channels: (1) demonstration/imitation, (2) labour mobility, (3) exports, (4) competition, and (5) backward and forward linkages with domestic firms. Thus, the demonstration effect may help domestic firms imitate product and process technologies. Labour mobility could allow the hiring of workers from foreign firms to be used in domestic sectors. By permitting foreign firms to export, domestic firms could enter the foreign market with lower

costs. Due to the competitive atmosphere in the host country, there is an incentive for using the existing resources and technology more efficiently. Linkages are created when domestic firms establish local markets in which MNEs are buyers (backward linkages) or sellers of intermediate inputs (forward linkages). These five channels of the spill-over effects of FDI to the domestic industries can be classified into two forms: (a) intra-industry (horizontal FDI) and (b) inter-industry (vertical FDI). Horizontal spill-over takes place when MNEs carry out the same activities in the host country as at home. Vertical spill-over arises from the MNEs engaging in different stages of activities in the host country, and leads to backward (downstream) and forward linkages (upstream).

A review of the literature reveals that the neoclassical and endogenous growth theories and industrial organization theory have been used by research scholars to explain the relationship between FDI and spill-overs. As discussed in Chapter 3, in the neoclassical growth theory, in many countries FDI becomes a necessary ingredient to promote growth strategies capable of maximizing the utilization of existing productive capabilities and the opportunities of creating new ones. This will result in long-run economic growth. The endogenous growth theory also stands on the supposition that technological advances are an endogenous factor stimulating research on the path in which FDI accelerates a country's economic growth in the long-run.

Hymer[9] (1976) introduces the concept of firm-specific advantages, and demonstrates that FDI takes place only when the benefits of exploiting firm-specific advantages outweigh the relative costs of the operations abroad (for more details, see Section 2.3, Industrial Organisation Theory). The firm-specific advantages are in the form of brand name, patent-protected superior technology, marketing and managerial skills, cheaper sources of financing, preferential access to markets, and economies of scale. Kindleberger (1970) agrees with Hymer that firms invest abroad because of the possession of monopolistic advantages such as product differentiation, marketing skills in the goods market, proprietary knowledge, discrimination in access to capital and managerial skills in factor markets. In this way, FDI creates spill-overs into the host country.

[9] Hymer's 1960 Doctoral dissertation was not published until 1976.

Findlay (1978), one of the pioneers of FDI spill-overs theory, investigates the relationship between FDI and technological change in a backward region. In this model, the rate of technological progress in the advanced region was assumed to increase at a constant rate. His model, based on the earlier ideas of the relative backwardness of Gerschenkron (1962), states that the greater the relative disparity in development levels between the backward country and the advanced country, the faster the catch-up rate. Findlay then proposes a hypothesis that the rate of technological progress in a "backward" region is an increasing function of the technology gap between it and the "advanced" region. Moreover, Findlay followed the idea of diffusion of technology, suggested by Arrow (1971), and considered it as an analogy of the spread of a contagious disease. The basis of the analogy was that technological innovations are most efficiently diffused when there is personal contact between those with the knowledge of the innovation and those who adopt it. In this way, Findlay (1978) formalized the Hymer approach to endogenize the rate of technological change in the backward region as a function of the degree to which it is exposed to FDI. However, the technology gap can be affected by the learning capability and saving propensity of the host country and by tax rates on the profit of MNEs'.

Using the oligopoly price leadership model, Das (1987) asserts that technology is transferred from MNEs to domestic firms with the assumption of no cost in transferring. Therefore, domestic firms become more efficient. Wang and Blomstrom (1992) establish a model of international technology transfer through FDI. This model follows Findlay's model (1978), in which it is possible for the domestic firms to learn technology from foreign firms at an increasing rate. However, when the growth rate of the MNE's research and development decreases slightly, at which point the host country imitators consume the MNE's technological advantage, the technology gap will end. Using a dynamic general equilibrium model, Dasgupta (2012) investigates how MNEs affect host countries through knowledge diffusion. Considering worker mobility, this study suggests that domestic managers can gain indirectly from foreign multinationals, even in the absence of any flow of knowledge between them. But mobility of workers from foreign firms to domestic firms could be another channel through which domestic managers gain. Viewed this way, spill-overs can take place in host countries.

The objective of this chapter is to assess the impact of FDI on total factor productivity in Sri Lanka. This chapter addresses the following questions: (1) Does FDI induce improvement in the total factor productivity of Sri Lanka at the aggregate level? (2) Are there any other factors that influence total factor productivity in Sri Lanka? (3) Did the civil war affect total factor productivity of Sri Lanka?

The rest of the chapter is organised as follows. Section 6.2 reviews the relevant empirical literature on FDI and the spill-over effect in single-country studies, while cross-country studies are reviewed in Section 6.3. In Section 6.4, the theoretical framework for the relationship between FDI and total factor productivity is discussed. Section 6.5 presents the empirical analysis and estimation results. Section 6.6 comprises the conclusion and policy implications.

6.2 A Review of the Literature: Single-Country

During the last three decades, numerous empirical studies have investigated FDI and spill-overs in both developed and developing countries. The spill-over effects of FDI attracted relatively high levels of attention, with the pioneer study coming from Caves (1974). Most of the studies focused on exploring the channels of technological diffusion from multinational enterprises (MNEs) to the host countries. In literature, the FDI and spill-over relationship has been investigated, based on firm level, industry level and country specific data. However, the majority of the studies have been conducted using firm-level data. This section presents a review of a number of single-country empirical studies on FDI and spill-over; the next section reviews studies based on cross-country studies.

Using plant-level data, Kokko et al. (1996) examine whether differences in the technology gap between locally-owned plants and foreign affiliates have any impact on the observed spill-overs at intra-industry level in Uruguayan manufacturing plants in 1988. The study finds that there were no signs of spill-overs in simple tests covering the entire sample of 159 locally-owned manufacturing plants. However, looking separately at two sub-samples of plants characterized by the size of the technology gap between the locally-owned plant and its foreign-owned competitors, spill-overs appeared to be positive and statistically significant in the sub-sample of plants with moderate technology gaps, compared to foreign firms.

Working the panel data on Venezuelan plants for the period 1976–1989, Aitken and Harrision (1999) identify two effects of FDI on domestic firms. The study reveals that foreign equity participation is positively correlated with plant productivity, but that this relationship is only robust for small enterprises. An increase in foreign ownership negatively affects the productivity of wholly domestically-owned firms in the same industry. These negative effects are large and robust to alternative model specifications. On balance, their evidence suggests that the net effect of foreign ownership on the economy is quite small. Therefore, they conclude that there are benefits from foreign investment, but that such benefits appear to be internalized by joint ventures. Overall, there is no evidence supporting the existence of technology spill-overs from foreign firms to domestically owned firms.

Schoors and Tol (2002) analyse how FDI influences labour productivity of domestic firms in Hungary for the period 1997–1998. The study finds that foreign firms perform better than local firms; the presence of foreign firms has a positive spill-over effect on labour productivity of local firms in the same sector, specifically in manufacturing sectors. Spill-over effects between sectors are found to be relatively more important than spill-over effects within sectors. Backward linkage spill-overs are found to be negative and forward linkage spill-overs are found to be positive. The authors assert that inter-sectoral spill-overs constitute the most important transmission mechanism of spill-over effects from foreign enterprises to local firms.

Based on provincial-level data, Cheung and Lin (2004) examine the spill-over effects of FDI on innovation in Chinese firms for the period from 1995 to 2000. The findings of the study reveal the positive effects of FDI on the number of domestic patent applications in China. This result is robust under different types of patent applications (invention, utility model, and external design). The spill-over effect is the strongest for minor innovation, such as an external design patent, highlighting a demonstration effect of FDI. Lastly, the authors assert that there is no evidence of a crowding-out effect of FDI, in that the estimated coefficients of FDI on patent applications are all positive.

Focusing on manufacturing firms, Javorcik (2004) examines the productivity spill-overs taking place through backward linkages (contacts between foreign affiliates and their domestic suppliers) and forward linkages (interactions between foreign suppliers of intermediate inputs

and their domestic customers), using unbalanced panel firm-level data of Lithuania covering the period 1996–2000. The result indicates that there are positive intra-industry spill-overs from FDI. However spill-overs are associated with projects with shared domestic and foreign ownership, not with fully owned foreign investments.

In the manufacturing industries of India, Sasidharan (2006) investigates both the horizontal and vertical spill-over effects of FDI for the period 1994–2002. The results of the study indicate that horizontal spill-over is positive and not statistically significant; vertical spill-over is negative and insignificant; the backward spill-over is also negative and insignificant. Therefore, this study fails to find positive spill-over effects in Indian manufacturing industries. In another study, Mishra (2012) examines inter and intra industrial spill-overs from FDI, based on 22 sectors of Indian manufacturing industries for the period 2006–2010. The findings of the study show that negative productivity spill-overs from FDI take place between foreign affiliates in the upstream sectors, or suppliers, and their local clients (forward linkages) and that negative productivity spill-overs from foreign affiliates take place in the downstream sector, or consumers, with their local suppliers (backward linkages). Contrary to Sasidharan (2006), a horizontal spill-over is positive, significant evidence supporting productivity spill-overs from foreign firms to local firms.

Buckley et al. (2007) investigate the spill-over effects of MNEs of different home country origins in Chinese manufacturing industry for the year 1995. A key finding of the study is that the relationship between HMT (Hong Kong, Macau and Taiwan) capital and LOE (locally owned enterprise) productivity is curvilinear, but is not so for other (Western) firms: that is, the spill-over benefits begin to fall; a curvilinear relationship signals the existence of increasing negative spill-over effects counteracting the primary positive ones, reflecting the nature of the ownership advantages of the foreign investors. Therefore, they suggest that the Chinese government should not promote high FDI inflows in low-technology industries (associated with HMT firms). Covering over 20,000 manufacturing firms, Liu (2008) investigates the effects of spill-overs of FDI, at industry level in China for the period 1995–1999. The results show that an increase in FDI at the four-digit industry level lowers the short-term productivity level but raises the long-term rate of productivity growth of domestic firms in the same industry; spill-overs through backward and forward linkages between industries at the two-digit level have similar

effects on the productivity of domestic firms. Among the three spill-over channels, backward linkages are statistically the most important channel through which technology spills over from foreign-invested to domestic firms.

Hoi and Pomfret (2010) investigate the importance of both horizontal and vertical wage spill-overs under different characteristics of firms and industries in Vietnam for the period 2000–2005. The findings of the study provide strong evidence of horizontal wage spill-overs from foreign firms to domestic private firms, despite different labour market conditions and different firm characteristics; vertical wage spill-overs exist, but depend on the specific characteristics of firms and industries. The study also reveals that training activities facilitate wage spill-overs. The study concludes that horizontal and vertical wage spill-overs from FDI to domestic private producers are widespread in Vietnam, related to industry and firm characteristics.

Using UK panel survey data for the period 1998–2004, Fu (2012) explores the managerial knowledge spill-overs from FDI through the diffusion of management practices in manufacturing and services sectors industries. The results of the study demonstrate that MNEs adopt more high performance management practices than local firms, even in an industrialized country; there are significant horizontal and vertical spill-overs of managerial knowledge from foreign to local firms. Vertical spill-overs within the supply chain are found to be the most effective channel with the greatest spill-over effects. However, the reverse spill-overs of management practices from local to foreign firms are not significant. Moreover, the author suggests that FDI can serve as a vehicle which facilitates the transfer of advanced managerial knowledge from foreign to local firms, intentionally or unintentionally.

Tang et al. (2012) investigate the FDI spill-over effects on Chinese consumer behavior in China for the period 1987–2004. The findings of the study show that changes in tastes and consumption patterns have occurred in China in the post-reform period due to the FDI spill-over effects. Rapid income expansion has a significant impact on consumption, so a consumption propensity shift has occurred due to FDI spill-over effects. In sum, Chinese consumption function is jointly determined by rapid growth income, accumulated wealth, FDI spill-over effects and increased uncertainty.

Merlevede et al. (2014) investigate the effect of FDI on the productivity of Romanian manufacturing firms during the period 1996–2005. They consider horizontal, backward, and forward spill-overs. The study finds that the spill-over effects of the majority foreign-owned firms are economically larger than for minority foreign-owned firms and that the entry of majority foreign owned firms initially impairs the productivity of their domestic competitors. However, productivity of the local competitor is permanently boosted once the majority foreign owned firm has been present in the domestic economy for a while. The authors conclude that foreign entry, initially negatively, affects local competitors' productivity, followed by a positive permanent effect from majority foreign-owned firms present for a longer time.

Bruhn and Calegario (2014) investigate whether the presence of FDI produces productivity spill-overs in 23 Brazilian industries in 2011. The findings of the study reveal that FDI has both positive and negative influence on the productivity of Brazilian industries. That is, FDI inflows lead to positive spill-over effects in high absorption capacity industries and to negative effects in labour intensive industries. Therefore, this study concludes that FDI benefits depend on the absorptive capacity of industries. This implies that a minimum level of absorptive capacity is required for locally owned enterprises to get benefit from FDI.

Using Romanian firm level panel data, Lenaerts and Merlevede (2015) investigate productivity spill-over effects of FDI on manufacturing and services industries in Romania for the period 1996–2005. They consider the size of foreign firms as a potential determinant factor of spill-over effects. The findings reveal that only medium-sized foreign firms generate spill-overs. Large foreign firms are less embedded in the domestic economy because they tend to bring their own suppliers, import intermediate inputs and export their output. Smaller foreign firms fail to transmit spill-overs to domestic firms. The authors admit that the size of domestic firms is not important for explaining spill-over effects.

Table 6.1 presents a summary of the studies on FDI and spill-overs in single-country studies reviewed in Section 6.2, based on the data period, country of study, type of methodology used and their findings.

Table 6.1: A Summary of Findings from Single-Country Studies on Spill-over Effect of FDI

Author(s), Year	Period	Country	Technique	Variables	Findings
Aitken and Harrision (1999)	1976–1989	Venezuela	OLS and weighted least squares (WLS)	Output, foreign ownership in the plant , foreign ownership in the sector and Number of plants	A negative spill-over from FDI to domestic enterprises.
Bruhn and Calegario (2014)	2011	Brazil	OLS, and Generalized linear model (GLM)	TFP, capital, labour, qualification, and rate of return on assets, absorptive capacity of industries, technological intensity, FDI, rate of inflation and capital cost	FDI inflows lead to positive spill-over effects in high absorption capacity industries and negative effects in labour intensive industries.
Buckley et al. (2007)	1995	Chinese overseas firms (Hong Kong, Macau and Taiwan- HMT)	OLS	Labour productivity, capital intensity, R&D intensity, labour quality, firm's size, HMT firm (Hong Kong, Macau and Taiwan) capital share and other capital share	The relationship between HMT capital and LOE productivity is curvilinear.
Cheung and Lin (2004)	1995 to 2000	China	OLS	R&D inputs (patent), expenditures on science and technical development, number of technical personnel, export–output ratio, level of per capita and FDI	Among the three spill-overs channels, backward linkages are statistically the most important channel through which technology spills over from FDI to domestic firms.
Fu (2012)	1998 -2004	Britain	OLS and Three stage least squares (3SLS)	Management practices of local firms, horizontal management practices, backward management practices, firm size, size of the company group, human capital, competition pressure, openness to foreign markets and industry dummies	Existence and significance of intra industry linkage, and inter industry spill-overs of managerial knowledge from foreign to local firms.
Hoi and Pomfret (2010)	2000- 2005	Vietnam	OLS	Wages per employee in a domestic private firm, horizontal, vertical, capital intensity, skills, scale, concentration and technology gap	Horizontal wage spill-overs from foreign firms to domestic private firms; vertical wage spill-overs exist, but depend on the specific characteristics of firms and industries.
Javorcik (2004)	1996-2000	Lithuania	OLS	Real output, capital, labour, material inputs, firm's total equity, horizontal (foreign presence in sector), backward (foreign presence in industries) and	There are positive intra industry spill-overs from FDI.

				forward (share of output in upstream sectors)	
Kokko et al. (1996)	1988	Uruguay	OLS	Labour productivity, capital-intensity, plant's capacity utilisation ,use of disembodied proprietary technology, labour quality, plant's share of total sales and FDI technology gap	Spill-overs effect is positive and statistically significant in the sub-sample of plants with moderate technology gaps compared to foreign firms, but not in the group of local plants facing large technology gaps.
Lenaerts and Merlevede (2015)	1996–2005	Romania	OLS	TFP, FDI, Herfindahl index, firm age and firm size	Only medium sized foreign firms generate spill-overs.
Liu (2008)	1995 -1999	China	OLS	Output, capital stock, employees, TFP, foreign equity weighted average of firm's equity owned by foreign investors at industry level and weighted average of FDI in upstream and downstream	Among the three spill-overs channels, backward linkages are statistically the most important channel through which technology spills over from foreign-invested to domestic firms.
Merlevede et al. (2014)	1996–2005	Romania	OLS	Real output, real capital, number of employees and material inputs	FDI initially negatively affects local competitors' productivity but then positively impacts later on.
Mishra (2012)	2006 –2010	India	OLS	Quantity produced by firm, capital, labour, intermediate inputs, energy inputs, size of firms, share of the firm's total equity owned by the foreign and each firm's share in sectorial output	Negative productivity spill-overs from foreign affiliates in the downstream sector and upstream sectors.
Sasidharan (2006)	1994–2002	India	OLS	Output, capital, labour, material cost, horizontal and vertical	Vertical spill-overs are positive and significant; horizontal is negative and is not statistically significant.
Schoors and Tol (2002)	1997 –1998	Hungary	OLS	Output, fixed assets, human capital and Firm's sales	Foreign firms have a positive spill-over effect on labour productivity of local firms in the same sector; spill-over effects between sectors are found to be relatively more important than spill-over effects within sectors.
Tang et al. (2012)	1987 –2004	China	Cointegration and ECM	consumption, real disposable income, FDI spill-over effects, wealth, real interest and uncertainty	A consumption propensity shift has occurred due to FDI spill-over effects.

As can be seen, results from most of the empirical studies reveal that FDI brings positive externalities to host countries, positively affecting productivity (Cheung and Lin, 2004; Javorcik, 2004; Liu, 2008; Hoi and Pomfret, 2010; Fu, 2012; Tang et al., 2012; Lenaerts and Merlevede, 2015), but some studies report a negative effect of FDI on productivity (Kokko et al., 1996; Aitken and Harrision, 1999; Buckley et al., 2007). Bruhn and Calegario (2014) and Merlevede et al. (2014) confirm that FDI both positively and negatively affects productivity when considering the capital intensive and labour intensive capacity, and the short-run and long-run.

Studies by Aitken and Harrision, 1999; Cheung and Lin, 2004; Branstetter, 2006; Liu, 2008; Hoi and Pomfret, 2010; Fu, 2012; and Javorcik, 2004 provide evidence of FDI spill-overs through vertical or/and horizontal channels. Among the reviewed studies, two studies (Bruhn and Calegario, 2014; Lenaerts and Merlevede, 2015) have used the total factor productivity to measure the spill-over effects, while others such as Buckley et al. (2007) and Kokko et al. (1996) have used the labour productivity. When this study considers the relationship between FDI and spill-overs, the review of the findings confirms that the relationship between FDI and spill-overs has largely supported the view that there are positive spill-overs from FDI. However, the evidence on the relationship between FDI and spill-overs is mixed. This may be due to data sets, the alternative econometric methods, and the different country characteristics.

6.3 A Review of the Literature: Cross-Country

The idea of the spill-over effects of FDI was pioneered by Caves in 1974, who investigates the effects of foreign presence on the manufacturing domestic-owned firms of Australia (1962–1966) and Canada (1965–1967). The findings of this study reveal that foreign subsidiaries serve as an effective competitive force, reducing the (excess) profits earned by domestic competitors while improving the productivity of domestic firms due to the competition effect. Therefore, higher subsidiary shares apparently coincide with higher productivity levels in competing domestic firms.

Branstetter (2006) examines the impact of FDI on knowledge spill-overs from Japanese firms investing in American firms and American firms investing in Japanese firms, for an unbalanced panel data set for 189 Japanese firms for the years 1980–1997. The findings of the study show

that FDI is a channel of knowledge spill-overs, both from investing firms to domestic firms and from domestic firms to investing firms. In addition, the author affirms that knowledge spill-overs received by the investing Japanese firms tend to be strongest via R&D and product development facilities. Spill-overs from investing Japanese firms to American firms seem to flow most strongly through Greenfield affiliates, in which Japanese firms, often possessing a productivity advantage over American incumbents, are deploying superior technology and or managerial practices.

Gorodnichenko et al. (2007) examine the impact of FDI on the efficiency of domestic firms in the 17 transition countries for the period 2002–2005. The study reveals that positive backward spill-overs for the domestically owned firms (selling to foreign-owned firms, whether in the country or outside) raises a domestic firm's efficiency, that buying inputs from competing foreign firms (forward spill-overs) confers positive spill-overs only in older firms and firms in the service sector, and that horizontal spill-overs are mostly insignificant but are positive for older firms and firms in the service sector. In addition, tests for the effect of the technological quality of FDI, proxied by whether FDI originates in advanced or developing countries, indicate that there is no systematic difference in efficiency spill-overs from higher to lower quality of FDI.

Piyaareekul and Peridy (2010) investigate the causality between FDI and total factor productivity (TFP) growth for explaining productivity spill-overs within the ASEAN host countries Indonesia, Malaysia, Philippines, Singapore and Thailand for the period 1970–2005. The results from the Granger causality show that there is a bilateral causal relationship between the FDI and the TFP growth found in four countries (Indonesia, Malaysia, Philippines and Thailand), while for Singapore, there is a unidirectional causality from the FDI to the TFP growth. In other words, the Granger causality test confirms that there are positive productivity spill-overs effects from FDI inflows in all the selected ASEAN countries. Moreover, the author affirms that the MNEs play an important role in the horizontal and vertical productivity spill-overs effects.

Karunaratne (2012) examines the impacts of FDI inflows and FDI outflows on total factor productivity growth, using the panel data of 25 OECD countries over the period 1983–2007. The findings of the study reveal that FDI inflows and outflows both positively contribute to TFP

growth in the OECD. However, the impact of FDI on TFP growth is moderate. The result also shows that FDI positively influences both host and source country TFP growth, irrespective of any threshold requirements. The author suggests that this result is not surprising for them as their sample includes only the developed economies that have already reached a threshold level of human capital stock or the level of R&D.

Did foreign entry induce positive productivity spill-overs to domestic firms in the electricity sector, both at the aggregate and disaggregated level? Del Bo (2013) examines this issue by focusing on regional FDI spill-overs in the European Union (EU) electricity sector for the period 2002–2009. The study finds that both industrial and spatial disaggregation matter when evaluating the existence and sign of foreign firms for domestic firms in the electricity sector. The spatial disaggregation appears relevant in the generation sector, where negative vertical spill-overs arise only within regional boundaries. In contrast, positive horizontal and vertical spill-over effects in the distribution sector are distance-related, increasing in magnitude the closer to the presence of foreign firms. Baltabaev (2014) investigates the impact of FDI stock on the TFP growth of 49 countries for the period 1974–2008. The study finds that FDI is an important factor of technological transfer. Moreover, the distance to the technological frontier, the R&D and the openness positively influence TFP growth, while the rate of inflation and the population growth negatively influence TFP growth. The study suggests that FDI should be appreciated as they cause positive externalities in the form of a productivity increase in the economy.

Table 6.2 presents a summary of the cross-country studies reviewed in Section 6.3, based on the data period, country of study, type of methodology used and their findings. As can be seen, results from most of the empirical studies reveal that FDI brings positive externalities to host countries. That is, FDI positively affects productivity (Caves, 1974; Branstetter, 2006; Piyaareekul and Peridy, 2010; Karunaratne, 2012; Baltabaev, 2014), although Del Bo (2013) finds a negative effect of FDI on productivity. Two studies, by Branstetter (2006) and Del Bo (2013), provide evidence of FDI spill-overs through vertical and/or horizontal channels. Among the reviewed studies, some (Piyaareekul and Peridy, 2010; Karunaratne, 2012; Del Bo, 2013; Baltabaev, 2014) have used the total factor productivity to measure the spill-over effects, while Caves (1974) used the labour productivity. .

Table 6.2: A Summary of Findings from Cross-Country Studies on Spill-over Effect and FDI

Author(s), Year	Period	Country	Technique	Variables	Findings
Baltabaev (2014)	1974–2008	49 countries	GMM	Total factor productivity, distance to the technological frontier, R&D expenditure, human capital, FDI, trade openness, rate of inflation, population growth, and existence of investment promotion agency	FDI is an important factor of technological transfer.
Branstetter (2006)	1980–1997	Japan and America	OLS	U.S. patent applications of Japanese firm, FDI, R&D expenditure and firm's age	FDI is a channel of knowledge spill-overs, both from investing firms to indigenous firms and from indigenous firms to investing firms.
Caves (1974)	1965–1967	Canada, Australia	OLS	Value added per worker, foreign-owned firms' share of industry, average profit on equity, sales by corporations and total assets of firms	Higher subsidiary shares make higher productivity levels in competing domestic firms.
Del Bo (2013)	2002–2009	European Union	OLS	TFP, public ownership, horizontal spill-over and total assets,	In the generation sector, negative vertical spill-overs arise only within regional boundaries, but positive horizontal and vertical spill-over effects in the distribution sector are distance-related, increasing in magnitude the closer the presence of foreign firms is.
Gorodnichenko et al. (2007)	2002–2005	17 Transition countries	OLS	Sales revenues, forward ,backward, horizontal, exports, imports, a firm's sales to MNEs, competition and capital stock	No support for the hypothesis that spill-overs are greater for FDI with more advanced technology.
Karunaratne, (2012)	1983–2007	25 OECD Countries	Panel cointegration and causality	TFP, FDI inward stocks, FDI outward stocks, openness to trade, R&D expenditure, capital Formation and government Expenditure, rate of Inflation and unemployment	Both inward and outward FDI positively contribute to TFP growth in the OECD.
Piyaareekul and Peridy (2010)	1970 –2005	Indonesia, Malaysia, Philippines, Singapore and Thailand	Yamamoto Granger causality test and ECM	FDI and TFP	Positive productivity spill-overs effects from inward FDI in all the selected ASEAN countries.

When this study considers the relationship between FDI and spill-overs, the review of the findings confirms that the relationship between FDI and spill-overs has largely supported the view that there are positive spill-overs from FDI. However, the evidence on the relationship between FDI and spill-overs is mixed.

6.4 Theoretical Framework for the Model

A production function approach has been used by many researchers to explain the importance of various factors for determining economic growth. The model starts with Solow's aggregate production function alongside the assumption of exogenous technological change. It can then be expressed as a country's aggregate output (GDP) in functional form as follows:

$$Y = Af(K, L) \tag{6.1}$$

where Y is aggregate output of an economy, A is level of technology, K is stock of capital stock and L is quantity of labour. The functional model can be written in terms of the simple Cobb-Douglas production function,

$$Y = A K^{\alpha} L^{1-\alpha} \tag{6.2}$$

where α is the contribution of capital to aggregate output (output elasticity with respect to capital. The remainder, 1-α, is the contribution of labour to aggregate output (output elasticity with respect to labour).

In order to measure the productivity of all inputs together, the concept of total factor productivity (TFP) is employed. TFP growth accounts for the changes in output not caused by changes in labour and capital inputs. Therefore, TFP growth represents the effect of technological change and efficiency improvements. In Equation (6.1), change in *A* represents the TFP. That is, the change in TFP is residual, not explained by labour and capital growth. The economic growth now depends on the increase in factor inputs and technological progress that is taking place in

the economy. Hence, the production function in Equation (6.2) can be written in the following form, when the variable TFP is substituted for *A*.

$$Y = TFP\, K^{\alpha} L^{1-\alpha} \tag{6.3}$$

Equation (6.3) can be transformed as:

$$TFP = Y \Big/ K^{\alpha} L^{1-\alpha} \tag{6.4}$$

The concept of TFP can be combined with the foreign presence (FDI) of a country. FDI (multinational enterprises) represents the existence of the spill-over effect on an aggregate level. In order to investigate the relationship between FDI and TFP, a model is constructed in which the following variables are included to avoid any bias in the estimation (Baltabaev, 2014). Then, a country's TFP level becomes a function of FDI, research and development (R&D), human capital (HC), trade (TRA), technology gap (TGAP), rate of inflation (INF), population growth (POPG) and civil war (WAR). In our model, this WAR is considered as exogenous variable. The general functional form for determinants of TFP is as follows:

$$TFP = f(FDI, R\&D, HC, TRA, TGAP, INF, POPG, WAR) \tag{6.5}$$

Equation (6.5) can be rewritten in a linear regression framework as follows:

$$\begin{aligned} TFP = {} & \delta_0 + \delta_1 LFDI + \delta_2 LR\&D + \delta_3 LHC + \delta_4 LTRA \\ & + \delta_5 LTGAP + \delta_6 INF + \delta_7 POPG + \delta_8 WAR + \varepsilon \end{aligned} \tag{6.6}$$

All explanatory variables are in natural logarithm, with the exception of total factor productivity, rate of inflation and population growth. The ε is the error term.

6.5 Preliminary Data Analysis

In the considered literature of FDI and spill-overs, a majority of the studies use firm level data to analyse the spill-over effect of FDI. However, due to the limitation of firm level data in Sri Lanka, this study uses aggregate level data to investigate the impact of FDI on TFP. We use annual data over the years from 1978 to 2014 to estimate model (6.6). TFP is calculated at constant purchasing power parity rates relative to the US, in terms of the prices in that period. FDI is defined as FDI net inflows in US$. Trade is measured in terms of exports plus imports (US$). Patent applications filed by residents are proxy for R&D. Education expenditure (US$m) is used as a proxy for human capital. Technology gap is calculated as the ratio of US labour productivity to the labour productivity of Sri Lanka. The labour productivity is measured as per hour labour in US$. Rate of inflation is measured as GDP deflator (annual %). Population growth is measured as a percentage growth rate of the total population. A dummy variable (WAR) is used to capture the effect of the civil war on TFP during relevant periods. The 'war' variable takes the value 1 for the civil war years 1983–2009 and 0 otherwise.

The TFP data are obtained from *Penn World Tables PWT 8.1* (Feenstra et al., 2015). The data for FDI, patent applications, trade, rate of inflation and population growth are collected from *World Development Indicators (2016).* The data on education expenditure are found in various issues of *Annual Reports* and *Economic and Social Statistics Reports of the Central Bank of Sri Lanka.* The data on labour productivity is collected from the *Conference Board: Total Economy Database.*

In the view of the literature review, the expected signs of the determinants on TFP are as follows: R&D, human capital, trade, and population growth are expected to have a positive impact on TFP, while rate of inflation and war dummy are expected to have a negative effect. The FDI and technology gap could have either positive or negative effects on TFP. If FDI inflows bring positive technological externalities to host countries, then FDI positively influences TFP, allowing the host countries to enjoy positive spill-overs. However, if FDI inflows bring negative technological externalities to host countries, then they enjoy negative spill-overs, implying that FDI could have either positive or negative spill-over effects on TFP.

As R&D can be regarded as reflecting an invention in the production process, the development of new products with superior quality improves the TFP. The level of knowledge indicated by human capital plays an important role in TFP. Higher levels of knowledge can help countries increase total factor productivity. Technology transfer, which can take place through international trade, a channel of technological diffusion, leads to TFP. The larger technology gap between the home and the host countries will result in lower TFP due to insufficient absorptive capacity. However, if there is sufficient absorptive capacity in the host country, then there may be greater TFP. Since the rate of inflation causes misperception of the relative price levels and leads to inefficient allocation, a higher rate of inflation is associated with lower TFP. A population that has more ideas and innovation helps a society to increase its ability to acquire and use relevant knowledge.

As a preliminary investigation, in Figures 6.1–6.7, the variable TFP is graphed as scatter plots against each of the possible determinants: (i) FDI, (ii) R&D, (iii) human capital, (iv) trade, (v) technology gap, (vi) rate of inflation and (vii) population growth. As can be seen, as expected, there is a positive relationship between TFP and FDI, R&D, human capital, and trade, and a negative relationship between technology gap and rate of inflation, with the exception of population growth.

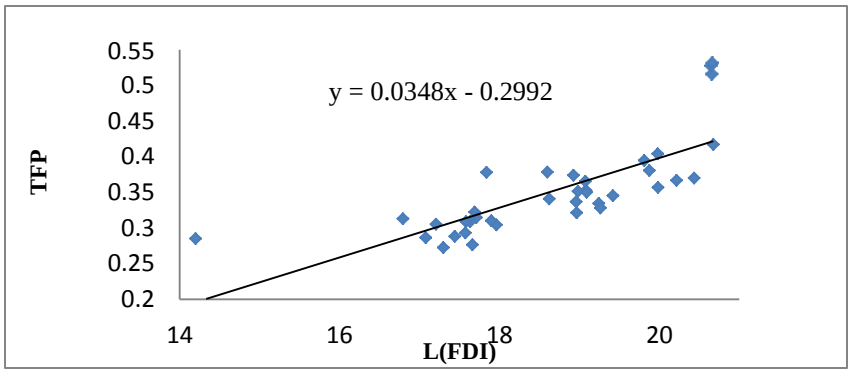


Figure 6.1: TFP vs FDI

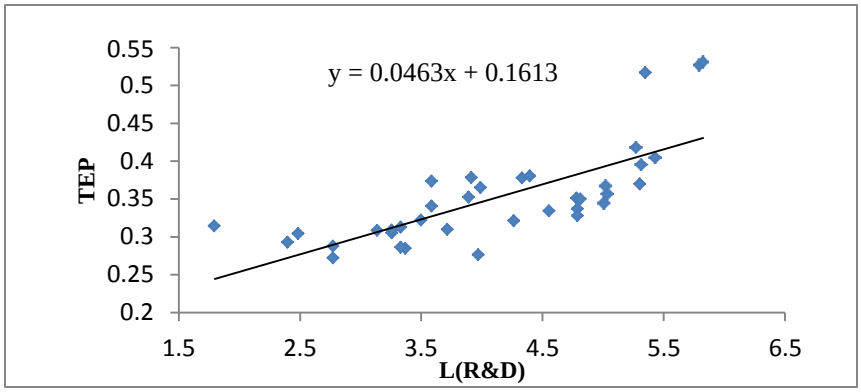


Figure 6.2: TFP vs Research and Development

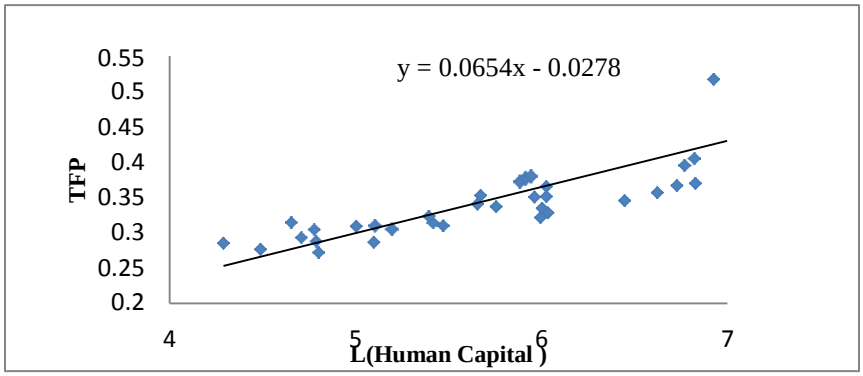


Figure 6.3: TFP vs Human capital

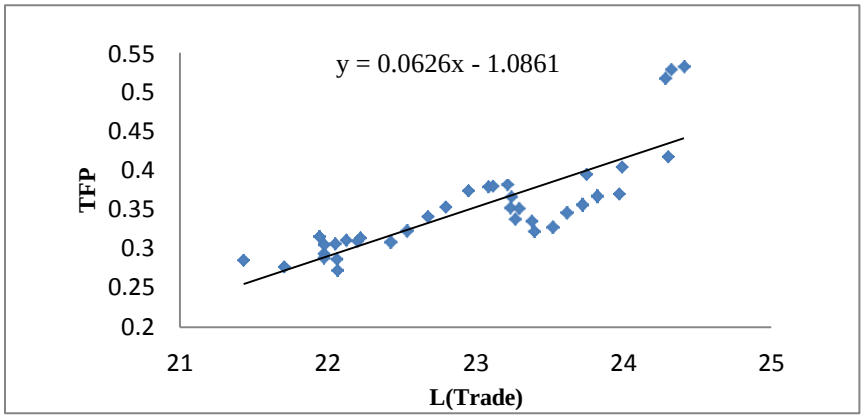


Figure 6.4: TFP vs Trade

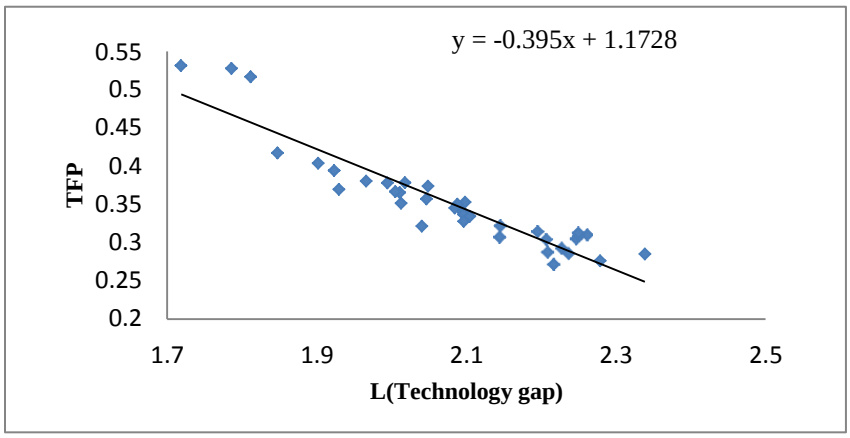


Figure 6.5: TFP vs Technology gap

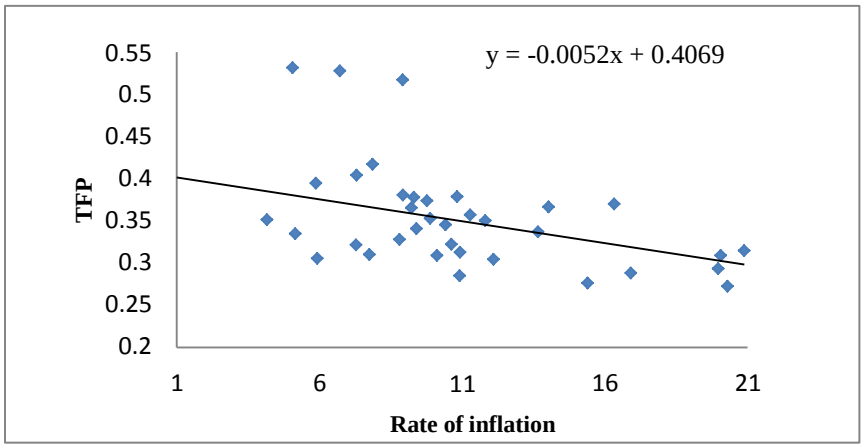


Figure 6.6: TFP vs Rate of inflation

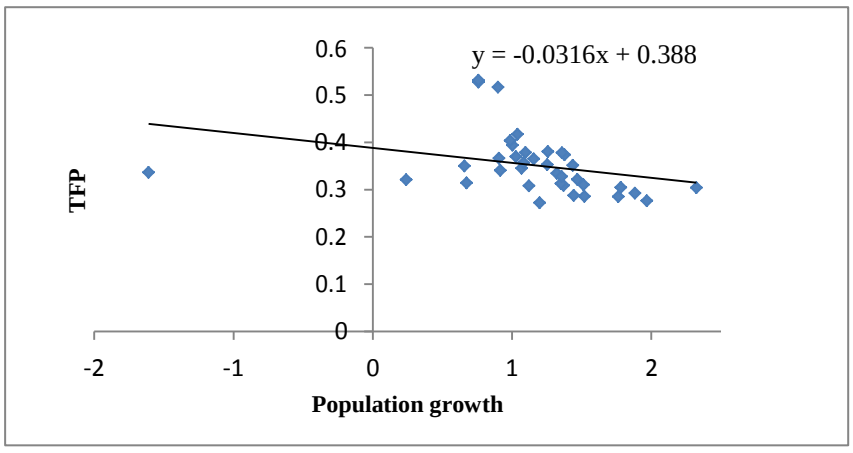
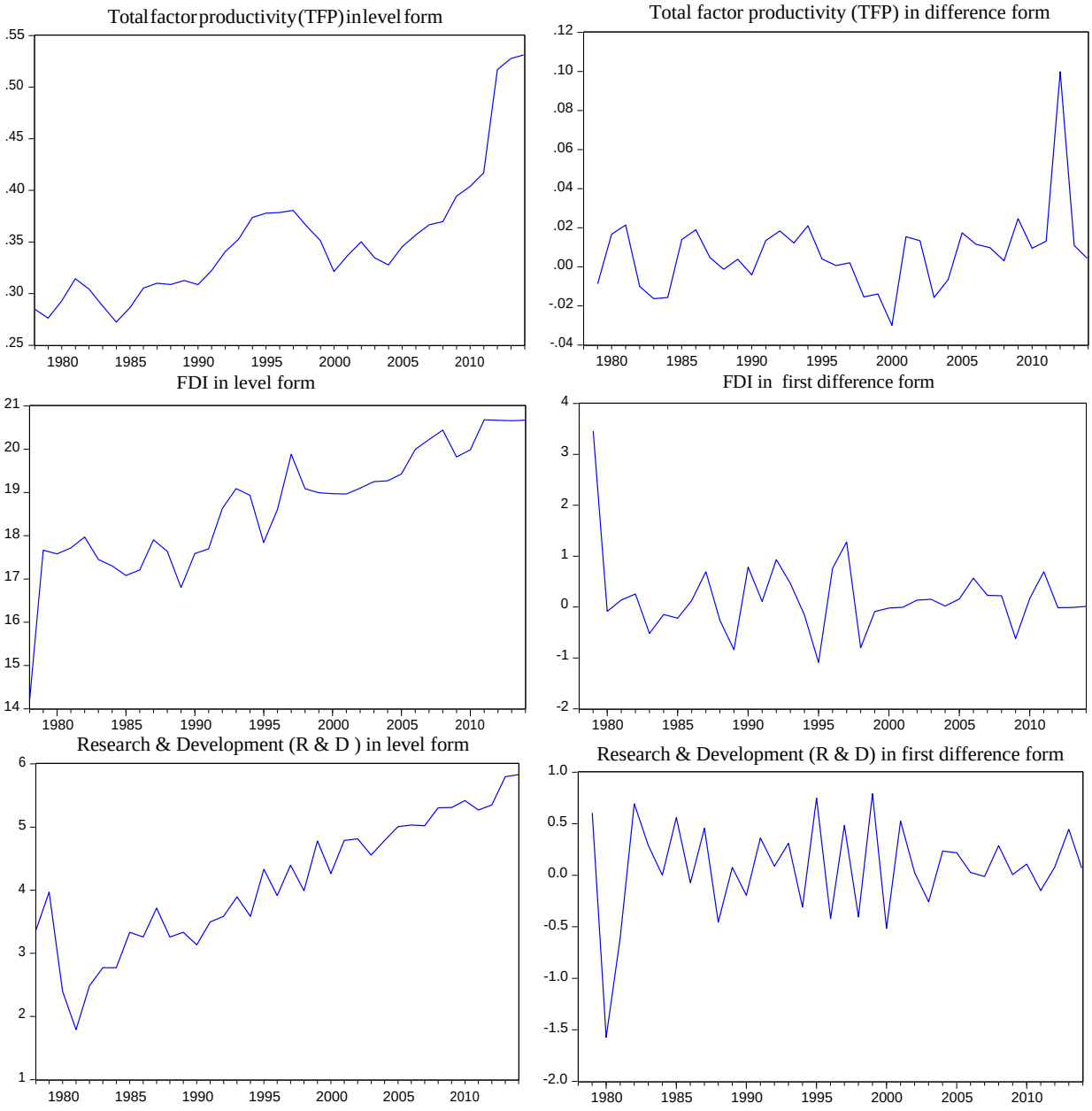


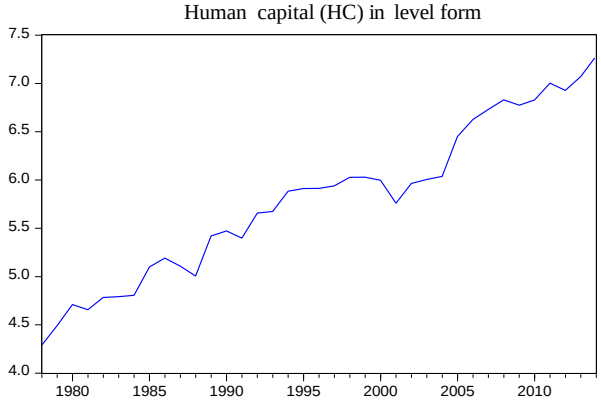
Figure 6.7: TFP vs Population growth

6.6 Estimation Results

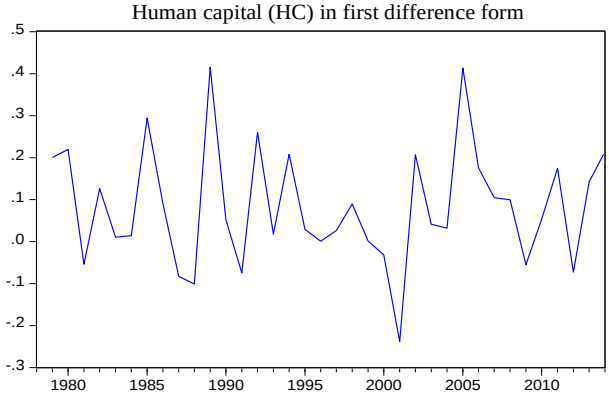
In this section, time series analysis is employed to analyse formally the relationship between FDI and the spill-over effect. Figure 6.8 plots the eight variables in their level form and first difference form. As can be seen, the plots suggest that the six variables in level form appear to be non-stationary and may be stationary in their first difference form.



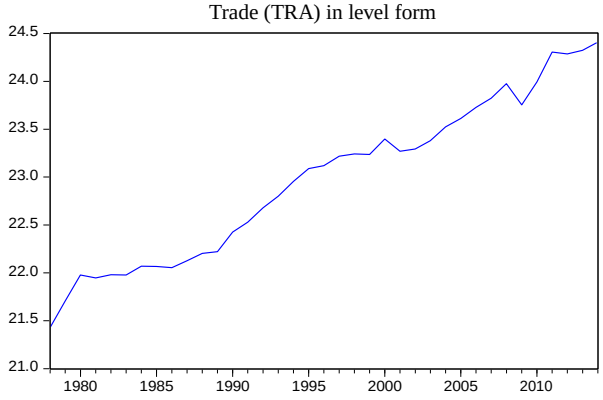
Human capital (HC) in level form



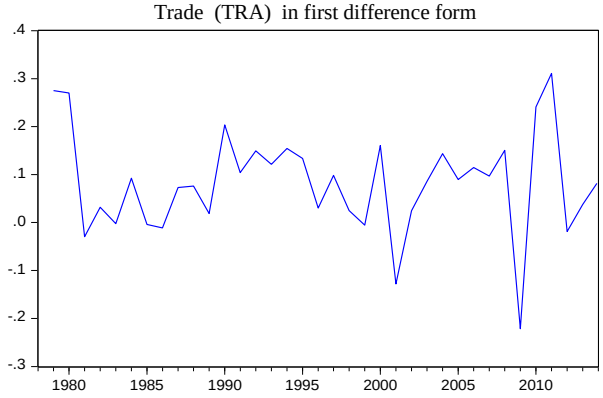
Human capital (HC) in first difference form



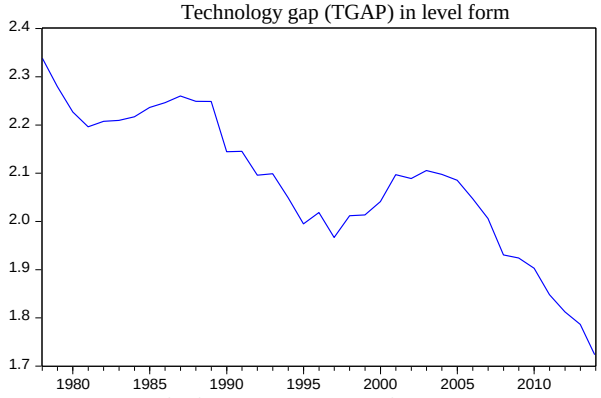
Trade (TRA) in level form



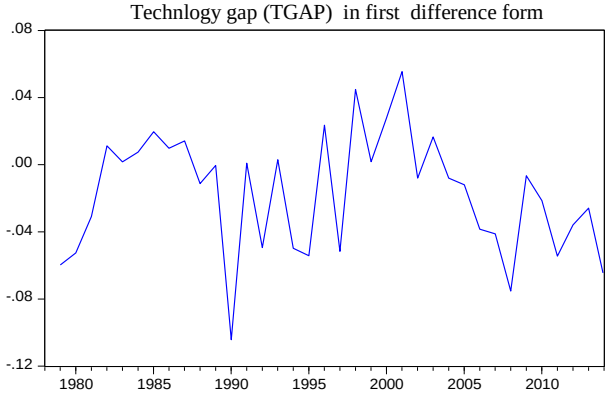
Trade (TRA) in first difference form



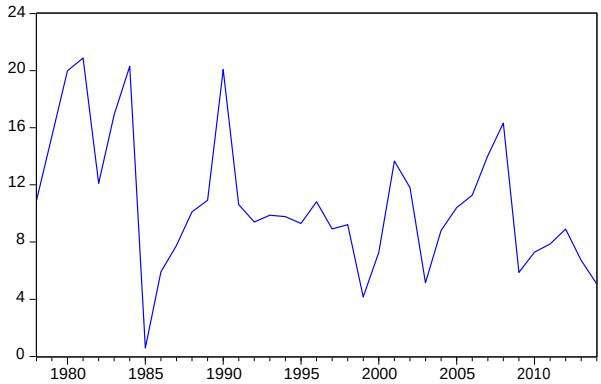
Technology gap (TGAP) in level form



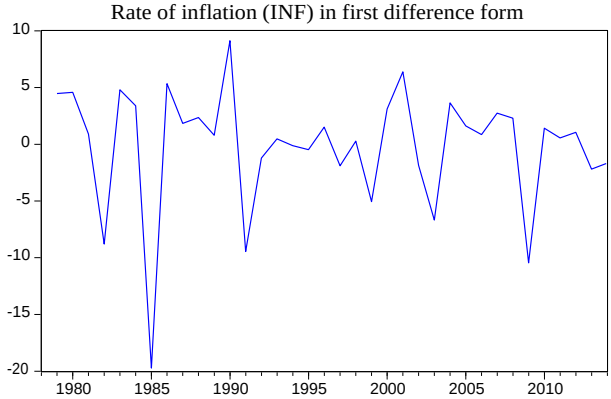
Technlogy gap (TGAP) in first difference form



Rate of inflation (INF) in level form



Rate of inflation (INF) in first difference form



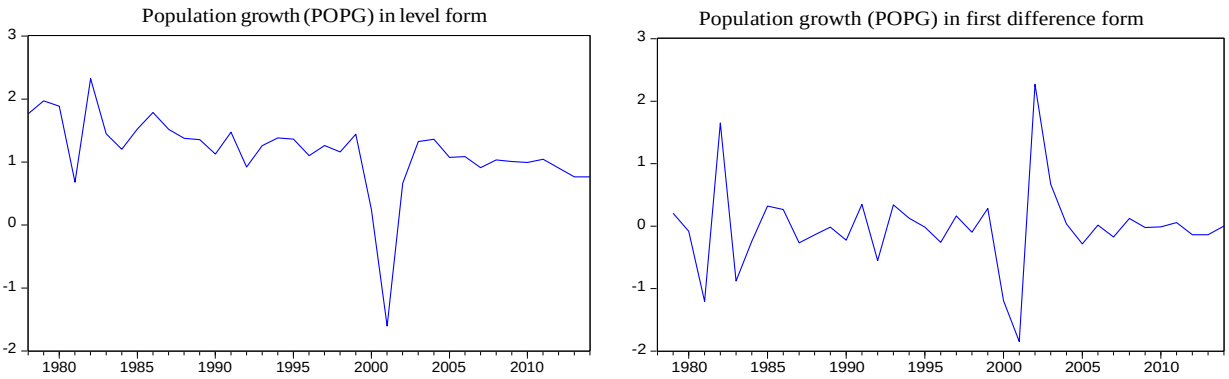


Figure 6.8: Time Series Plots of the Eight Variables in Level and First Difference form, 1978–2014

Unit Root Tests

First the time series properties of these data series is investigated, using ADF and PP unit root tests, in order to avoid the spurious regression estimation results. Table 6.3 presents the results based on the two unit root tests. For the two tests, the null hypothesis is that the series has a unit root (i.e., the series is non-stationary). As can be seen, null hypothesis of a unit root cannot be rejected for all eight variables in their level form, except rate of inflation and population growth. However, at the first difference, the null hypothesis of unit root can be rejected for all six variables. Hence, the results confirm that the rate of inflation and population growth are integrated of order zero, *I*(0), and all other variables are integrated of order one, *I*(1).

Table 6.3: Unit Root Test Results

Variables	ADF		PP		Order of Integration
	Levels	First Differences	Levels	First Differences	
TFP	-0.518	-4.778***	-0.747	-4.793***	I(1)
LFDI	-0.782	-5.782***	-0.987	-6.455***	I(1)
LR&D	-0.128	-8.497***	-0.407	-8.273***	I(1)
LHC	-3.072	-6.719***	-3.160	-6.719***	I(1)
LTRADE	-3.018	-6.367***	-3.229	-6.429***	I(1)
TGAP	0.327	-2.164**	-1.112	-4.490***	I(1)
INF	-3.916***	-	-3.940***	-	I(0)
POPG	-3.975***	-	-3.976***	-	I(0)

Note: ** and *** indicate statistical significance at the 5% level and 1% level, respectively.

ARDL Model and Estimation Results

When there is a linear relationship with time series variables in which some series are stationary, *I*(0), and some non-stationary, *I*(1), then it is recommended to use the ARDL bounds test to confirm whether a long-run relationship exists between the model variables. In model (6.6), the variables rate of inflation and population growth are *I*(0), and the others are *I*(1). We employ the ARDL bounds test for cointegration, developed by Pesaran et al., (2001), to test cointegration. According to Pesaran and Shin (1999), the ARDL model is sufficient to simultaneously correct for residual serial correlation and the problem of endogenous regressors.

The unrestricted error correction model (ECM) for the ARDL representation can be written as:

$$\begin{aligned}\Delta TFP_t = {} & \beta_0 + \beta_1 TFP_{t-1} + \beta_2 LFDI_{t-1} + \beta_3 LR\&D_{t-1} + \beta_4 LHC_{t-1} + \beta_5 LTRA_{t-1} + \beta_6 LTGAP_{t-1} \\ & + \beta_7 INF_{t-1} + \beta_8 POPG_{t-1} + \beta_9 WAR_{t-1} + \sum_{i=1}^{f} \alpha_{1i} \Delta TFP_{t-i} + \sum_{i=0}^{g} \alpha_{2i} \Delta LFDI_{t-i} \\ & + \sum_{i=0}^{h} \alpha_{3i} \Delta LR\&D_{t-i} + \sum_{i=0}^{i} \alpha_{4i} \Delta LHC_{t-i} + \sum_{i=0}^{j} \alpha_{5i} \Delta LTRA_{t-i} + \sum_{i=0}^{k} \alpha_{6i} \Delta LTGAP_{t-i} \\ & + \sum_{i=0}^{l} \alpha_{7i} \Delta INF_{t-i} + \sum_{i=0}^{m} \alpha_{8i} \Delta POPG_{t-i} + \sum_{i=0}^{n} \alpha_{9i} \Delta WAR_{t-i} + \varepsilon_t\end{aligned} \tag{6.7}$$

where Δ is the first difference operator, β_0 is the drift component, and ε is the white noise residuals. The coefficients $(\beta_1, \beta_2, \ldots, \beta_9)$ represent the long-run relationship whereas the remaining coefficients with summation sign $(\alpha_1, \alpha_2, \ldots, \alpha_9)$ represent the short-run dynamics of the model. The structural lags *f, g, h, i, j, k l, m* and *n* are determined by using the minimum Akaike Information Criterion. The bound test is conducted in order to investigate the existence of the long-run relationship among the variables in the system. The bound test is based on the F-statistic for the joint significance of the coefficients $(\beta_1, \beta_2, \ldots, \beta_9)$ and follows a non-standard distribution. Under this, the null hypothesis of no cointegration is tested against the alternative of cointegration.

H_0: $\beta_1=\beta_2=\beta_3=\beta_4=\beta_5=\beta_6=\beta_7=\beta_8=\beta_9=0$ (no cointegration or no long-run relationship)

H_1: At least one $\beta_i \neq 0$, $i=1, 2 \ldots 9$ (cointegration or long-run relationship)

According to Pesaran et al. (2001), there are two sets of critical values: I(0) and I(1). If the calculated F statistic falls below the lower bound I(0), the null hypothesis H_0 cannot be rejected, which means that no cointegration exists among the nine variables. In contrast, if the F-statistic is above the upper bound I(1), H_0 should be rejected, meaning that a cointegration relationship exists among the nine variables in the long-run. If the F-statistic lies between I(0) and I(1) as bounds, the inference is inconclusive.

Table 6.4 reports the results on the testing of cointegration. The calculated value of the *F*-statistic to test the null hypothesis of cointegration is 30.07, which is greater than the upper critical bound values available in Pesaran et al. (2001) at the 1%, 5% and 10% levels of significance. Therefore it can be concluded that cointegration exists among the variables considered. That is, a long-run relationship exists between TFP and the eight variables in model (6.6). In addition, the F-statistics 30.07 is compared with the finite-sample critical values (provided by Narayan (2005), Table: Case III, for $T = 36$) to see whether the conclusions remain the same. The results also reveal that there exists a long-run relationship among the variables, since the calculated value of the test statistic is greater than any of the upper bound values at 1% (3.79, 5.67), 5% (2.75, 4.21) and 10% (2.31, 3.59) significant levels.

Since the cointegration between TFP and other variables is found, the long-run model (6.6) has been estimated. The estimated coefficients for model (6.6) are given in Table 6.5. As can be seen, in the long-run, the estimated coefficient for the FDI is positive and statistically significant at the 10% level, implying that FDI is one of the factors that influence TFP. This implies that there are positive spill-overs from FDI in the Sri Lankan economy. A similar finding is reported in a number of other studies, such as those of Piyaareekul and Peridy (2010), Karunaratne (2012) and Baltabaev (2014). R&D contributes positively to TFP and is statistically significant at the 1% level, confirming that R&D plays a significant and positive role in determining TFP growth.

This finding in relation to R&D is also in line with the results reported by Romer (1990), Jones (1995) and Baltabaev (2014). The coefficient of human capital is also positive and significant at the 10% level, indicating that human capital plays an important role in determining TFP. The above result is also similar to the findings of Kneller (2005) and Baltabaev (2014).

Table 6.4: ARDL (1, 2, 3, 3, 3, 3, 3, 3) Estimation Results

Regressor	Parameter	Coefficient	Standard Error	t-Ratio	*p*-value
ΔTFP(1)	α_{11}	0.310	0.134	2.318	0.081
ΔLR&D	α_{20}	0.076	0.012	6.205	0.003
ΔLR&D(-1)	α_{21}	0.050	0.007	7.077	0.002
ΔLR&D(-2)	α_{22}	0.003	0.005	0.576	0.595
ΔLHC	α_{30}	0.139	0.024	5.730	0.005
ΔLHC(-1)	α_{31}	0.004	0.020	0.213	0.842
ΔLHC(-2)	α_{32}	-0.023	0.014	-1.602	0.184
ΔLLHC(-3)	α_{33}	-0.045	0.013	-3.517	0.025
ΔLFDI	α_{40}	0.003	0.009	0.335	0.755
ΔLFDI(-1)	α_{41}	0.024	0.005	5.377	0.006
ΔLFDI(-2)	α_{42}	-0.020	0.005	-3.664	0.022
ΔLFDI(-3)	α_{43}	0.020	0.004	5.392	0.006
ΔLTRA	α_{50}	-0.138	0.029	-4.779	0.009
ΔLTRA(-1)	α_{51}	0.082	0.023	3.510	0.025
ΔLTRA(-2)	α_{52}	-0.098	0.025	-3.980	0.016
ΔLTRA(-3)	α_{53}	-0.201	0.021	-9.439	0.001
ΔLTGAP	α_{60}	0.129	0.089	1.442	0.223
ΔLTGAP(-1)	α_{61}	-0.325	0.145	-2.242	0.088
ΔLTGAP(-2)	α_{62}	-0.563	0.128	-4.408	0.012
ΔLTGAP(-3)	α_{63}	0.049	0.087	0.557	0.607
ΔINF	α_{70}	0.004	0.000	6.259	0.003
ΔINF(-1)	α_{71}	0.001	0.000	1.919	0.127
ΔINF(-2)	α_{72}	-0.000	0.000	-1.825	0.142
ΔINF(-3)	α_{73}	-0.002	0.000	-2.768	0.050
ΔPOPG	α_{80}	-0.004	0.003	-1.195	0.298
ΔPOPG(-1)	α_{81}	0.003	0.002	1.378	0.240
ΔPOPG(-2)	α_{82}	-0.026	0.003	-8.453	0.001
ΔPOPG(-3)	α_{83}	-0.019	0.004	-4.182	0.014
C		8.449	1.189	7.103	0.002
ΔWAR	α_{90}	-0.064	0.005	-11.883	0.000
$\overline{R}^2$		0.90	S.E. of Regression		0 .01
AIC		143.06	SBIC		120.17
Computed F – statistics		**30.073**			

The lower and upper bound of the critical values at the 1%, 5% and 10% significant levels are (2.96, 4.26), (2.32, 3.50) and (2.03, 3.13), respectively (Pesaran et al, 2001, Table C1 (iii) Case III: Unrestricted intercept and no trend).

Moreover, the trade coefficient is positive and significant at the 1% level and thus has a positive impact on TFP, which confirms that international trade in goods and services leads to an

increasing accumulation of knowledge that can increase TFP. This result is in line with the results reported in Keller (2004) and Baltabaev (2014). The coefficient corresponding variable TGAP is negative, indicating that the technology gap negatively impacts on TFP and is estimated significantly at the 1% level. This implies that a large technology gap tends to reduce TFP, due to a lack of absorbing capability. The result in relation to the technology gap is consistent with the previous study by Kokko et al. (1996). However, the rate of inflation is positive and statistically insignificant, suggesting that the rate of inflation has no significant impact on the TFP. The same findings were also reported by Tanna (2009) and Ray (2011). Unexpectedly, population growth is negative and significant at 1% level, indicating that population growth negatively influences TFP. This may be because the population is not well-educated and is poorly trained, which fails to help a society to increase TFP. This finding on the relation to population growth is in line with the result reported in Baltabaev (2014). The WAR variable coefficient is negative and significant, indicating that civil war adversely influences on the TFP.

Table 6.5: Estimated Long-run Coefficients of the ARDL Model

Regressor	Coefficient	Standard Error	t-Ratio	*p*-value
LFDI	0.040	0.016	2.456	0.070*
LR&D	0.187	0.037	5.024	0.007***
LHC	0.110	0.046	2.367	0.077*
LTRA	0.515	0.086	5.974	0.004***
LTGAP	-1.031	0.105	-9.809	0.001***
INF	0.003	0.002	1.256	0.277
POPG	-0.065	0.010	-6.390	0.003***
C	12.253	1.774	6.907	0.002***
WAR	-0.093	0.014	-6.641	0.003***

Note: * and *** indicate statistical significance at the 10% level and 1% level, respectively.

To estimate the short-run dynamic parameters, we use an error correction model of the form:

$$\Delta TFP_t = \alpha_0 + \sum_{i=1}^{f} \alpha_{1i} \Delta TFP_{t-i} + \sum_{i=0}^{g} \alpha_{2i} \Delta LFDI_{t-i} + \sum_{i=0}^{h} \alpha_{3i} \Delta LR\,\&\,D_{t-i} + \sum_{i=0}^{i} \alpha_{4i} \Delta LHC_{t-i} + \sum_{i=0}^{j} \alpha_{5i} \Delta LTRA_{t-i} + \sum_{i=0}^{k} \alpha_{6i} \Delta TGAP_{t-i} + \sum_{i=0}^{l} \alpha_{7i} \Delta INF_{t-i} + \sum_{i=0}^{m} \alpha_{8i} \Delta POPG_{t-i} + \sum_{i=0}^{n} \alpha_{9i} \Delta WAR_{t-i} + \lambda ECT_{t-1} + \varepsilon_t \quad (6.8)$$

where α_{ij} (i = 1, 2,…,9) are the short-run dynamic coefficients, λ is the speed of the adjustment parameter and ECT is the error correction term that is calculated from the estimated model (6.6) in the following form:

$$ECT = TFP - \delta_0 - \delta_1 LFDI - \delta_2 LR\ \&\ D - \delta_3 LHC - \delta_4 LTRA - \delta_5 LTGAP - \delta_6 INF - \delta_7 POPG - \delta_8 WAR \quad (6.9)$$

The ARDL (1, 3, 2, 3, 3, 3, 3, 3) is selected based on AIC, and the results of the short-run dynamic coefficients associated with the long-run relationships are shown in Table 6.6. The equilibrium error correction coefficient ECT is -0.69, which has the expected negative sign and is significant at 1% level.

Table 6.6: Estimates of the Error Correction Representation

Regressor	Parameter	Coefficient	Standard Error	t-Ratio	*p*-value
ΔLFDI	α_{20}	0.003	0.009	0.335	0.744
ΔLFDI(-1)	α_{21}	0.000	0.006	0.021	0.984
ΔLFDI(-2)	α_{22}	-0.020	0.004	-5.392	0.000
ΔLR&D	α_{30}	0.076	0.012	6.205	0.000
ΔLR&D(-1)	α_{31}	-0.003	0.005	-.0576	0.576
ΔLHC	α_{40}	0.139	0.024	5.730	0.000
ΔLHC(-1)	α_{41}	0.068	0.017	3.943	0.002
ΔLHC(-2)	α_{42}	0.045	0.013	3.517	0.005
ΔLTRA	α_{50}	0.138	0.029	4.779	0.001
ΔLTRA(-1)	α_{51}	0.299	0.033	9.041	0.000
ΔLTRA(-2)	α_{52}	-0.201	0.021	-9.439	0.000
ΔLTGAP	α_{60}	0.129	0.089	-1.442	0.177
ΔLTGAP(-1)	α_{61}	0.514	0.108	-4.763	0.001
ΔLTGAP(-2)	α_{62}	-0.049	0.087	-0.557	0.589
ΔINF	α_{70}	0.004	0.000	6.259	0.000
ΔINF(-1)	α_{71}	0.003	0.990	3.216	0.008
ΔINF(-2)	α_{72}	0.002	0.834	2.768	0.018
ΔPOPG	α_{80}	-0.004	0.003	-1.195	0.257
ΔPOPG(-1)	α_{81}	0.045	0.007	6.780	0.000
ΔPOPG(-2)	α_{82}	0.019	0.004	4.182	0.002
ΔWAR	α_{90}	-0.064	0.005	-11.885	0.000
ECM(-1)	λ	-0.690***	0.134	-5.149	0.000

Note: *** indicate statistical significance at the 1% level.

The absolute value of the coefficient of error correction term (i.e. 0.69) implies that about 69% of the disequilibrium of the previous year's shock adjusts back to the long-run equilibrium in the current year. Hence, there is a moderate adjustment process.

Diagnostic Tests

In order to check whether the estimated results are reliable, three diagnostic tests are employed: serial correlation, functional form and heteroscedasticity. The results are given in Table 6.7. As can be seen, residuals are serially uncorrelated, normally distributed and homoscedastic at the 5% level of significance and correct functional form. Therefore, there is no evidence of diagnostic problem with the model.

Table 6.7: Diagnostic Tests Results

Tests	F-Statistic	*p*-value
Serial Correlation(a)	8.954	0.054
Functional Form(b)	0.024	0.887
Normality(c)	0.187	0.911
Heteroscedasticity(d)	0.618	0.438

Note: Null hypothesis in a = No serial correlation; b = Functional specification is correct, c = Residuals are normal, and d = Residuals are homoscedastic.

Stability Tests

In the final stage, the cumulative sum (CUSUM) and the CUSUM of squares (CUSUMSQ) tests have been employed to examine the stability of the long-run coefficients. The graphical presentation of these tests is seen in Figure 6.9. Since the plots of CUSUM and CUSUMSQ statistic are within the critical lines at the 5% significance level, there exists stability in the parameters and error terms of the estimated model over the sample period.

It can be highlighted that, in regard to breaks, the linear ARDL function in Equation (6.7) shows that the relationship is stable over time, regardless of how the individual time series behave. It may be feasible that the co-movement of variables compensates for breaks in individual series when an error correction process is modelled with long-run equilibrium (the variables are cointegrated). Our model satisfied the diagnostic tests and stability test.

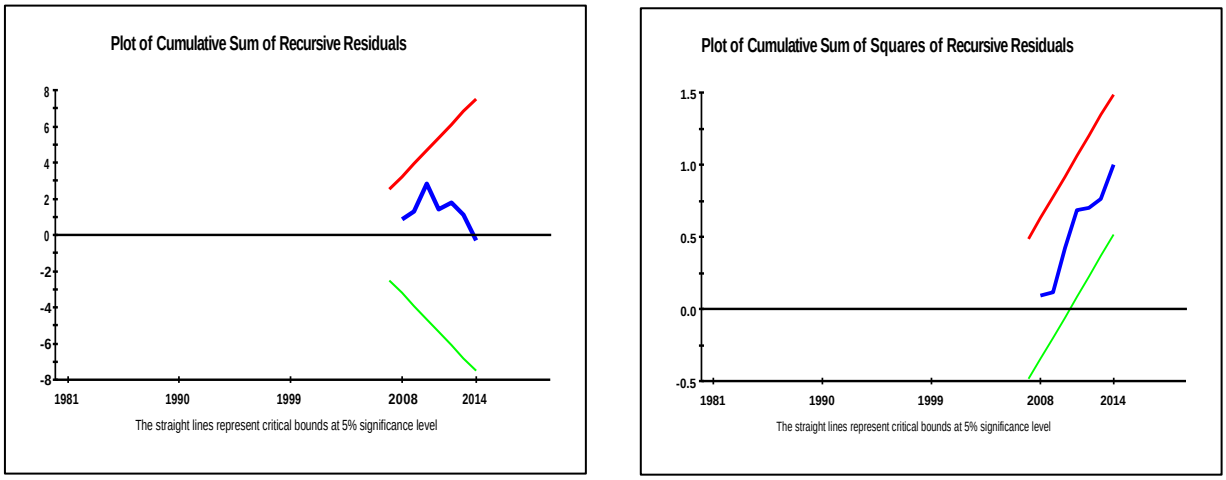


Figure 6.9: CUSUM and CUSUMSQ Tests for Parameter Stability

6.7 Conclusions and Policy Implications

The objective of this study was to develop an empirical framework to identify the spill-over effects of FDI in Sri Lanka by using time series data for the period 1978–2014. In the review of previous research, the study identified seven important determinants that generally determine total factor productivity: FDI, R&D, human capital, trade, technology gap, rate of inflation, and population growth. We have also included a war dummy to analyse the impact of WAR on TFP.

The estimated results suggest that there is long-run equilibrium among the variables considered. FDI has a positive impact on total factor productivity, indicating that FDI is one of the important determinants of TFP. Thus, FDI brings positive spill-overs into the Sri Lankan economy. R&D has a positive effect on TFP, meaning that a larger amount of R&D facilities leads to higher total factor productivity. Therefore, increasing the level of R&D facilities is necessary for Sri Lanka to maintain sustainable total factor productivity. Human capital in the form of education has a positive effect on total factor productivity, suggesting that increasing investment in human capital leads towards technical and/or labour efficiency. International trade also positively influences total factor productivity in Sri Lanka. This implies that implementing greater trade liberalization policies enhances international trade, which increases total factor productivity. The technology gap in Sri Lanka has a negative impact on total factor productivity, revealing that it is necessary to increase the ability for absorption in order to reduce the technology gap. Population growth has a negative effect on total factor productivity. This indicates that increasing the size of

the workforce with more innovative ideas is crucial for Sri Lanka, to increase the total factor productivity, as a well-educated population has a greater ability to create new technologies. In addition, the war in Sri Lanka had a negative impact on total factor productivity, implying that civil war is associated with greater uncertainty regarding future economic policy and does adversely affect productivity.

The findings of the analysis reported in this chapter confirm that encouraging FDI inflows into Sri Lanka should be expected to have a beneficial effect on total factor productivity. The results thus support the argument of the positive spill-over effects of FDI.

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CHAPTER 7

Effect of Foreign Direct Investment on Income Inequality

7.1 Introduction

Social science research reveals that the number of the rich and the level of their wealth increases more rapidly than global economic growth (Ahmadov, 2016). Against this background, the extent of inequality and what to do about it have become issues of much debate by policymakers and researchers. The global investment decisions of MNEs have played an important role in the globalization process. Due to financial globalization, particularly FDI, flows could facilitate capital allocation to almost all countries. A substantial body of literature has long been generated around the question of how FDI inflows impact host countries. There are many possible effects of FDI inflows on host countries. When studying the impact of FDI on host countries, most literature is concerned with the effects on capital stock, productivity and economic growth at either the macro or the micro level. In addition, FDI has been explored as a major channel of technology transfer and productivity spillover from home countries to host countries. However, in recent times specific attention has been devoted to the question of whether FDI inflows change the level of income inequality in host countries. The effect of FDI on income inequality remains an area of unresolved controversy in the open economy macroeconomics.

Given the importance of the subject and the wide divergence of opinions examining individual countries and cross-country data, numerous studies have been conducted to assess the impact of FDI on income inequality by employing different empirical techniques. However, the association between FDI and income inequality is not well understood, in terms of nature, magnitude, and characteristics of a country (urban and rural areas, regional and national levels, low and high income levels and developed and developing countries). In general, increasing FDI flows have been shown to increase income inequality in developing countries. One potential explanation is the concentration of FDI inflows in relatively higher skill and capital intensive sectors, which push up the demand for, and the wages of, higher skilled workers. However, FDI could lead to less income inequality if it raises the demand for unskilled workers or provides economic opportunities for those who would not otherwise have them (Meyer, 1999 and Obstfeld, 1998).

This issue is important and needs to be addressed in the Sri Lankan context, since the relationship between FDI and income inequality has potentially important implications for economic policy in Sri Lanka. The objective of this chapter is to examine the impact of FDI on income inequality in Sri Lanka during the period 1978 to 2014. To the best of our knowledge, this is the first study to investigate the relationship between FDI and income inequality in Sri Lanka. This chapter answers the following questions: (1) Does FDI influence income inequality in Sri Lanka? (2) What other factors affect income inequality in Sri Lanka? (3) Did the civil war affect income inequality of Sri Lanka?

The rest of the chapter is structured as follows. Section 7.2 reviews relevant theoretical literature on FDI and income inequality. Section 7.3 reviews the relevant empirical literature on FDI and income inequality in single-country studies; while cross-country studies are reviewed in Section 7.4. The background information on income distribution in Sri Lanka is provided in Section 7.5. Section 7.6 presents the empirical analysis. The model specification and estimation results are discussed in Section 7.7. Section 7.8 comprises the conclusion and policy implications.

7.2 Theories on FDI and Income Inequality

In order to understand the relationship between FDI and income inequality**,** it is necessary to review the existing theories which are linked with FDI. However, income inequality is not explicitly addressed by FDI theories. A review of the literature shows that the Heckscher-Ohlin (H-O) model, the modernization and dependency theories and the North–South models have been used to explain the relationship between FDI and income inequality. This section briefly discusses these models and theories in relation to FDI and income inequality.

The Heckscher–Ohlin Model

The traditional Heckscher–Ohlin model, first introduced by Eli Heckscher (1919), was further developed by Ohlin (1933). The H-O model is an application of general equilibrium theory between two trading countries. In the H-O model, the two trading countries should have the same production and utility functions, where the production functions are under constant returns to scale. The H-O model specifies four key elements: two commodities and two factors of production (labour and capital).

Ohlin added a further critical dimension to the original model in 1933, by identifying capital intensive and labour intensive commodities. Capital intensive production means that the way a good or service is produced depends more heavily *on* capital than *on* labour. Labour intensive production means that the way a good or service is produced depends more heavily on labour than the capital. The H-O model states that capital-rich countries export capital intensive commodities, while labour-rich countries export labour intensive commodities. The effect that free trade could have on the distribution of income within countries means that relative factor prices could move in the direction of equality between the trading countries that share similar technology.

The Stolper-Samuelson Theorem (1941) is often used to enrich the quality of understanding and application of the H-O model. Stolper and Samuelson assert that free trade would raise the incomes of the abundant factors of production and lower the returns of the scarce factors of production. This approach is important because it highlights the significance of abundant factors of production and how this impacts on trading countries. For example, developed countries have large capital endowments, where free trade will increase the returns of capital profits while decreasing the returns of labour. On the other hand, in developing countries with large labour endowments relative to capital, free trade will increase wages and decrease profits. This leads to clear predictions about how trade affects income inequality according to a country's factor endowments (Wood, 1994; Jensen and Rosas, 2007). Many economists, following the predictions of H-O and Stopler Samuelson trade models, expected trade liberalization in developing countries to reduce income inequality through an increase in the relative demand for unskilled labour. It can be expected that FDI will reduce wage inequality in developing countries because FDI could allow developing countries to specialise in less skilled intensive activities (Te Velde, 2003).

Modernization and Dependency Theories

Modernization theorists address the effect *of* FDI on income inequality. According to them, FDI is an ideal mechanism for the diffusion of capital, markets and knowledge, which would lead to development for newly independent countries (King and Varadi, 2002). They treat foreign and domestic capital as homogeneous goods, so the capital fosters economic growth and its benefits ultimately spread throughout the whole economy. On the other hand, even if FDI initially stimulates growth only in some leading sectors and regions, and provides

benefits to some skilled elites only, the growth in these leading sectors and regions could facilitate more equal income distribution within a country in the long run (Tsai, 1995). As long as the effects of FDI are taken into account, differences in the amount of FDI should not cause any significant variance in income inequality. This argument is supported by Kuznets's (1955) inverted U-shaped curve hypothesis, according to which income inequality increases at the early stages of development but declines later, once a certain stage of development is reached. Conversely, dependency scholars (for more details, see Section 2.2) argue that FDI will increase income inequality. The inequality problem is based on world economy and historical perspective (Tsai, 1995). The influence of where a country fits into the world economy and its relative position determines its income distribution. This influence demonstrates that the more FDI a country has, the more foreign control they have: consequently, the greater the degree of income inequality that country will have (Bornschier and Chase-Dunn, 1985).

In the presence of FDI, income inequality can also be raised in different ways in host countries. Firstly, FDI raises relative wages of skilled labour in a host country by bringing in skill-biased technology. Secondly, the capital intensive techniques used by foreign investors promote unemployment among unskilled workers and distort income distribution by creating an economy with a small advanced sector and a large backward sector (Lall, 1985; Jenkins, 1996; Reuveny and Li, 2003). Thirdly, multinational corporations pay low wages in labour intensive industries and push domestic suppliers to follow suit to reduce the MNCs' purchasing costs. Finally, FDI creates a new class of labour elites in some leading sectors. These labour elites earn four to ten times the normal wages and other benefits in the comparable domestic sectors (Girling, 1973).

North–South Model

The North–South model, introduced by Feenstra and Hanson (1996), explains the capital flows from North to South. An increase in the Southern capital stock relative to that of the North can increase the relative wage of skilled labour in both regions. It follows that the relative demand for skilled labour in both countries increases, which results in a higher relative wage for skilled workers. In the model, different levels of skilled and unskilled labour are required by each industry. If factors are not equalised between countries, then the North specializes in inputs which are relatively intensive in skilled labour and the South

specializes in inputs which are relatively intensive in unskilled labour. In this way, the North–South model is similar to the H-O model. A flow of capital from north to south, which is identified as outsourcing by northern firms, shifts an increasing portion of input production to the south. This type of FDI involves the division of production and gives a means to allocate specific steps of the production process to where the relevant comparative advantages can be utilized (Herzer et al., 2014). As a result, distributional consequences of FDI is interpreted in terms of the North–South model as FDI flows from North to South, which leads to higher relative wages for skilled workers in both rich and poor countries, which, in turn, raises wage inequality.

7.3 A Review of the Literature: Single-Country

This section presents a review on previous studies that researched FDI and income inequality. In recent times, the impact of FDI inflows on income inequality has attracted much attention in the literature. The FDI and income inequality relationship has been widely examined in both single-country and cross-country contexts.

Tang and Selvanathan (2005) examine whether FDI has influenced China's regional inequality at national, rural and urban levels for the period 1978–2002. The findings of the study indicate that FDI inflow is one of the key factors that increase regional income inequality at the national level, as well as in the rural and urban regions of China. Expressly, FDI has a significant impact on China's regional income inequality, by widening the difference in the income of Chinese people.

Using state-level panel data for 48 states of the US Chintrakarn et al. (2012) explore the relationship between FDI and income inequality for the period 1977–2001. The study finds that FDI has a negative effect on income inequality in the US, as a whole. However, considering the heterogeneity in the long-run effects of FDI on income inequality across states, 21 out of 48 states exhibit a positive relationship between FDI in income inequality. The results clearly indicate that FDI contributes to widening income gaps. In other words, FDI does not narrow income gaps in each individual state in the US.

Ucal and Bilgin (2013) examine the impact of FDI on income inequality and other determinants of income inequality in Turkey for the period 1990 to 2006. The findings of the

study show that a positive impact of FDI on income inequality is significant in the short run but not in the long run. In another study, recently, Ucal et al. (2016) explore how FDI and other determinants have impacted income inequality in Turkey for the period from 1970 to 2008. The results show that FDI negatively impacts income inequality in the short and long run, though quantitative effects are relatively small. These results contradict previous results. Finally, their study concludes that FDI does not have adverse effects on the distribution of incomes in Turkey, but instead reduces inequality, though not by much.

Table 7.1 presents a summary of single-country studies on FDI and income inequality, based on the data period, country of study, type of methodology used and their findings. As can be seen, results from most of the empirical studies on Table 7.1 reveal that FDI leads to more income inequality to host countries: explicitly, FDI increases income inequality (Tsai, 1995; Feenstra and Hanson, 1997; Te Velde, 2003 and Tang and Selvanathan, 2005). However, a number of studies report a negative effect of FDI on income inequality, indicating that FDI reduces income inequality (Chintrakarn et al., 2012 and Ucal et al., 2016).

7.4 A Review of the Literature: Cross-Country

In view of 33 less developing countries (Latin America and Southeast Asia: LDCs), Tsai (1995) investigates whether FDI inflow is associated with a greater income inequality during the 1970s. The finding of the study reveals that FDI increases unequal income distribution in the LDCs countries, particularly for Southeast Asia.

Using 32 states' level data on two digit industries, Feenstra and Hanson (1997) examine the impact of FDI on the skilled labour share of wages in Mexico during 1975–1988. The findings of the study indicate that FDI is positively correlated with the relative demand for skilled labour, as can account for a large portion of the increase in the skilled labour share of total wages. The rising wage inequality is linked to foreign capital inflows. The FDI into Mexico leads to increased wages of skilled workers relative to unskilled workers and thus probably increases income inequality. On the contrary, in another study, Jensen and Rosas (2007) explore the relationship between the FDI and income inequality in 32 Mexican states for the period 1990–2000. The finding of their study shows that increased FDI inflow is associated with a decrease in income inequality in Mexico.

Table 7.1: A Summary of Findings from Single-Country Studies on FDI and Income Inequality

Author(s), Year	Period	Country	Technique	Variables	Findings
Chintrakarn et al. (2012)	1977–2001	US	OLS	Top decile income earners and FDI stock to gross state product ratio	The short-run effects of FDI on income inequality are insignificant and negative; in the long run, FDI has a significant negative effect on income inequality.
Feenstra and Hanson (1997)	1975–1988	Mexico	OLS	Wage, FDI stock, domestic capital and real value added in manufacturing	FDI leads to increased wages of skilled workers relative to unskilled workers and thus probably increases income inequality.
Tang and Selvanathan (2005)	1978–2002	China	OLS	Gini coefficient, FDI inflows to total investment ratio, trade, real GDP per capita, agriculture labour force to total labour force ratio, human capital and total government expenditure to GDP ratio	FDI increases regional income inequality at the national level, as well as in rural and urban regions.
Te Velde (2003)	1978–2000	Latin America	OLS	Wages, FDI stock to GDP ratio and employment	FDI does not reduce inequality.
Ucal and Bilgin (2013)	1990–2006	Turkey	ARDL	Gini coefficient, FDI inflows growth, GDP growth, population growth, inflation and literacy rate	FDI positively impacts income inequality in the short run but not in the long run.
Ucal et al. (2016)	1970–2008	Turkey	Non-ARDL	Gini coefficient, FDI inflows, GDP growth rate, gross domestic fixed capital formation, inflation rate, political stability index, population growth rate, literacy rate and trade	FDI negatively impacts income inequality in the short run and long run.

Considering East Asia, Te Velde and Morrissey (2002) focus on the relationships between FDI, skills and wage inequality in five countries, namely Korea, Singapore, Hong Kong, Philippines and Thailand, over the period 1985–1998. The study does not find strong evidence that FDI reduces wage inequality. Furthermore, the study shows that when domestic influences such as wage setting and supply of skills are controlled, FDI increases wage inequality in Thailand.

Te Velde (2003) investigates the effects of FDI on income inequality in Latin America for the period 1978–2000. The findings of the study show that FDI does not reduce inequality, with the exception of Colombia. Moreover, FDI raises wage inequality by raising the wages of skilled workers more than the wage of less-skilled workers. On average, results indicate that not all types of workers necessarily gain from FDI to the same extent. In another study, Herzer et al. (2014) investigate the long-run impact of FDI on income inequality in 5 Latin American host countries (Bolivia, Chile, Colombia, Mexico and Uruguay) for the period 1980–2000. The findings reveal that FDI has a significant and positive effect on income inequality. This implies that FDI leads to wide income gaps in Latin America. This result supports the previous study. In country-specific analysis, FDI also increases inequality in all individual countries, except for Uruguay. Further, causality results indicate that causality runs from FDI to inequality. There is no evidence for reverse causality.

Considering 29 less-developed countries (LDCs), Sylwester (2005) examines how FDI is associated with both economic growth and changes in income inequality for the period 1970–1989. The findings of this study reveal that significant association between FDI and changes in income inequality are not found. There is no evidence that FDI leads to more income inequality within this group of LDCs. However, FDI is positively associated with economic growth within this group of countries.

Using pooled data, Choi (2006) examines whether an increase in FDI leads to income inequality for 119 countries for the period 1993 to 2002. The findings of the study show that the rise in the FDI intensity is measured by inflows, outflows and that total FDI increases the income inequality. The effect of FDI on income inequality is greater in the case of outward FDI than in the case of inward FDI. This implies that outward FDI is associated with job losses in an existing industry in a home country, thus leading to more inequality than inward FDI. Rich countries and fast-growing countries have more equal income distribution. Latin

American and the Caribbean countries have unequal income distribution. However, the coefficients of the ASIA dummy are negative but insignificant.

Basu and Guariglia (2007) empirically and theoretically examine the interactions between FDI, inequality, and economic growth in 119 developing countries, over the period 1970–1999. The study finds that FDI and inequality are positively correlated and that FDI fosters growth. Accordingly, FDI promotes both inequality and growth. The study concludes that FDI could increase inequality, particularly in an environment where the poor are unable to access the modern FDI-based technology because of low initial human capital. Particularly, human capital inequality increases as FDI drives the modern sector's growth. This suggests a positive co movement between FDI and inequality.

In consideration of transitional countries, Bhandari (2007) examines the effect of FDI on income inequality for 19 countries in Eastern Europe and Central Asia for the period of 1990 to 2002. The income inequality contains wage inequality and capital income inequality. The findings reveal that FDI does not affect overall income inequality. However, breaking the effect into its components, the results also show that FDI increases wage income inequality, while reducing capital income inequality. In another study, Franco and Gerussi (2013) analyze whether trade and FDI impact on income distribution in 17 transition countries over the period 1990–2006. The findings of the study show that FDI does not have significant effects on income inequality. This result is similar to the findings of the previous study. However, the inclusion of trade, particularly with developed countries, seems to be significantly more relevant to income inequality. Nevertheless, different results are found when considering the educational system. In this case, the educational system reduces inequality when interacted with FDI and trade; thus the educational system represents an important channel through which FDI and trade affect inequality.

Employing an unbalanced panel of 103 developing and developed countries, Figini and Gorg (2011) investigate the relationship between FDI and wage inequality for the period 1980–2002. The findings reveal that the impact of FDI differs based on the level of development in the developed or developing countries. FDI has a positive effect on inequality and this relationship is nonlinear FDI for developing countries, which means that the effect diminishes with further increases in FDI. For developed countries, wage inequality decreases with FDI.

Observing eight European countries, Herzer and Nunnenkamp (2013) examine the relationship between FDI and income inequality for the period 1980 to 2000. The findings of the study reveal that both inward FDI and outward FDI have, on average, a negative long-run effect on income inequality. Causality results show that long-run causality runs in both directions, implying that an increase in FDI reduces income inequality and that, in turn, higher inequality leads to lower FDI inflows. Additionally, there are large differences in the long-run effect of FDI on income inequality, with two countries (Ireland and Spain) exhibiting a positive relationship between FDI and income inequality.

Wu and Hsu (2012) assess the impact of FDI on income inequality, using a cross-sectional dataset for 54 countries (33 developing countries and 21 developed countries) over the period 1980–2005. The findings show that FDI reduces the income inequality for countries with well-developed absorptive capacity, more than for those countries whose absorptive capacity are less developed. That is, FDI could be harmful to the income distribution of those host countries with low levels of absorptive capacity.

In view of low, middle and high income countries, Deng and Lin (2013) examine whether the relationship between FDI and income inequality varies with the level of human capital in 102 countries over the period 1970–2007. The findings of the study reveal that the effect of FDI inflows on inequality depends on the level of human capital in a country: FDI inflows increase inequality in low-income countries where human capital is scarce, but inequality raises in middle and high income countries where human capital is abundant. FDI outflows have no significant impact on inequality in low or high income countries. Nevertheless, FDI outflows are inequality-raising only in middle-income countries with low levels of human capital.

Im and McLaren (2015) investigate the effects of FDI on income distribution and poverty in 127 developing countries for the period 1977–2012. The study finds that FDI does not have an effect on income inequality and has a slightly positive effect on poverty, without using instruments variables. When addressing the endogeneity problem with the instruments, FDI decreases both inequality and the poverty. Moreover, the negative relationships of FDI and income inequality with poverty are found only among lower income developing countries.

Table 7.2 presents a summary of cross-country studies on FDI and income inequality. As can be seen, results reveal that FDI leads to more income inequality for host countries. Explicitly, FDI increases income inequality (Tsai, 1995; Te Velde and Morrissey, 2002; Choi, 2006; Basu and Guariglia, 2007; Figini and Gorg, 2011; Deng and Lin, 2013; Ucal and Bilgin, 2013 and Herzer et al., 2014). A number of studies report a negative effect of FDI on income inequality, indicating that FDI reduces income inequality (Jensen and Rosas, 2007; Figini and Gorg, 2011; Wu and Hsu, 2012; Herzer and Nunnenkamp, 2013 and Im and McLaren, 2015). However, few studies show that FDI does not affect income inequality (Sylwester, 2005; Bhandari, 2007; Franco and Gerussi, 2013).

7.5 Income Distribution in Sri Lanka: An Overview

Sri Lanka is a lower middle-income country with a per capita income of US$3795 and a total population of 20.9 million people in 2015 (World Bank 2016). It comprises different ethnicities: 74.9% Sinhalese, 24.7% Tamils, and others 0.4%. The Sri Lankan economy can be divided into three distinct sectors, namely, urban (18.2%), rural (77.4%) and estate (4.4%) (Central Bank of Sri Lanka, 2015). The majority of the people live in rural areas and depend on agriculture for their livelihood. Sri Lanka's economy transformed from a rural-based agriculture economy towards a more urbanized economy driven by services. In 2015, the agriculture sector accounted for 8.7% of Gross Domestic Product (GDP), and industry and service, 30.7% and 60.6% respectively (Central Intelligence Agency, 2016). Considering the distribution of income in Sri Lanka, according to the Household Income and Expenditure Survey (HIES) 2012/2013, about 52.6% of the total income has been distributed among the richest 20% of the population (9th and 10th decile groups) while the poorest 20% (1st and 2nd decile groups) receive only 5.1%. However, 42.3% of the total income has been shared by the middle class people, who are in the 3rd to 8th decile groups, which is 60% of the total population. Sri Lanka's Gini Coefficient (of income receivers' income) has ranged between 0.43 and 0.55 during the period 1980 to 2013 and has sustained above 0.50 since 1990. Consequently, there is an unequal income distribution in Sri Lanka.

For the consumption patterns of Sri Lanka, the Gini coefficient of mean household expenditure and mean per capita expenditure, based on the 2012/2013 survey period, are reported in Figure 7.1. As can be seen, Sri Lanka's Gini coefficient of mean household expenditure and per capita expenditure were 0.40 and 0.39, respectively.

Table 7.2: A Summary of Findings from Cross-Country Studies on FDI and Income Inequality

Author(s), Year	Period	Country	Technique	Variables	Findings
Basu and Guariglia (2007)	1970–1999	119 developing countries	OLS	Gini coefficient, FDI net inflows, economic growth, share of agriculture to GDP and human capital	FDI and inequality are positively correlated.
Bhandari (2007)	1990–2002	19 Transitional countries in Eastern Europe and Central Asia	OLS	Gini coefficient, Inward FDI stock to GDP ratio, GDP per capita, Square of GDP per capita, unemployment rate, domestic investment to GDP ratio and rate of inflation	FDI does not affect overall income inequality.
Choi (2006)	1993–2002	119 countries	A pooled OLS	Gini coefficient, Inward FDI stock to GDP ratio, Outward FDI stock to GDP ratio, Total FDI stock to GDP ratio, GDP, GDP Per capita, GDP Per capita growth, dummy (ASIA, Latin America)	The positive effect of FDI on income inequality is greater in the case of outward FDI than in the case of inward FDI.
Deng and Lin (2013)	1970–2007	102 countries	Generalized likelihood ratio test	both FDI flows to GDP ratio, both FDI stocks to GDP ratio, human capital, trade and private credit	FDI inflows increase inequality in low-income countries where human capital is scarce.
Franco and Gerussi (2013)	1990–2006	17 transition countries	GMM	Gini coefficient, FDI stock, GDP per capita, trade and inflation rate	FDI does not have significant effect on income inequality.
Figini and Gorg (2011)	1980–2002	103 developing and developed countries	Panel regression and GMM	Gini coefficient, FDI stock to GDP ratio, GDP per capita, Openness to trade and education	Wage inequality decreases with FDI in developed countries, for developing countries, wage inequality increases with FDI.
Herzer and Nunnenkamp (2013)	1980–2000	8 European countries	Panel Cointegration and Dynamic Ordinary Least Squares (DOLS)	Gini coefficient, both FDI stock to GDP ratio, GDP per capita, trade to GDP ratio and human capital	Both inward FDI and outward FDI have, on average, a negative long-run effect on income inequality; bidirectional causality between FDI and income inequality.
Herzer et al. (2014)	1980–2000	5 Latin American countries (Bolivia,	Panel Cointegration	Gini coefficient, FDI stock to GDP ratio, GDP per capita, GDP per	FDI has a significant and positive effect on income inequality.

		Chile, Colombia, Mexico and Uruguay)	and DOLS	capita growth and human capital	
Jensen and Rosas (2007)	1990–2000	32 Mexican states	OLS, Two-stage least squares (TSLS)	Gini coefficient, FDI inflows GDP per capita, distance to border and education	Increased FDI inflows are associated with a decrease in income inequality.
Im and McLaren (2015)	1977–2012	127 developing countries	OLS and TSLS	Gini coefficient, FDI stock to GDP ratio, trade to GDP ratio, GDP per capita, GDP growth, gross capital formation and total population	FDI decreases inequality.
Sylwester (2005)	1970–1989	Less developed countries	OLS	Gini coefficient, FDI inflows to GDP ratio and GDP per capita growth	FDI does not lead to more income inequality.
Te Velde and Morrissey (2002)	1985–1998	East Asia -Korea, Singapore and Hong Kong, Philippines and Thailand	OLS	Wages, FDI stock to GDP ratio and employment	FDI does not reduce wage inequality.
Tsai (1995)	During 1970s	33 developing countries	OLS	Gini coefficient, real GDP per capita, FDI stock to GDP ratio, share of government services in real GDP, agricultural labour force to total labour force ratio, trade to GDP ratio, economic growth and human capital	FDI increases income inequality.
Wu and Hsu (2012)	1980–2005	54 countries (33 developing countries and 21 developed countries)	OLS and threshold regression	Gini coefficient, initial Gini, initial GDP, FDI inflows to GDP ratio, schooling, inflation and trade	FDI reduces the income inequality for countries with well-developed absorptive capacity than less absorptive capacity.

The lowest value for the Gini coefficient of household expenditure is obtained by the estate sector (0.30), when sectors are considered. This inequality within the sectors can be observed in the per capita expenditure as well, indicating a similar consumption pattern among the households and people of the estate sector, compared to the other two sectors. Among the provinces, the highest (0.39) Gini coefficient of mean per capita expenditure is received by the Western province, while the lowest (0.31) is received by the Eastern province. This proves the existence of inequalities between the intra-sectorials and intra-provincials.

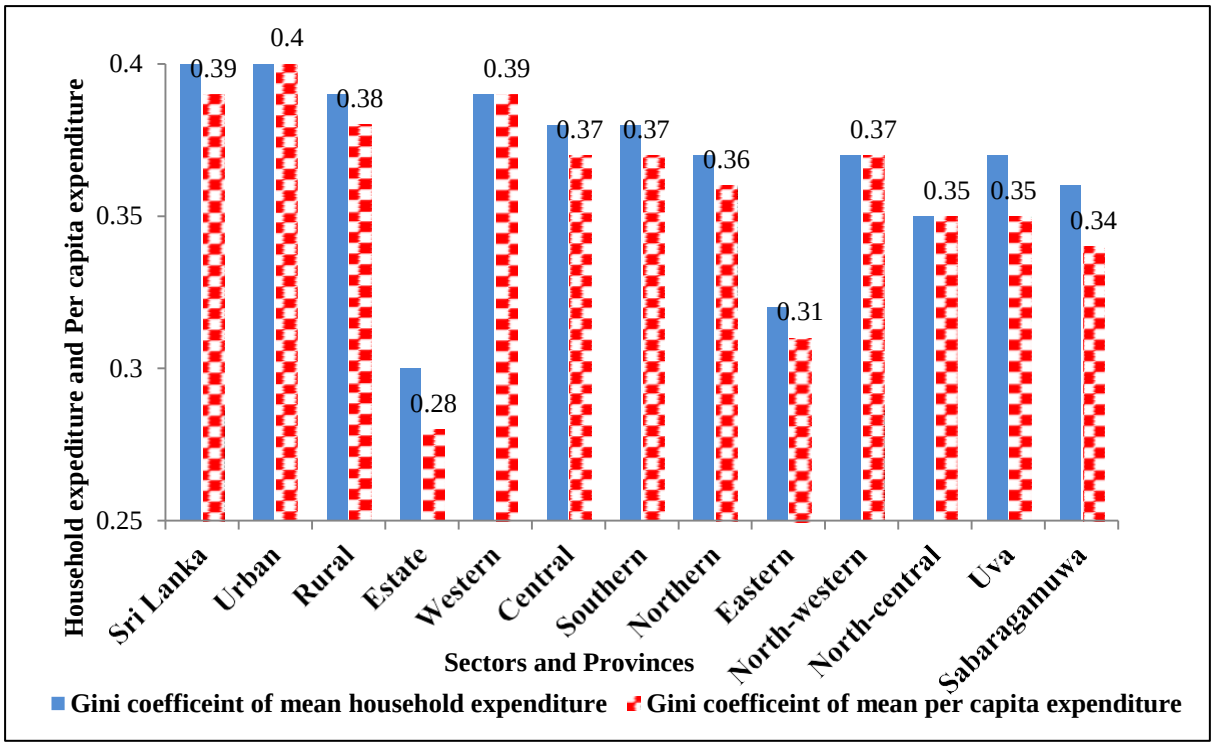

Figure 7.1: Gini Coefficients for Mean Household Expenditure and Mean per Capita Expenditure by Sector and Province–2012/2013

Note: Data label shown is for Gini coefficients for mean per capita expenditure only.
Source: HIES – 2012/2013, Department of Census and Statistics.

When income deciles[10] are considered, the average monthly mean household expenditure and mean household income by household income decile are shown in Figure 7.2. As can be seen, the average monthly expenditure of a household in the income group of tenth decile (Rs.

[10] Note: decile groups'(1-10) income (Rs) ranges are less than 10836, 10836 - 16531, 16532 - 21286, 21287 - 25903, 25904 - 30814, 30815 - 36758, 36759 - 45000, 45001 - 57495, 57496 - 83815 and greater than 83815.

103,658) is almost six times greater than that of the first decile group received (Rs. 16,287). When considering the mean household income by income decile group, it can be seen that the tenth decile group has received an average household income that is 26 times greater than that of the first decile received.

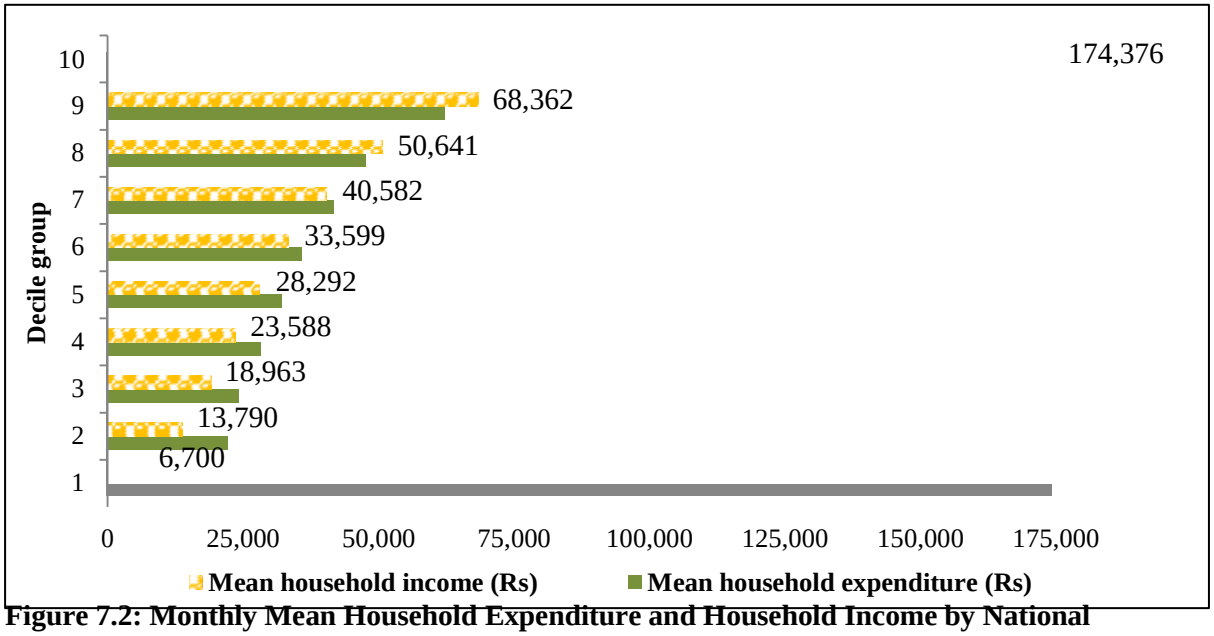

Figure 7.2: Monthly Mean Household Expenditure and Household Income by National Household Income Decile–2012/2013

Note: Data label shown is for mean household expenditure only.
Source: HIES – 2012/13, Department of Census and Statistics.
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Figure 7.2 shows that the 1st decile to 7th decile mean household expenditure is higher than the mean household income; nevertheless, from the 8th decile onwards, mean household expenditure is less than mean household income. Household income is more unequally distributed among the deciles groups in Sri Lanka, which affects the wellbeing of society and individuals, particularly people's ability to acquire the goods and services required to satisfy their needs.

7.6 Preliminary Data Analysis

This section presents the sources of data used in the study and conducts a preliminary analysis of the data. The variables used in this study are Gini coefficient, FDI, GDP per capita, human capital, trade, rate of inflation, population and civil war dummy. We use annual times series data for the period 1978–2014. The Gini index is a measure of inequality,

which is 0 when everybody has the same income (perfect equality) and 1 when one individual person has all the income. The Gini coefficient is estimated as a Gini index of inequality in equalized household disposable income (net income: post-tax and post-transfer). FDI is defined as FDI net inflows in US$. GDP per capita is used (constant 2005 US$) as a proxy for economic growth. Education expenditure (US$m) is used as a proxy for human capital. Trade is calculated as exports plus imports (US$). Rate of inflation is measured as Consumer price index (2010=100). Population is measured as total population. A dummy variable war (WAR) is used to capture the effect of the civil war on income inequality during the relevant periods. The WAR variable takes the value 1 for the war years 1983–2009 and 0 otherwise.

The Gini coefficient is obtained from the Standardized World Income Inequality Database (SWIID, 2014, version 5.1) developed by Solt (2009; 2016). The data for FDI, GDP per capita, trade, rate of inflation and population are collected from *World Development Indicators (2016).* The data on education expenditure are found from various issues of *Annual Reports* and *Economic and Social Statistics Reports of the Central Bank of Sri Lanka.* In view of the previous studies, the rate of inflation and war dummy variables are expected to have a positive relationship with income inequality while the FDI, GDP per capita, human capital, trade and population could have either a positive or a negative relationship with income inequality. The effects of FDI on income inequality in host countries are theoretically ambiguous. For example, dependency theorists assert that increasing FDI inflows are associated with greater income inequalities, implying that the expected relationship will be positive. In contrast, modernization scholars believe that an increase in FDI inflows would reduce regional income inequality, and thus the expected relationship would be negative.

The effect of rising GDP per capita on income inequality depends on whether the country is rich or poor. For example, an increase in GDP per capita on income inequality is negative for a rich country but positive for a poor country. According to Kuznets's inverted U-shaped curve, the relationship between income inequality and economic growth is positive (meaning that income inequality increases) at the early stages of development but declines later, after it has reached a certain stage of development.

The education expenditure is a measure of education levels (human capital), which reflects basic skill levels. The high levels of human capital are associated with more knowledge. The improvements in education, in general, do not benefit all people (with different education

levels) equally. As a result, the effect is to increase income inequality. In contrast, secondary education in the country is considered as human capital, therefore when expenditure on secondary education increases the sign of income inequality negative, because a higher level of secondary education is associated with a higher supply of skilled labour in the labour market. It reduces wage inequality by increasing the relative supply of skilled labour.

The effect of trade on income inequality depends on factor endowments; thus, the impact of increased trade on income inequality may differ between countries. A higher rate of inflation represents economic uncertainty and such a situation causes contractionary monetary policy. This will result in a drop in investment and hence more inequality is associated with higher inflation. Population growth may alter the distribution of income among labour earnings, profits, rent and interest. Consequently, a rapid rate of population growth leads to higher income inequality. An unstable political environment may reduce investment and the pace of economic development. Along these lines, civil war (political instability) increases inequality.

As a preliminary investigation, in Figure 7.3–7.8, we present scatter plots of GINI coefficients against each of the possible determinants: (i) FDI, (ii) GDP per capita (GDPPC), (iii) human capital (HC), (iv) trade (TRA), (v) rate of inflation (INF) and (vi) population (POP) for the sample period 1978–2014. As can be seen, as expected, we observe a positive relationship between GINI and FDI, GDP per capita, human capital, trade, rate of inflation and population.

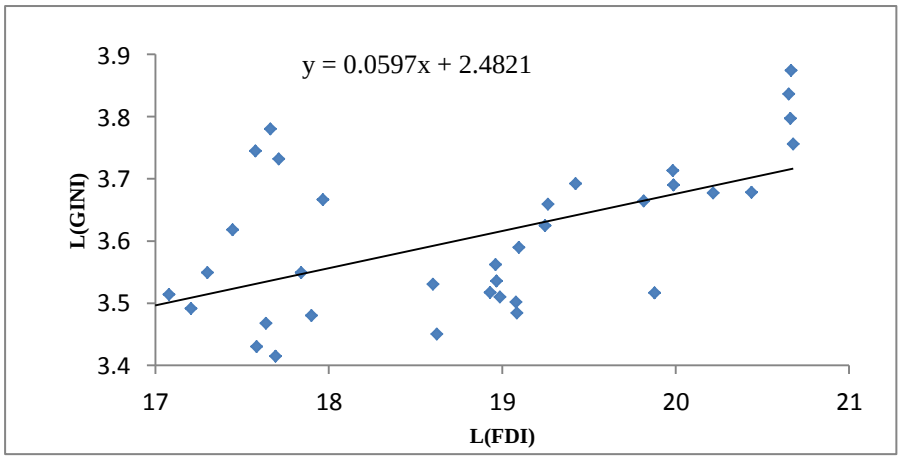


Figure 7.3: GINI vs FDI

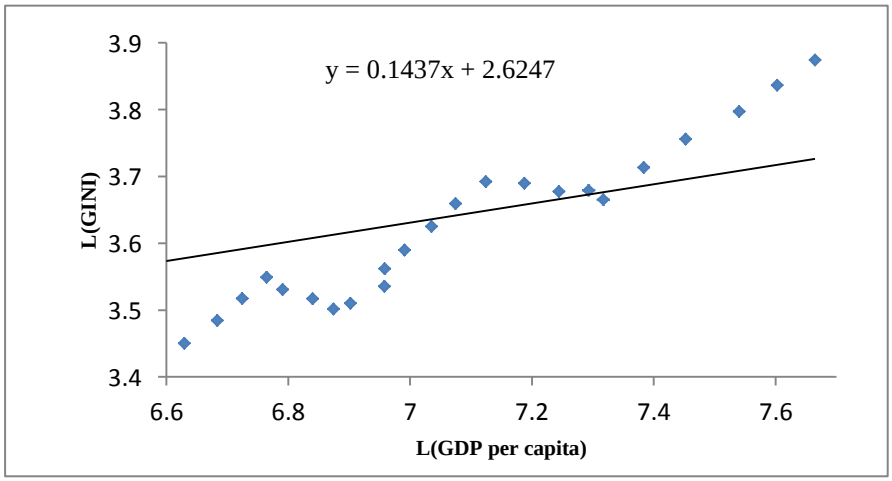


Figure 7.4: GINI vs GDP per capita

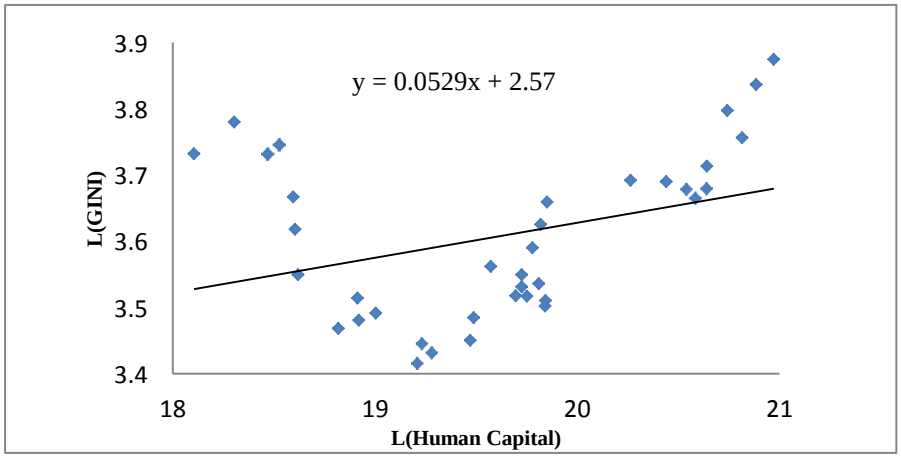


Figure 7.5: GINI vs Human Capital

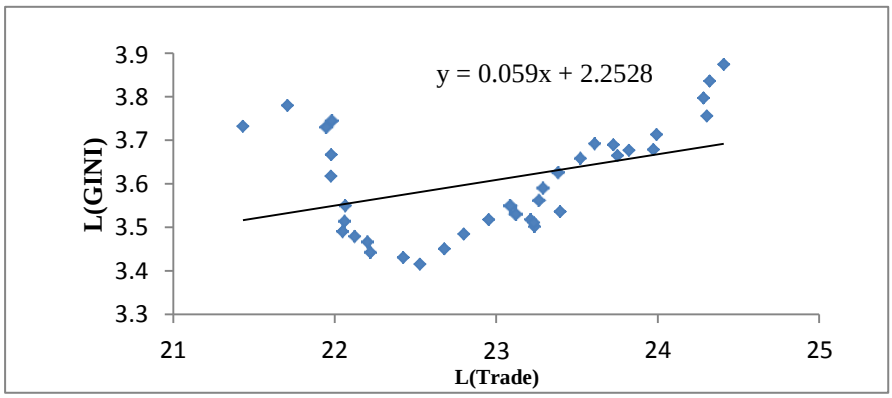


Figure 7.6: GINI vs Trade

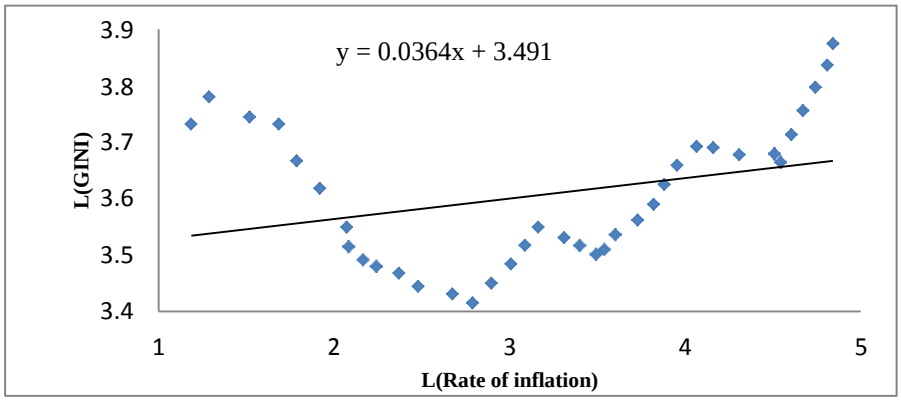


Figure 7.7: GINI vs Rate of inflation

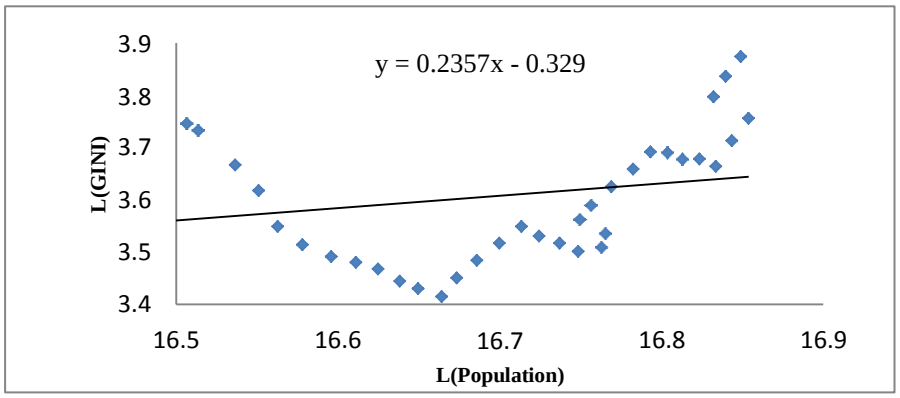


Figure 7.8: GINI vs Population

7.7 Model Specification and Estimation

We express income inequality as a function of FDI, GDP per capita (GDPPC), human capital (HC), trade (TRA), rate of inflation (INF), population (POP) and civil war, as shown in (7.1). In (7.1) we treat civil war as an exogenous variable.

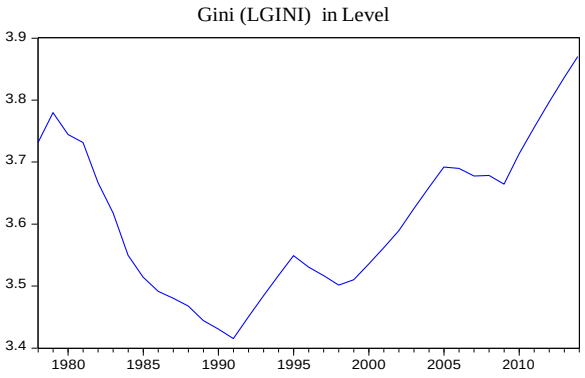
$$GINI = f(FDI, GDPPC, HC, TRA, INF, POP, WAR) \tag{7.1}$$

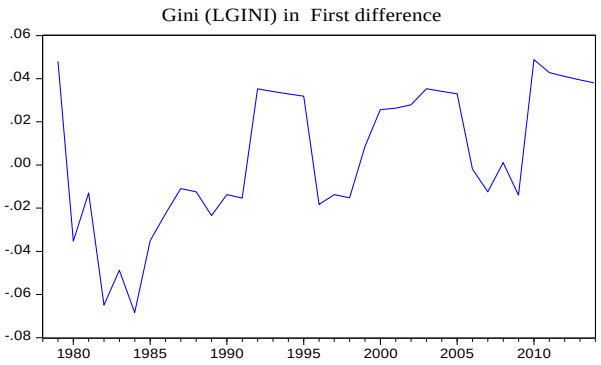
Equation (7.1) can be rewritten in a linear regression framework as follows:

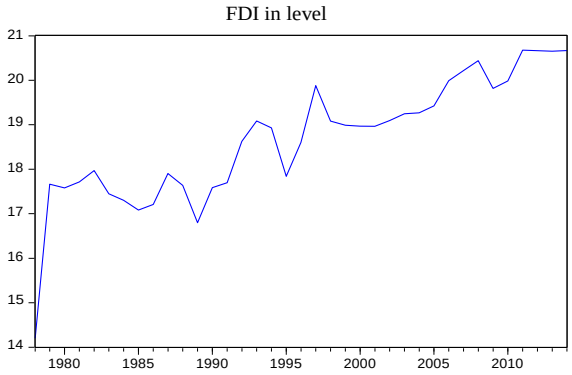
$$\begin{aligned} LGINI &= \delta_0 + \delta_1 LFDI + \delta_2 LGDPPC + \delta_3 LHC + \delta_4 LTRA + \delta_5 INF \\ &\quad + \delta_6 LPOPG + \delta_7 WAR + \varepsilon \end{aligned} \tag{7.2}$$

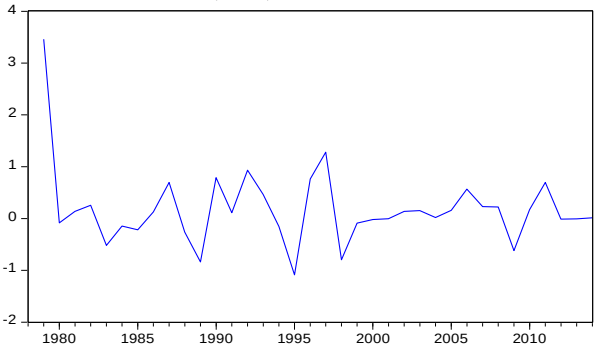
All variables are in natural logarithms except the WAR variable, and ϵ is a random error term.

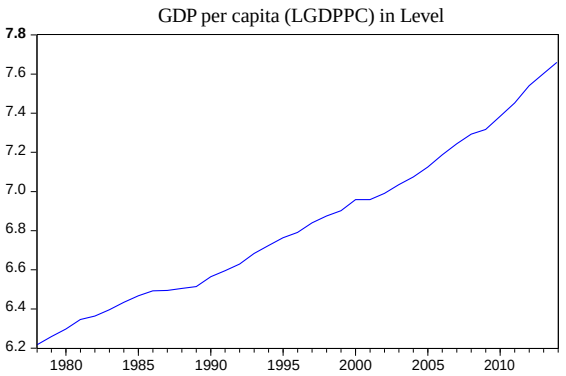
Figure 7.9 plots the seven variables in their level form and first difference form. As can be seen, the plots suggest that the seven variables in level form appear to be non-stationary and may become stationary in their first difference form.

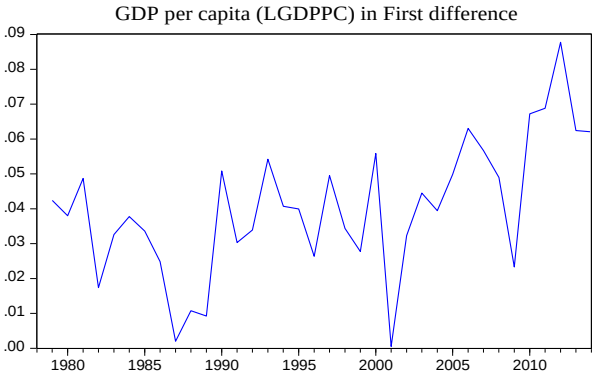


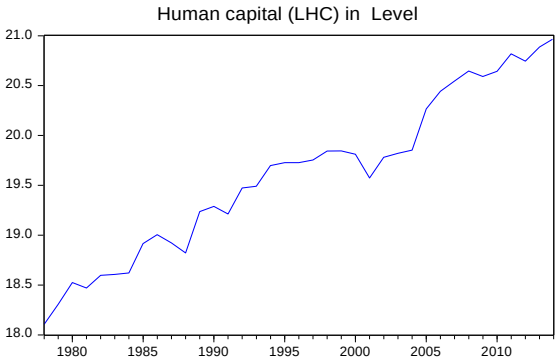


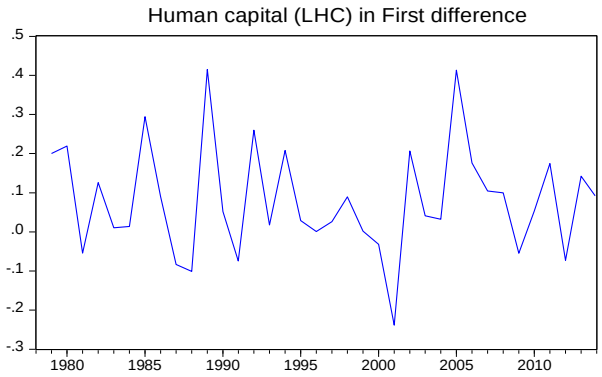












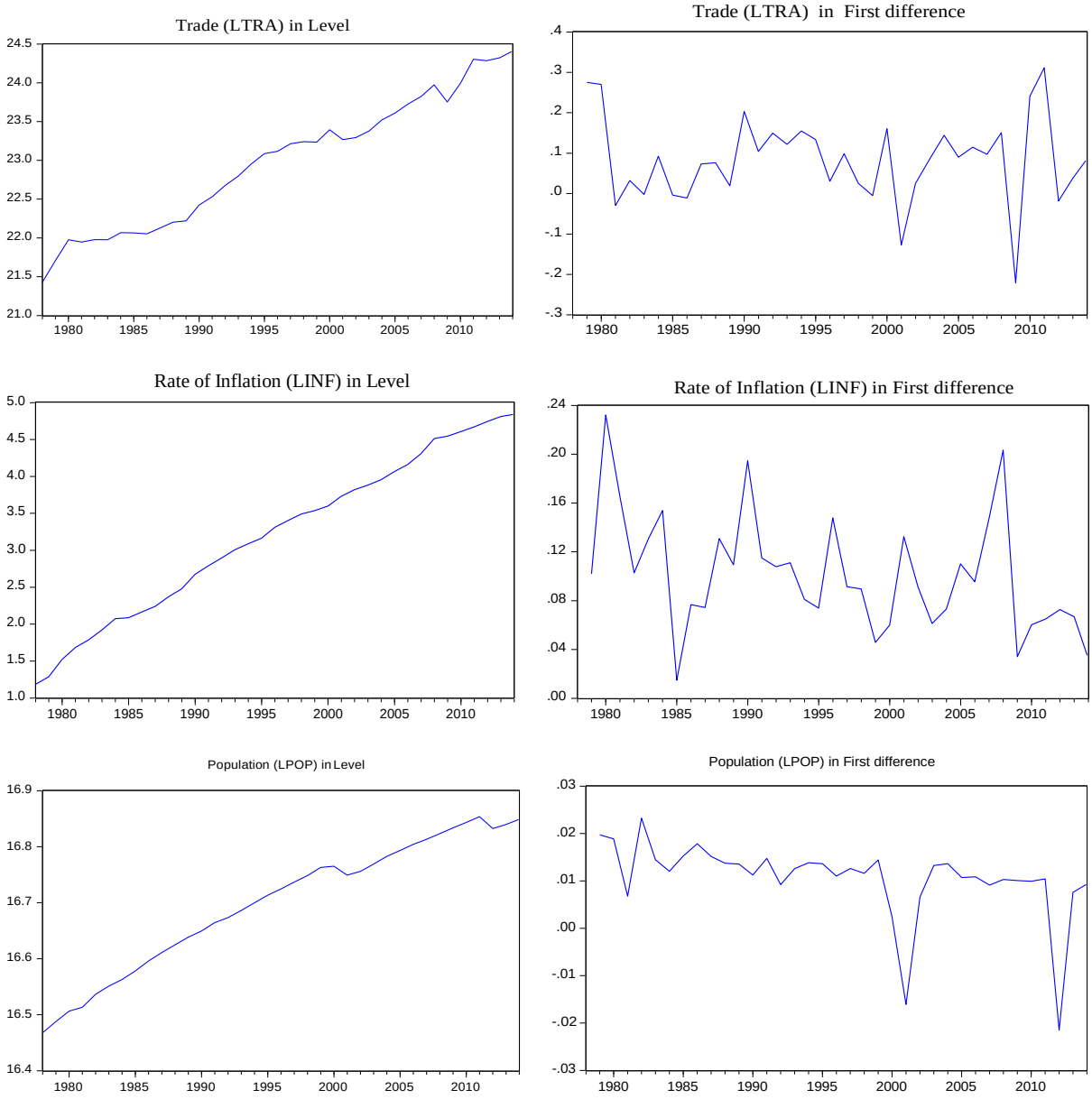


Figure 7.9: Time Series Plots of the Eight Variables in Level and First Difference form, 1978–2014

Unit Root Tests

Now formally we test stationary properties of these data series using ADF and PP unit root tests, in order to avoid spurious regression estimation results. Table 7.3 presents the results based on these two unit root tests. For the two tests, the null hypothesis is that the series has a unit root (i.e., the series is non-stationary). As can be seen, the null hypothesis of a unit root cannot be rejected for all seven variables in their level form. However, at the first difference, the null hypothesis of unit root can be rejected for all seven variables. Hence, the results confirm that all the other variables are integrated of order one, *I*(1).

Table 7.3: Unit Root Test Results

Variables	ADF		PP		Order of Integration
	Levels	First Differences	Levels	First Differences	
LGINI	-2.468	-2.666**	-0.827	-2.883**	I(1)
LFDI	-0.782	-5.782***	-0.987	-6.455***	I(1)
LGDPPC	-0.128	-8.497***	-0.407	-8.273***	I(1)
LHC	-3.072	-6.719***	-3.160	-6.719***	I(1)
LTRADE	-3.018	-6.367***	-3.229	-6.429***	I(1)
LINF	0.392	-2.901**	0.304	-2.753**	I(1)
LPOP	1.126	-4.593***	-0.902	-4.593***	I(1)

Note: ** and *** indicate statistical significance at the 5% level and 1% level, respectively.

Cointegration Test

The cointegration test is employed to determine if Equation (7.2) represents a cointegrating relation. The cointegrating relationship has been tested using the tests proposed by Johansen (1988, 1991), and Johansen and Juselius (1990). The test is full maximum likelihood estimation and is based on the error correction representation under various assumptions about the trend or intercepting parameters. The Johansen's Trace and Maximum Eigen values tests are examined to investigate the long-run relationship between income inequality, FDI, GDP per capita, human capital, trade, rate of inflation, population and civil war. Two lags have been chosen, based on AIC and SBIC. Table 7.4 presents the Johansen cointegration results.

Table 7.4: Johansen Test for Cointegration

H_0	H_1	Trace value		H_1	Maximum Eigen Value	
		Test statistic	p-value		Test statistic	p-value
r = 0	r ≥1	144.669	0.002***	r = 1	52.753	0.008***
r ≤ 1	r ≥2	91.916	0.089	r = 2	32.678	0.267

Note: *** indicates test statistics are significance at the 1% level.

As can be seen, the null hypothesis of no cointegration relationship is rejected against at least one cointegrating vector, in both the Trace and Max Eigen value tests. This suggests that at least one co-integrating vector exists in the model. However, the null hypothesis of one cointegrating vector against the alternative hypothesis of at least 2 cointegrating vectors

cannot be rejected. This implies that a cointegrating vector exists in the model. Therefore, we conclude that there is a long-run relationship among the variables in Sri Lanka.

Dynamic Ordinary Least Squares

Having tested for the stationarity of each time series and found that all of them are I(1), in this chapter we estimate equation (7.2) using an alternative estimation method, Stock and Watson's (1993), dynamic ordinary least squares (DOLS), to find out the long-run impact of each variable on income inequality. DOLS estimation has been chosen, as it is one of the estimation methods available that is more suitable for small-sample observations (Masih and Masih, 1996). The long-run estimated coefficients with Sri Lankan data are given in Table 7.5. As can be seen, in the long run, the coefficient of FDI on the Gini coefficient is negative but insignificant. This supports a positive view that encouraging FDI inflows does not cause income inequality. This result is consistent with previous studies of Bhandari (2007), Franco and Gerussi (2013) and Sylwester (2005). Economic growth contributes positively to income inequality and is statistically significant at the 1% level, confirming that economic growth plays a significant role in increasing income inequality. This may be due to the rising per capita income for all units in the country, which consequently increases the income inequality, indicating that the per capita income of the upper-income groups is rising at a more rapid rate than the per capita income of the lower-income groups. The result supports the findings of Partridge (1997) and Szekely and Hilgert (1999).

Human capital negatively impacts on income inequality and is statistically significant at the 1% level, implying that an investment in human capital tends to reduce income inequality due to education attainment; thus inequality is decreased when education is improved. This result is in line with the results reported in Adelman and Morris (1973), Basu and Guariglia (2007) and Deng and Lin (2013). The trade coefficient is significant at the 1% level and has a positive impact on inequality, which confirms that international trade leads to widening the income inequality. This concept is well supported by the dependency theory.

The result in relation to trade is consistent with the previous studies by Zhang et al. (2004) and Aradhyula et al. (2007). Size of the population negatively impacts on income inequality and is statistically significant at the 1% level. The finding is in line with the result reported by Im and McLaren (2015) and by Ucal et al. (2016). However, both rate of inflation and civil

war are insignificant suggesting that both rate of inflation and civil war have no significant impact on the income inequality in Sri Lanka.

Table 7.5: Estimated Long run Coefficients of the DOLS Model

Regressor	Coefficient	Standard Error	t-Ratio	*p*-value
LFDI	-0.014	0.014	-0.960	0.381
LGDPPC	0.480	0.113	4.237	0.008***
LHC	-0.140	0.031	-4.537	0.006***
LTRA	0.756	0.068	11.045	0.000***
LINF	0.061	0.067	0.922	0.399
LPOP	-5.713	0.520	-10.998	0.000***
WAR	-0.013	0.024	-0.535	0.615
C	80.810	7.621	10.604	0.000***

Note: *** indicate statistical significance at the 1% level.

Vector Error Correction Model and Granger Causality

With the finding of cointegration, VECM is employed to detect the direction of the Granger causality. The VECM is used to follow the existence of cointegration among the variables by the following matrix formation.

The error correction Equations (7.3)–(7.9) allow us to test for both short-run and long-run causality.

$$\begin{aligned}\Delta LGINI_{it} = {} & \alpha_{1j} + \sum_{k=1}^{p} \alpha_{11k} \Delta LGINI_{t-k} \sum_{k=0}^{q} \alpha_{12k} \Delta LFDI_{t-k} + \sum_{k=0}^{r} \alpha_{13k} \Delta LGDPPC_{t-k} \\ & + \sum_{k=0}^{s} \alpha_{14k} \Delta LHC_{t-k} + \sum_{k=0}^{t} \alpha_{15k} \Delta LTRA_{t-k} + \sum_{k=0}^{v} \alpha_{16k} \Delta LINF_{t-k} \\ & + \sum_{k=0}^{w} \alpha_{17k} \Delta LPOP_{t-k} + \gamma_1 WAR_t + \lambda_1 ECT_{t-1} + u_{1t}\end{aligned} \tag{7.3}$$

$$\begin{aligned}\Delta LFDI_{it} = {} & \alpha_{2j} + \sum_{k=1}^{p} \alpha_{21k} \Delta LGINI_{t-k} \sum_{k=0}^{q} \alpha_{22k} \Delta LFDI_{t-k} + \sum_{k=0}^{r} \alpha_{23k} \Delta LGDPPC_{t-k} \\ & + \sum_{k=0}^{s} \alpha_{24k} \Delta LHC_{t-k} + \sum_{k=0}^{t} \alpha_{25k} \Delta LTRA_{t-k} + \sum_{k=0}^{v} \alpha_{26k} \Delta LINF_{i-k} \\ & + \sum_{k=0}^{w} \alpha_{27k} \Delta LPOP_{t-k} + \gamma_2 WAR_t + \lambda_2 ECT_{t-1} + u_{2t}\end{aligned} \tag{7.4}$$

$$\Delta LGDPPC_{it} = \alpha_{3j} + \sum_{k=1}^{P} \alpha_{31k} \Delta LGINI_{t-k} \sum_{k=0}^{q} \alpha_{32k} \Delta LFDI_{t-k} + \sum_{k=0}^{r} \alpha_{33k} \Delta LGDPPC_{t-k} + \sum_{k=0}^{s} \alpha_{34k} \Delta LHC_{t-k} + \sum_{k=0}^{t} \alpha_{35k} \Delta LTRA_{t-k} + \sum_{k=0}^{v} \alpha_{36k} \Delta LINF_{t-k} + \sum_{k=0}^{w} \alpha_{37k} \Delta LPOP_{t-k} + \gamma_3 WAR_t + \lambda_3 ECT_{t-1} + u_{3t} \quad (7.5)$$

$$\Delta LHC_{it} = \alpha_{4j} + \sum_{k=1}^{p} \alpha_{41k} \Delta LGINI_{t-k} \sum_{k=0}^{q} \alpha_{42k} \Delta LFDI_{t-k} + \sum_{k=0}^{r} \alpha_{43k} \Delta LGDPPC_{t-k} + \sum_{k=0}^{s} \alpha_{44k} \Delta LHC_{t-k} + \sum_{k=0}^{t} \alpha_{45k} \Delta LTRA_{t-k} + \sum_{k=0}^{v} \alpha_{46k} \Delta LINF_{t-k} + \sum_{k=0}^{w} \alpha_{47k} \Delta LPOP_{t-k} + \gamma_4 WAR_t + \lambda_4 ECT_{t-1} + u_{4t} \quad (7.6)$$

$$\Delta LTRA_{it} = \alpha_{5j} + \sum_{k=1}^{p} \alpha_{51k} \Delta LGINI_{t-k} \sum_{k=0}^{q} \alpha_{52k} \Delta LFDI_{t-k} + \sum_{k=0}^{r} \alpha_{53k} \Delta LGDPPC_{t-k} + \sum_{k=0}^{s} \alpha_{54k} \Delta LHC_{t-k} + \sum_{k=0}^{t} \alpha_{55k} \Delta LTRA_{t-k} + \sum_{k=0}^{v} \alpha_{56k} \Delta LINF_{t-k} + \sum_{k=0}^{w} \alpha_{57k} \Delta LPOP_{t-k} + \gamma_5 WAR_t + \lambda_5 ECT_{t-1} + u_{5t} \quad (7.7)$$

$$\Delta LINF_{it} = \alpha_{6j} + \sum_{k=1}^{p} \alpha_{61k} \Delta LGINI_{t-k} \sum_{k=0}^{q} \alpha_{62k} \Delta LFDI_{t-k} + \sum_{k=0}^{r} \alpha_{63k} \Delta LGDPPC_{t-k} + \sum_{k=0}^{s} \alpha_{64k} \Delta LHC_{t-k} + \sum_{k=0}^{t} \alpha_{65k} \Delta LTRA_{t-k} + \sum_{k=0}^{v} \alpha_{66k} \Delta LINF_{t-k} + \sum_{k=0}^{w} \alpha_{67k} \Delta LPOP_{t-k} + \gamma_6 WAR_t + \lambda_6 ECT_{t-1} + u_{6t} \quad (7.8)$$

$$\Delta LPOP_{it} = \alpha_{7j} + \sum_{k=1}^{p} \alpha_{71k} \Delta LGINI_{t-k} \sum_{k=0}^{q} \alpha_{72k} \Delta LFDI_{t-k} + \sum_{k=0}^{r} \alpha_{73k} \Delta LGDPPC_{t-k} + \sum_{k=0}^{s} \alpha_{74k} \Delta LHC_{t-k} + \sum_{k=0}^{t} \alpha_{75k} \Delta LTRA_{t-k} + \sum_{k=0}^{v} \alpha_{76k} \Delta LINF_{t-k} + \sum_{k=0}^{w} \alpha_{77k} \Delta LPOP_{t-k} + \gamma_7 WAR_t + \lambda_7 ECT_{t-1} + u_{7t} \quad (7.9)$$

where Δ denotes the first differences operator and *p,q,r,s,t,v* and *w* are the optimal lag length determined by the AIK and SBIC. ECT is the error correction term and u_{1t}, $u_{2t,}$ $u_{3t,}$ $u_{4t,}$ $u_{5t,}$ u_{6t} and u_{7t} are serially uncorrelated random error terms with mean zero. The error correction

models, given by Equations (7.3)–(7.9), depicting the relationships among the variables, are estimated and presented in Table 7.6.

Table 7.6: VECM Estimation Results

Dependent Variables	Δ(LGINI) Equation (7.3)	Δ(LFDI) Equation (7.4)	Δ(LGDPPC) Equation (7.5)	Δ(LHC) Equation (7.6)	Δ(TRA) Equation (7.7)	Δ(LINF) Equation (7.8)	Δ(LPOP) Equation (7.9)
Δ(LGINI(-1))	-0.410	-1.904	-0.033	-0.055	0.861	-0.405	0.102
	(1.863)	(-0.324)	(-0.147)	(-0.032)	(0.986)	(-0.760)	(1.185)
Δ(LGINI(-2))	0.236	3.219	0.328	0.608	1.363	0.543	-0.057
	(1.134)	(0.579)	(1.787)	(0.374)	(1.647)	(1.075)	(-0.701)
Δ(LFDI(-1))	0.009	0.027	0.005	0.010	0.042	-0.003	0.001
	(1.117)	(0.129)	(0.787)	(0.160)	(1.312)	(-0.175)	(0.226)
Δ(LFDI(-2))	-0.011	-0.261	-0.005	0.018	0.006	0.007	0.002
	(-1.868)	(-1.623)	(-0.949)	(0.400)	(0.279)	(0.513)	(0.896)
Δ(LGDPPC(-1))	0.864	20.843	0.306	10.460	6.008	-0.332	0.151
	(1.510)	(1.367)	(0.609)	(2.347)	(2.649)	(-0.240)	(0.676)
Δ(LGDPPC(-2))	1.082	12.934	0.237	3.754	3.875	0.112	0.070
	(2.603)	(1.167)	(0.648)	(1.158)	(2.350)	(0.111)	(0.435)
Δ(LHC(-1))	-0.046	0.128	0.044	-0.574	-0.076	0.073	0.004
	(0.034)	(0.909)	(0.030)	(0.266)	(0.135)	(0.083)	(0.013)
Δ(LHC(-2))	-0.071	-0.966	-0.033	-0.895	-0.272	0.055	0.002
	(0.045)	(1.208)	(0.040)	(0.353)	(0.180)	(0.110)	(0.018)
Δ(LTRA(-1))	-0.137	2.652	-0.005	1.081	0.372	-0.030	0.091
	(-1.192)	(0.866)	(-0.054)	(1.207)	(0.817)	(-0.109)	(2.027)
Δ(LTRA(-2))	0.009	-4.059	0.035	-0.600	-0.088	0.095	0.021
	(0.075)	(-1.273)	(0.330)	(-0.643)	(-0.186)	(0.327)	(0.442)
Δ(LINF(-1))	-1.161	-3.173	-0.026	3.454	0.680	-2.072	0.280
	(-1.321)	(-0.136)	(-0.033)	(0.505)	(0.124)	(-0.975)	(0.816)
Δ(LINF(-2))	-0.771	-13.401	0.511	-3.928	1.508	1.708	-0.018
	(-0.933)	(-0.609)	(0.702)	(-0.610)	(0.460)	(0.854)	(-0.056)
Δ(LPOP(-1))	0.034	-0.705	-0.032	-0.505	-0.553	0.107	-0.059
	(0.468)	(-0.370)	(-0.502)	(-0.905)	(-1.946)	(0.619)	(-2.116)
Δ(LPOP(-2))	-0.058	1.402	-0.023	0.409	-0.443	-0.075	-0.022
	(-0.799)	(0.727)	(-0.360)	(0.724)	(-1.543)	(-0.429)	(-0.730)
C	-0.021	-0.441	0.030	-0.426	-0.167	0.088	-0.009
	(-0.595)	(-0.473)	(0.970)	(-1.559)	(-1.204)	(1.013)	(-0.636)
WAR	-0.014	-0.531	-0.020	0.010	-0.131	0.002	0.001
	(-1.205)	(-1.758)	(-2.001)	(0.108)	(-2.917)	(0.088)	(0.284)
ECT(-1)	-0.010**	-0.194**	-0.001	-0.056**	-0.051***	-0.004	-0.001
	(-2.78)	(-2.113)	(-0.354)	(-2.076)	(-3.734)	(-0.476)	(-0.674)
R^2	0.612	0.096	0.214	0.237	0.362	0.197	0.082
F-statistic	4.248	0.818	1.564	0.604	2.173	.0.660	1.185
AIC	-4.675	1.890	-4.930	-0.569	-1.920	-2.907	-6.550
SBIC	-3.912	2.653	-4.167	0.194	-1.157	-2.143	-5.787

Note: **and *** indicate statistical significance at the 5% and 1% levels respectively.
The values in brackets are t-statistics.

Based on the coefficients of the error correction terms (ECT) reported for each equation, we conclude that, there exists a long-run relationship among all the variables, and in the equations of Gini (7.3), FDI (7.4), human capital (7.6) and trade (7.7), the relationship is

statistically significant. This implies that there is a mechanism to converge such short-run dynamics into long-run equilibrium. There must be Granger causality in at least one direction if there exists a long-run cointegration relationship among the variables in the model; hence, the short-run causality is tested and the results are reported in Table 7.7, using VECM.

Table 7.7: Granger Causality Test Results based on VECM

Dependent Variables	Null Hypothesis	Chi-sq	*P*-value	Decision	Causal Link
ΔLGINI	ΔLFDI does not Granger Cause ΔLGINI	4.058	0.132	No	--
	ΔLGDPPC does not Granger Cause ΔLGINI	6.945	0.031**	Yes	EG→II
	ΔLHC does not Granger Cause ΔLGINI	2.927	0.232	No	--
	ΔLTRA does not Granger Cause ΔLGINI	0.887	0.642	No	--
	ΔLINF does not Granger Cause ΔLGINI	1.468	0.480	No	--
	ΔLPOP does not Granger Cause ΔLGINI	2.859	0.239	No	--
ΔLFDI	ΔLGINI does not Granger Cause ΔLFDI	0.342	0.843	No	--
	ΔLGDPPC does not Granger Cause ΔLFDI	2.269	0.322	No	--
	ΔLHC does not Granger Cause ΔLFDI	0.997	0.608	No	--
	ΔLTRA does not Granger Cause ΔLFDI	0.686	0.710	No	--
	ΔLINF does not Granger Cause ΔLFDI	1.955	0.376	No	--
	ΔLPOP does not Granger Cause ΔLFDI	0.407	0.816	No	--
ΔLGDPPC	ΔLGINI does not Granger Cause ΔLGDPPC	3.660	0.160	No	--
	ΔLFDI does not Granger Cause ΔLGDPPC	1.904	0.386	No	--
	ΔLHC does not Granger Cause ΔLGDPPC	5.290	0.071*	Yes	HC→EG
	ΔLTRA does not Granger Cause ΔLGDPPC	0.369	0.832	No	--
	ΔLINF does not Granger Cause ΔLGDPPC	0.110	0.947	No	--
	ΔLPOP does not Granger Cause ΔLGDPPC	0.495	0.781	No	--
ΔLHC	ΔLGINI does not Granger Cause ΔLHC	0.162	0.922	No	--
	ΔLFDI does not Granger Cause ΔLHC	0.167	0.920	No	--
	ΔLGDPPC does not Granger Cause ΔLHC	5.529	0.063*	Yes	EG→HC
	ΔLTRA does not Granger Cause ΔLHC	1.395	0.498	No	--
	ΔLINF does not Granger Cause ΔLHC	1.592	0.451	No	--
	ΔLPOP does not Granger Cause ΔLHC	0.577	0.750	No	--
ΔLTRA	ΔLGINI does not Granger Cause ΔLTRA	6.347	0.042**	Yes	II→TRA
	ΔLFDI does not Granger Cause ΔLTRA	1.722	0.423	No	--
	ΔLGDPPC does not Granger Cause ΔLTRA	8.767	0.013**	Yes	EG→TRA
	ΔLHC does not Granger Cause ΔLTRA	2.329	0.312	No	--
	ΔLINF does not Granger Cause ΔLTRA	0.667	0.716	No	--
	ΔLPOP does not Granger Cause ΔLTRA	0.268	0.875	No	--
ΔLINF	ΔLGINI does not Granger Cause ΔLTRA	1.259	0.532	No	--
	ΔLFDI does not Granger Cause ΔLTRA	0.346	0.841	No	--
	ΔLGDPPC does not Granger Cause ΔLTRA	0.116	0.944	No	--
	ΔLHC does not Granger Cause ΔLTRA	0.793	0.673	No	--
	ΔLTRA does not Granger Cause ΔLTRA	0.589	0.745	No	--
	ΔLPOP does not Granger Cause ΔLTRA	1.544	0.462	No	--
ΔLPOP	ΔLGINI does not Granger Cause ΔLPOP	1.445	0.486	No	--
	ΔLFDI does not Granger Cause ΔLPOP	0.805	0.669	No	--
	ΔLGDPPC does not Granger Cause ΔLPOP	0.481	0.786	No	--
	ΔLHC does not Granger Cause ΔLPOP	0.099	0.952	No	--
	ΔLTRA does not Granger Cause ΔLPOP	4.901	0.083*	Yes	TRA→POP
	ΔLINF does not Granger Cause ΔLPOP	5.017	0.084*	Yes	INF→POP

Note: Note: *and ** indicate statistical significance at the 10% and 5% levels respectively

The results suggest a unidirectional causality from economic growth (EG) to income inequality (II) (EG → II), income inequality to trade (II →TRA), trade to population (TRA → POP) and inflation to population (INF → POP). There is also a bidirectional causal relationship between economic growth and human capital.

Diagnostic Tests

Dealing with statistical issues, the diagnostic tests of normality, serial-correlation and heteroscedasticity have been conducted on the Equations (7.3 – 7.9) of this study. Table 7.8 presents the diagnostics test results. It is noticeable that the tests results fail to show evidence for serial correlation, heteroscedasticity and non-normality, in the model.

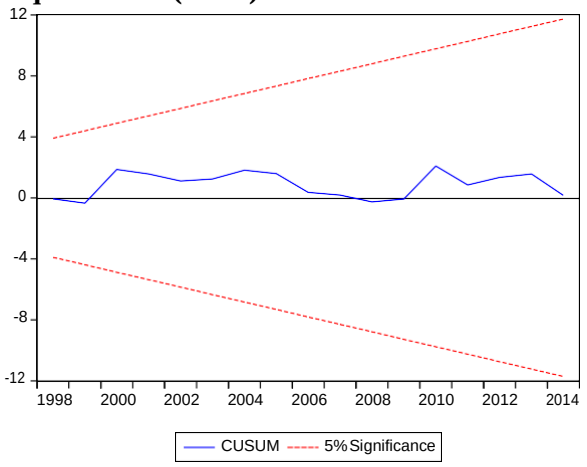
Table 7.8: Diagnostic Tests

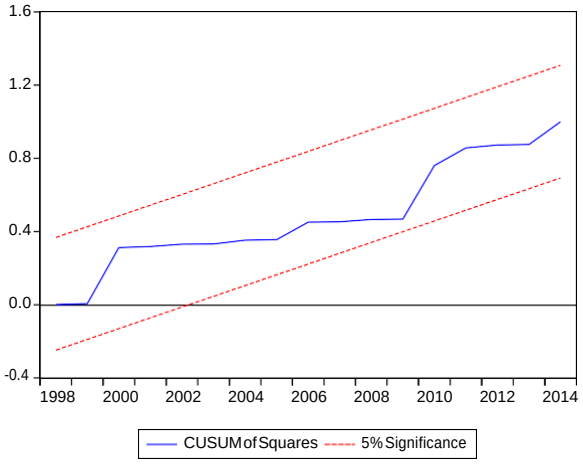
Tests	**LGINI Equation (7.3)**	**LFDI Equation (7.4)**	**LGDPPC Equation (7.5)**	**LHC Equation (7.6)**	**LTRADE Equation (7.7)**	**LINF Equation (7.8)**	**LPOP Equation (7.9)**
				P-value			
Normality	0.33	0.14	0.11	0.06	0.07	0.10	0.09
Serial Correlation	0.11	0.33	0.18	0.22	0.23	0.21	0.25
Hetroskedasticity	0.66	0.36	0.61	0.51	0.78	0.52	51.9

Stability Tests

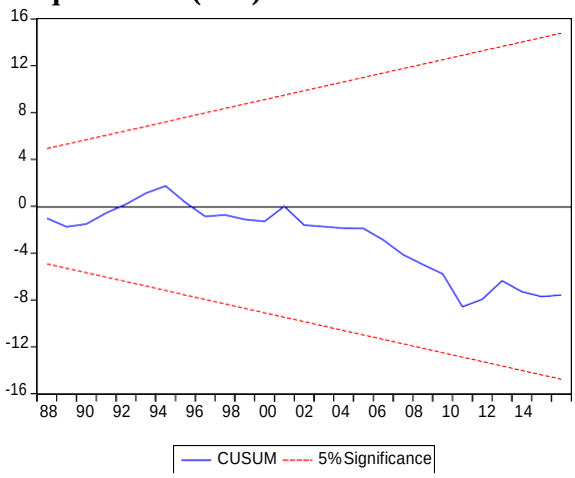
Concerning the structural instability, the cumulative sum (CUSUM) and the cumulative sum of squares (CUSUMSQ) tests have employed Equations (7.3–7.9) to examine the stability of the long-run coefficients. The graphical presentation of these tests is presented in Figure 7.10. Noticeably, CUSUM and CUSUMSQ statistics are within the critical lines at the 5% significance level, indicating that there exists stability in the coefficients over the sample period for Sri Lanka.

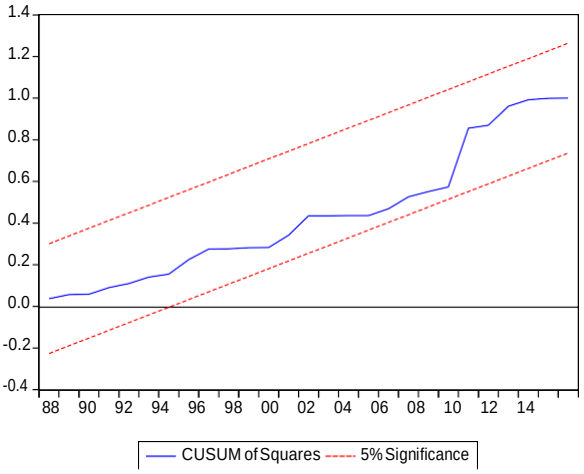
Equation 7.3 (GINI)



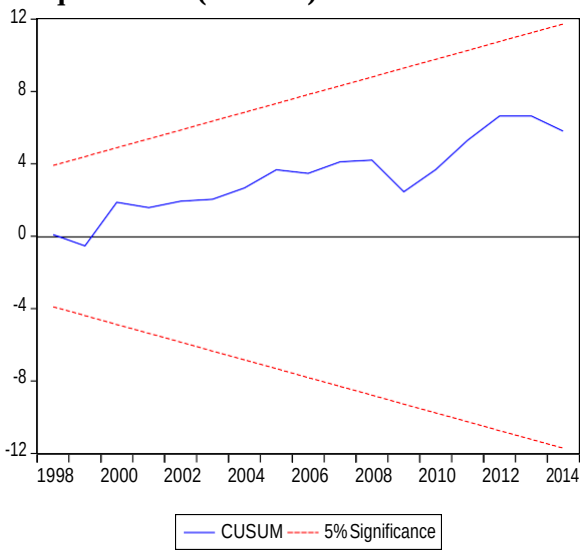


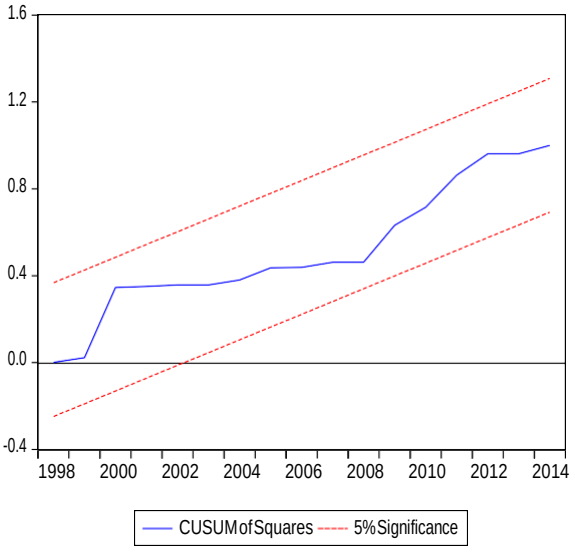
Equation 7.4 (FDI)



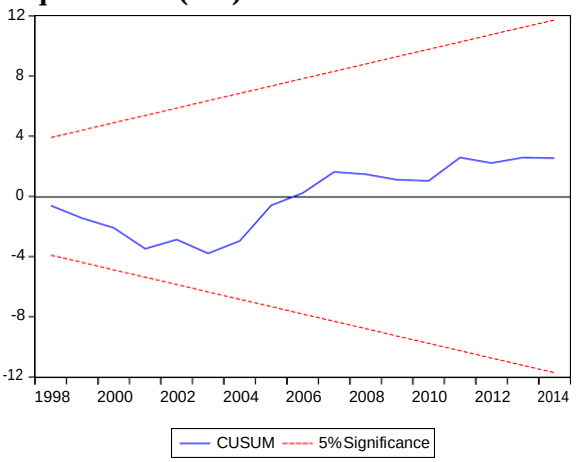


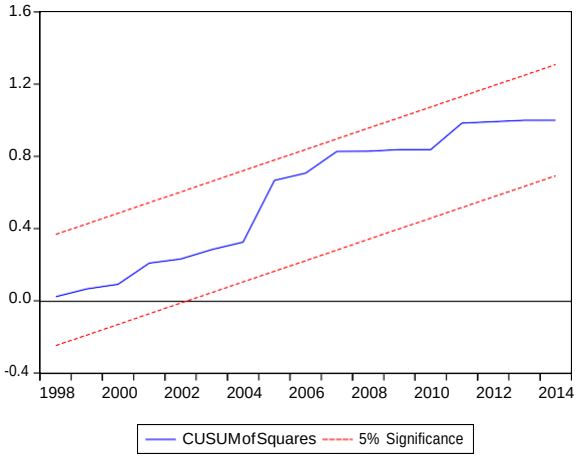
Equation 7.5 (GDPPC)



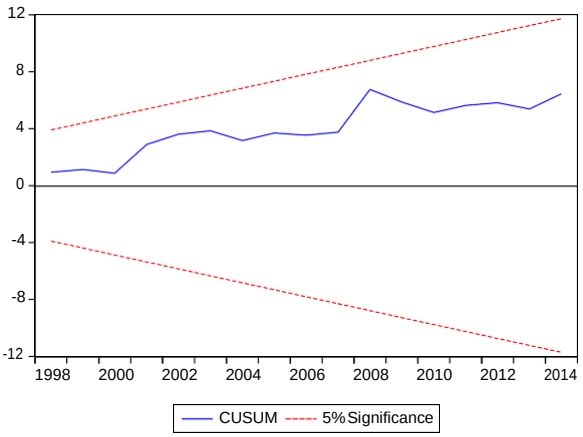


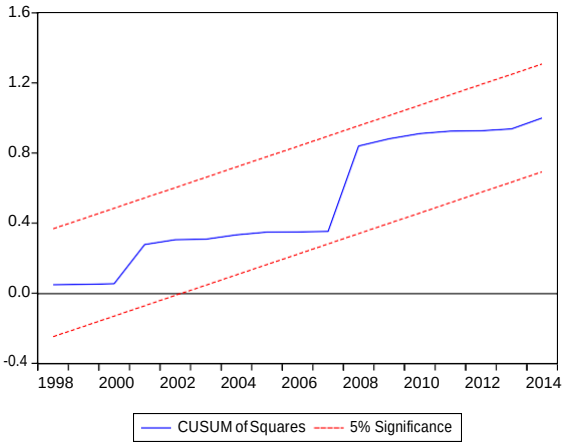
Equation 7.6 (HC)



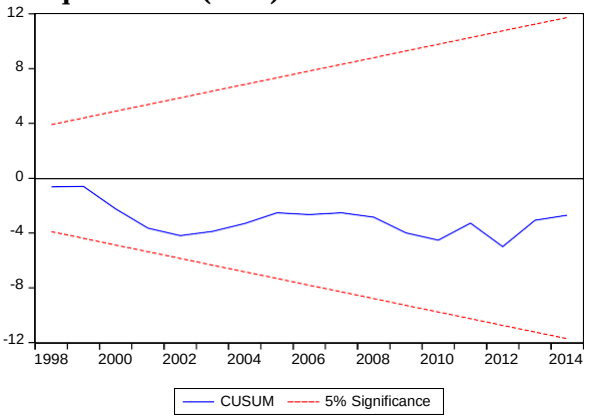


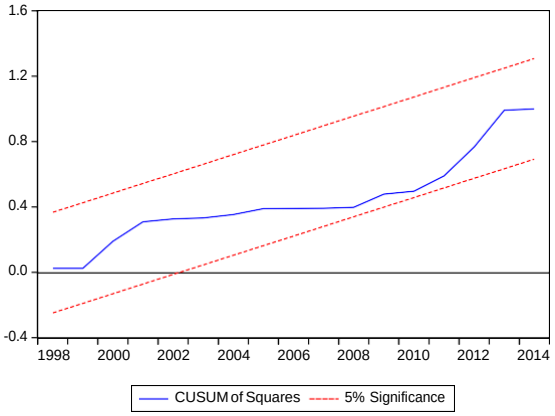
Equation 7.7 (INF)





Equation 7.8 (POP)





Equation 7.9 (TRA)

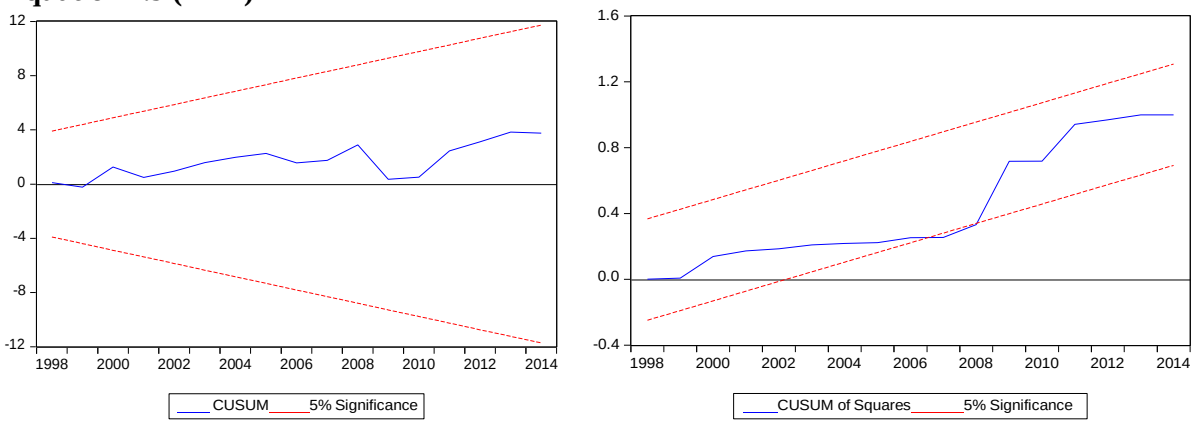


Figure 7.10: CUSUM and CUSUMSQ Tests for Parameter Stability

7.8 Conclusions and Policy Implications

The objective of this chapter was to investigate the effect of FDI inflows on income distribution in Sri Lanka by using time series data for the period 1978–2014. Reviewing previous studies, we identified six important determinants that generally determine income inequality. These are FDI, GDP per capita, human capital, trade, rate of inflation and population. A dummy variable WAR is also considered to capture the civil war effect.

The cointegration test confirms that there is long-run equilibrium among the considered variables. DOLS results suggest that FDI does not increase income inequality. This supports the argument that encouraging FDI inflows does not harm the distribution of income in Sri Lanka. Economic growth causes income inequality, and this may be due to economic growth being unable to associate with higher investments and higher employment generating processes, hence providing less access to jobs and income. This result is consistent with an inverted U-shaped curve, which means that Kuznets' theory is supported by the Sri Lankan data.

Human capital helps reduce income inequality, which implies that an increase in human capital (skills and knowledge of workers) is the fundamental source of labour productivity growth. Increasing labour productivity is likely to cause a rise in labour demand. This will increase the wage rate which will result in less income inequality. One of the possible reasons for the widening of income inequality through trade liberalisation could be because import competition is affecting the wages of low wage earners more than those of high wage earners.

This result is supported by the dependency theory. Population assists in decreasing income inequality. The rate of inflation and civil war represented by economic and political instability are not effective factors of income inequality in Sri Lanka. The findings of the analysis reported in this chapter, confirm that FDI inflows do not increase the level of income inequality in Sri Lanka. The results from this study suggest that Sri Lankan authorities could implement sound policies to attract more FDI, as there is no evidence to indicate that FDI would increase income inequality in Sri Lanka.

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CHAPTER 8

Relationship between Foreign Direct Investment and Domestic Investment

8.1 Introduction

Domestic investment is one of the main drivers of economic growth in both developed and developing countries, as it serves as a significant factor for production. In most developing countries, a wide gap exists between investment requirements and domestic resource availability. To overcome this problem, most developing countries depend on FDI as an alternative source of funds to fill this gap and Sri Lanka is no exception. FDI plays a key role in the internationalisation of business volume due to factors such as liberalisation policies, and new economic integration trade acts. The experience of a number of fast-growing East Asian economies has strengthened the belief that attracting FDI is a key to bridging the resource gap of low-income countries and avoiding further build-up of debt (UNCTAD, 2013). With this backdrop, FDI has been considered as a complement to domestic investment in many countries contributing to economic growth.

Since FDI inflows transfer physical capital, the capital accumulation of host countries is expected to increase. In this aspect, crowding effects of FDI on domestic investment have become one of the important arguments in the FDI related literature. In general, the effects of FDI on domestic investment in a host country can be complement or substitute. For this reason, the crowding effects of FDI on domestic investment can occur in two ways, either crowding in or crowding out domestic investment. Crowding out effects of FDI on domestic investment may take place when foreign and domestic firms are operating in the same industry. If FDI increases the amount of domestic investment, then there is a crowd-in effect, where foreign firms support domestic firms in the host country (backward or forward production linkages – complements). The crowding out effect occurs when foreign firms, because of their efficiencies, replace domestic firms (substitutes); thus, FDI discourages domestic investment in the host country (Agosin and Machado, 2005; Wang, 2010; Ipek and Kizilgol, 2015).

Theoretically, Markusen and Venables (1999) hypothesize the relationship between FDI and domestic investment in terms of MNEs and domestic firms, in which two effects can occur through MNEs in the host country, namely the competition effect and the backward linkage

effect. The competition effect states that the presence of MNEs increases competition in the industry and leads to a reduction in the profitability of domestic firms in the same industry. This, in turn, crowds out domestic investment. On the other hand, the presence of MNEs may raise demand for domestic production of intermediate inputs, which causes the backwards linkage effect. This probably could lead to an increase in domestic firms in the intermediate inputs industry, which, in turn, would crowd in domestic investment.

Empirically, a number of studies have examined the relationship between FDI and domestic investment; however, the results are rather mixed. Little or no research has been published in relation to this topic on Sri Lanka. In order to understand the crowding effect of FDI in Sri Lanka, the relationship between FDI and domestic investment needs to be investigated. The objective of this chapter is to examine the impact of FDI on domestic investment in Sri Lanka over the period 1978 to 2014. To the best of our knowledge, this is the first study to investigate the relationship between FDI and domestic investment in Sri Lanka using recent advances in econometrics. This chapter answers the following questions: (1) Does FDI affect domestic investment in Sri Lanka? (2) What are the other factors affect domestic investment in Sri Lanka? (3) Did the civil war affect the domestic investment in Sri Lanka?

The rest of the chapter is structured as follows. Section 8.2 presents a review of the empirical literature on FDI and domestic investment for single-country, while Section 8.3 presents a similar review on cross-country studies. Section 8.4 briefly presents the background of domestic investment in Sri Lanka. Section 8.5 describes the description of the variables and preliminary analysis. The empirical framework and estimation results are discussed in Section 8.6 and the last section of the chapter comprises the conclusion and policy implications.

8.2 A Review of the Literature: Single-Country

In a study of Korea, Kim and Seo (2003) examine the effects of FDI on domestic investment and explore dynamic interactions between FDI inflows, domestic investment and output for the period 1985(1)–1999(4). The findings of the study reveal that FDI does not crowd domestic investment in or out. However, an increase in domestic investment tends to crowd out the inflow of FDI, while a positive shock to economic growth has positive and persistent effects on the future level of FDI.

Using survey data over the 1993–1995 and 1997–1999 periods, Lin and Chuang (2007) investigate the effect of the FDI on Taiwanese manufacturing firms. The results show that the effect of these manufacturing firms' FDI decisions on domestic investment is significant within the firms. The results also reveal that larger firms that engage in FDI will increase their domestic investment, while the amount of domestic investment engaged in by smaller firms will be reduced, indicating that FDI has a positive influence on the domestic investment of the larger firms, even though the influence is negative in the case of the smaller firms.

Xu and Wang (2007) investigate the effects of FDI inflows on China's domestic investment, exports, imports, and economic growth for the period 1980–1999. The period is split into the 1980s and 1990s. The findings reveal that in the 1990s, FDI had a significant positive impact on domestic investment, which means that FDI crowded in domestic investment. A growing share of FDI is positively associated with a faster rate of economic growth, and FDI also stimulates exports and imports. In another study, Wu et al. (2012) explore the crowding in and crowding out effects of FDI on domestic investment in the Yangtze River Delta Region in China over the period 1998–2009. This area had accumulated foreign investment by absorption of FDI. The results support the likelihood of crowding in and crowding out effects of regional internal investment. It also shows that FDI has a crowding in effect on regional economic development. These results support Xu and Wang (2007).

A persistent decline in total investment during the post-crisis era has caused ongoing concern in Malaysia. Ang (2009) examines the relationship between private domestic investment, public investment and FDI in Malaysia for the period 1960–2003. The study finds that both public investment and FDI stimulate private domestic investment in the long run. The impact of FDI on private domestic investment is more significant than it is on public investment. Therefore, FDI has a complementary role in domestic investment, that is, FDI crowds in domestic investment in Malaysia. In another study, Lean and Tan (2011) examine whether FDI crowds in or crowds out domestic investment, and also examine the dynamic relationship between FDI, domestic investment and economic growth in Malaysia for the period 1970–2009. The results show that an increase of FDI has a positive impact on domestic investment. This means that FDI crowds in domestic investment and there appears to be a complementary effect from FDI to domestic investment. This result is in line with the finding of Ang (2009). Further, FDI has a positive impact on economic growth, while domestic investment is negatively affecting economic growth in the long run.

Working at the industry level, Onarana et al. (2013) examine the effects of outward FDI on domestic investment for a panel of 19 industry and 10 service sectors in Germany for the period 2002–2006. This study uses different host country groups (two high-wage country groups and two low-wage country groups). The findings of the study show that German FDI in low-wage countries crowds out domestic investment in industry, whereas FDI in high-wage countries positively affects investment in industry and services. However, FDI in the industry of high-wage countries outside Europe crowds in domestic investment. The effect of FDI in industry in high-wage Europe is insignificant; in services, FDI in Western Europe crowds in domestic investment. The study points out the relevance of wage differentials in a united Europe in shaping the domestic investment decisions of multinational firms.

Ullah et al. (2014) assess the interaction between domestic investment, FDI and economic growth in Pakistan for the period 1976–2010. The findings of this study reveal that there is bidirectional causality between FDI and domestic investment, implying that both domestic investment and FDI cause each other. Further, there exists a long-run relationship between domestic investment, FDI and economic growth. The study concludes that FDI could be used to supplement the domestic investment and that it holds a complementary status.

Considering both aggregate economy and nine production sectors, Ahmed et al. (2015) investigate whether FDI has had a crowding out effect on domestic investment in Uganda, for the period 1992–2012. The findings reveal that there is a neutral effect on the overall economy. At the sectoral level, there is a crowding out effect in the agriculture, community, construction and finance sectors, while there is a crowding in effect on mining and wholesale. Furthermore, there is a neutral effect in electricity, manufacturing and transport.

Table 8.1 presents a summary of the single-country studies reviewed on FDI. As can be seen, results from a number of the studies support the view that FDI complements domestic investment in host countries. Consequently, FDI has a crowding in effect with domestic investment (Xu and Wang, 2007; Ang, 2009; Lean and Tan, 2011; Wu et al., 2012; Ullah et al., 2014).

Table 8.1: A Summary of Findings from Single-Country Studies on FDI and Domestic Investment

Author(s), Year	Period	Country	Technique	Variables	Findings
Ahmed et al. (2015)	1992–2012	Uganda	OLS	Domestic investment, FDI and economic growth	There is a neutral effect on the overall economy. At the sectoral level, there is a crowding out effect in agriculture, community, construction and finance sectors, and crowding in effects on mining and wholesale. Besides that, there is a neutral effect in electricity, manufacturing and transport.
Ang (2009)	1960–2003	Malaysia	Cointegration and VAR	Domestic investment, FDI and public investment	FDI crowds in domestic investment.
Kim and Seo (2003)	1985(1)–1999(4)	Korea	Cointegration and VAR	Domestic investment, FDI and economic growth	FDI does not lead to crowding in or out of domestic investment.
Lean and Tan (2011)	1970–2009	Malaysia	Cointegration and VECM	Domestic investment, FDI and economic growth	FDI crowds in domestic investment.
Lin and Chuang (2007)	1993–95 and 1997–99	Taiwan	2SLS	Domestic investment, FDI, profitability, fixed capital stock, capacity utilization, R&D stock, export ratio, firm sales growth and market sales growth	FDI crowds in domestic investment in larger firms, but crowds out in smaller firms.
Onarana et al. (2013)	2002–2006	Germany	GLS	Domestic investment, FDI, sales, profits and interest rate	German FDI to low-wage countries, crowds out domestic investment in industry, whereas FDI to high-wage countries crowds in domestic investment in industry and services.
Ullah et al. (2014)	1976–2010	Pakistan	Cointegration and Toda-Yamamoto causality	Domestic investment, FDI and Economic growth	There is bidirectional causality between FDI and domestic investment.
Wu et al. (2012)	1998–2009	China	OLS	Domestic investment, FDI and Economic growth	FDI crowds in domestic investment.
Xu and Wang (2007)	1980–1999	China	OLS	Domestic investment, FDI, trade, exchange rate and economic growth	FDI crowds in domestic investment.

However, a number of other studies such as Lin and Chuang (2007); Onarana et al., (2013) and Ahmed et al., (2015) support the view that FDI has both positive and negative effects on domestic investment, taking into account different sectors: larger firms and small firms, in both the short run and the long run. In addition, Kim and Seo (2003) confirm that FDI does not impact on domestic investment, implying that there is no crowding in or out effect in the host counties. Overall, these findings of past studies affirm that there exists no conclusive evidence of the relationship between FDI and domestic investment.

8.3 A Review of the Literature: Cross-Country

Misun and Tomsik (2002) examine whether FDI in the Czech Republic, Hungary and Poland crowds in or crowds out domestic investment, for the periods 1990–2000 in Hungary and Poland, and 1993–2000 in the Czech Republic. The findings reveal that Hungary has been successful in taking advantage of high FDI and its positive impact on the domestic sector. The Czech Republic was also successful, but not to the same extent as Hungary. Conversely, the high FDI in Poland did not induce additional domestic investment, resulting in a crowding-out effect. Overall, there was evidence of a crowding out effect in Poland and a crowding in effect in Hungary and the Czech Republic.

As regards the developing countries in three regions (Africa, Asia and Latin America), Agosin and Machado (2005) investigate whether FDI causes crowding in or crowding out of domestic investment in 36 countries in those regions over the period 1971–2000. The study finds that FDI has displaced domestic investment in Latin America. In Africa and Asia, on the other hand, FDI has increased overall investment (no crowding in or out effect) over the whole period. If the three decades are taken separately, the results also show a crowding out effect in Latin America in the 1970s and in Africa in the 1990s. In the case of Latin America, if only 80% of FDI is transformed into real investment, then the effects of FDI on total investment are shown to have been neutral. The main conclusion from this study is that positive impacts of FDI on domestic investment are not certain. In some cases, total investment may increase much less than FDI or may even fail to rise when a country experiences an increase in FDI.

In OECD countries, Desai et al. (2005) investigate whether FDI outflows stimulate or reduce domestic investment in 20 countries during the 1980s and 26 countries during the 1990s. The

findings reveal that FDI has a crowding out effect on domestic investment. In an estimation of US multinational firms, it finds that FDI is positively associated with domestic investment by the multinational firms, indicating that a complementary relationship exists between FDI and domestic investment.

Herzer and Schrooten (2008) explore the relationship between outward FDI and domestic investment in the US and Germany for the periods 1970–2003 and 1971–2004, respectively. The findings reveal that in the US, outward FDI has positive long-run effects (complementary relationship) on domestic investment. This complementary relationship implies that American multinational firms combine home production with foreign production to reduce costs and to raise the return on domestic production, thus stimulating domestic output and domestic investment. However, this complementary relationship exists only in the short run in Germany; in the long run, outward FDI substitutes for German domestic investment. This substitutionary relationship could identify a long-run loss of attractiveness relative to other countries.

In view of developed countries (DCs) and less developed countries (LDCs), Wang (2010) explores the effect of FDI on host countries' domestic investment for 50 countries over the period 1970–2004. The study finds that FDI inflows have a negative contemporaneous effect on domestic investment overall, while the cumulative effect of FDI over time tends to be positive. In addition, when the study is separated for developed countries and less developed countries, the effect of contemporaneous FDI on domestic investment is negative in DCs, and the cumulative effect of FDI is neutral. However, the contemporaneous effect of FDI on domestic investment is neutral in LDCs, while the cumulative effect of FDI is positive, suggesting that FDI inflows help increase domestic investment in LDCs over time.

In a study of Middle East and North Africa (MENA) region, Acar et al. (2012) investigate the relationship between FDI and domestic investment for the period 1980–2008 in 13 countries, among which seven are categorized as oil rich and six are categorized as oil poor countries. The estimation is performed for all 13 countries, as well as for oil rich and for oil poor countries. The findings show that FDI crowds out domestic investment in the 13 countries as a whole region; when the countries are considered as poor and rich, FDI has a crowding out effect on domestic investment both in oil rich and oil poor countries. Thus, FDI crowds out domestic investment in the MENA region (specifically in the selected 13 countries).

The different levels of income in various countries (high, middle and low) were examined by Sadig (2013) in a study of the effects of FDI inflows on domestic investment in 91 developing host countries for the period 1970–2000. The results show that FDI stimulates domestic investment in the host countries, indicating that FDI crowds in domestic investment. In addition, when countries are considered according to their level of income, the results also show that FDI has positive effects in middle income and high income developing countries. However, the positive effects of FDI in low income developing countries depend on the availability of human capital. Accordingly, low income developing countries will be able to take advantage of FDI by developing their human capital.

In considering developing countries in different regions, Gocer et al. (2014) investigate whether FDI affects domestic investments in 11 countries from Latin America and the Caribbean, nine from Asia and the Pacific, eight from Africa and two from economies in transition, for the period 1992–2010. The results confirm that FDI has a crowding out effect in developing countries as a whole. When an analysis is carried out for country groups, FDI has crowding in effects, in Asian, Latin American and the Caribbean countries, while crowding out effects occur in African countries.

Ipek and Kizilgol (2015) investigate the impact of FDI on domestic investment in Brazil, Mexico, Russia, South Africa and Turkey. The sample period is 1995(1)–2012(3) for Brazil, 1990(1)–2012(3) for Mexico and Turkey, 1995(1)–2012(2) for Russia and 1990(1)–2011(4) for South Africa. The results show a crowding in effect of FDI on domestic investment in Russia only, while FDI crowds out domestic investment in Turkey and South Africa. Nevertheless, there is no crowding in or crowding out effect for Brazil and Mexico.

In view of BRIC countries, Dasgupta (2015) investigates the relationship between domestic investment and FDI outflows for Brazil, Russia, India and China over the period 1992–2013. The study reveals that FDI has a positive and statistically significant effect on domestic investment. Moreover, a causality test shows that FDI has a positive causality with domestic investment in both the short run and long run. In this way, FDI is shown to be a significant factor affecting domestic investment in the BRIC countries.

Comparing India and Pakistan, Haq and Zhu (2016) explore the relationship between FDI and domestic investment for the period 1978–2013. The study finds that FDI has a

complementary effect on domestic investment in India, while it has a substitute effect on domestic investment in Pakistan in the long run. Thus, FDI has a crowding in effect in India, but a crowding out effect in Pakistan. Moreover, economic growth has also a positive and significant effect on domestic investment in India and Pakistan, showing that economic growth encourages domestic investment.

Table 8.2 presents a summary of the cross-country studies reviewed on FDI. As can be seen, results from a number of the studies support the view that FDI complements domestic investment in host countries. Consequently, FDI has a crowding in effect with domestic investment (Xu and Wang, 2007; Wang, 2010; Sadig, 2013; Dasgupta, 2015). On the other hand, a number of other studies (such as Desai et al., 2005; Acar et al., 2012; and Gocer et al., 2014) support the opposite view that FDI substitutes domestic investment, allowing for FDI to crowds out domestic investment. However, equally, a number of other studies such as Misun and Tomsik (2002), Agosin and Machado (2005), Herzer and Schrooten (2008), Ahmed et al., (2015), Ipek and Kizilgol (2015) and Haq and Zhu (2016) support the view that FDI has both positive and negative effects on domestic investment, taking into account different regions, countries and sectors; larger firms and small firms; and in both the short run and the long run. In addition, Ipek and Kizilgol (2015) confirm that FDI does not impact on domestic investment, implying that there is no crowding in or out effect in the host counties. Overall, these findings of past studies affirm that there exists no conclusive evidence of the relationship between FDI and domestic investment.

8.4 Domestic investment in Sri Lanka: An Overview

Sri Lanka's economic growth has been stimulated by various form of investment. In order to achieve a high rate of economic growth, greater investment in more fixed assets is needed. Figure 8.1 shows the investment movements in Sri Lanka over the period 1960 to 2015. As can be seen, in 1960, Sri Lanka's total investment (GFCF) and share of total investment in GDP were $496m and 15%, respectively. In 1969, a massive increase was seen in GFCF, which reached the highest on record (19% total investment in GDP), due to the doubling of private sector investment (partial departure from the closed economy to open economy) in the government sector (Jeyaratnam, 1979).

Table 8.2: A Summary of Findings from Cross-Country Studies on FDI and Domestic Investment

Author(s), Year	Period	Country	Technique	Variables	Findings
Acar et al. (2012)	1980–2008	13 countries from Middle East and North Africa (MENA) region	GMM	Domestic investment, FDI, trade and GDP	FDI crowds out domestic investment in the 13 countries as a whole region.
Agosin and Machado (2005)	1971–2000	36 developing countries	GMM	Domestic investment, FDI and economic growth	FDI crowds out domestic investment in Latin America while FDI crowds in domestic investment in Africa and Asia.
Dasgupta (2015)	1992–2013	BRIC countries	DOLS and Causality	Domestic investment, FDI trade, interest rate and broad money	FDI crowds in domestic investment in Brazil, Russia, India and China.
Desai et al. (2005)	1980–2000	OECD countries	OLS	Domestic investment, FDI and gross saving	FDI crowds out domestic investment in OECD countries.
Gocer et al. (2014)	1992–2010	30 developing countries from Latin America and Caribbean, Asia and Africa	GMM	Domestic investment, FDI interest rate and economic growth	FDI crowds out domestic investment in countries as a whole. For country groups, FDI crowds in domestic investment, in Asian, Latin American and the Caribbean countries while crowds out in African countries.
Haq and Zhu (2016)	1978–2013	India and Pakistan	Cointegration and VECM	Domestic investment, FDI and interest rate	FDI crowds in domestic investment in India whereas it crowds out domestic investment in Pakistan.
Herzer and Schrooten (2008)	1970–2003 and 1971–2004	US and Germany	ARDL	Domestic investment, FDI and GDP	In the US, FDI crowds in domestic investment in long run whereas in short run FDI crowds in domestic investment in Germany, but crowds out in the long run.
Ipek and Kizilgol (2015)	1990(1)–2012(3)	Brazil, Mexico, Russia, South Africa and Turkey	GMM	Domestic investment, FDI and economic growth	FDI crowds in domestic investment only in Russia; FDI crowds out domestic investment in Turkey and South Africa. There is no crowding in or crowding out effect for Brazil and Mexico.
Misun and Tomsik (2002)	1990–2000	Czech Republic, Hungary and Poland	OLS	Domestic investment, FDI and economic growth	A crowding out effect in Poland and a crowding in effect in Hungary and the Czech Republic.
Sadig (2013)	1970–2000	91 developing countries	GMM	Domestic investment, FDI, public investment, rate of inflation, school, trade, debt, broad money and economic growth	FDI crowds in domestic investment.
Wang (2010)	1970–2004	50 developed and less developed countries	GMM	Domestic investment, FDI, interest rate, rate of inflation, exchange rate and economic growth	FDI crowds out domestic investment contemporaneously while the cumulative effect of FDI has a crowding in effect on domestic investment overall.

Nevertheless, with the liberalization policy implemented in 1978, the level of GFCF and share of GFCF in GDP had increased rapidly to 20% and $2169m, respectively. Ultimately, Sri Lanka's GFCF and share of GFCF in GDP in 2015 were $19336m and 27% (World Bank, 2016), respectively. Overall, as the graph shows, over the past 55 years GFCF has continued to increase but with an acceleration starting from 1977.

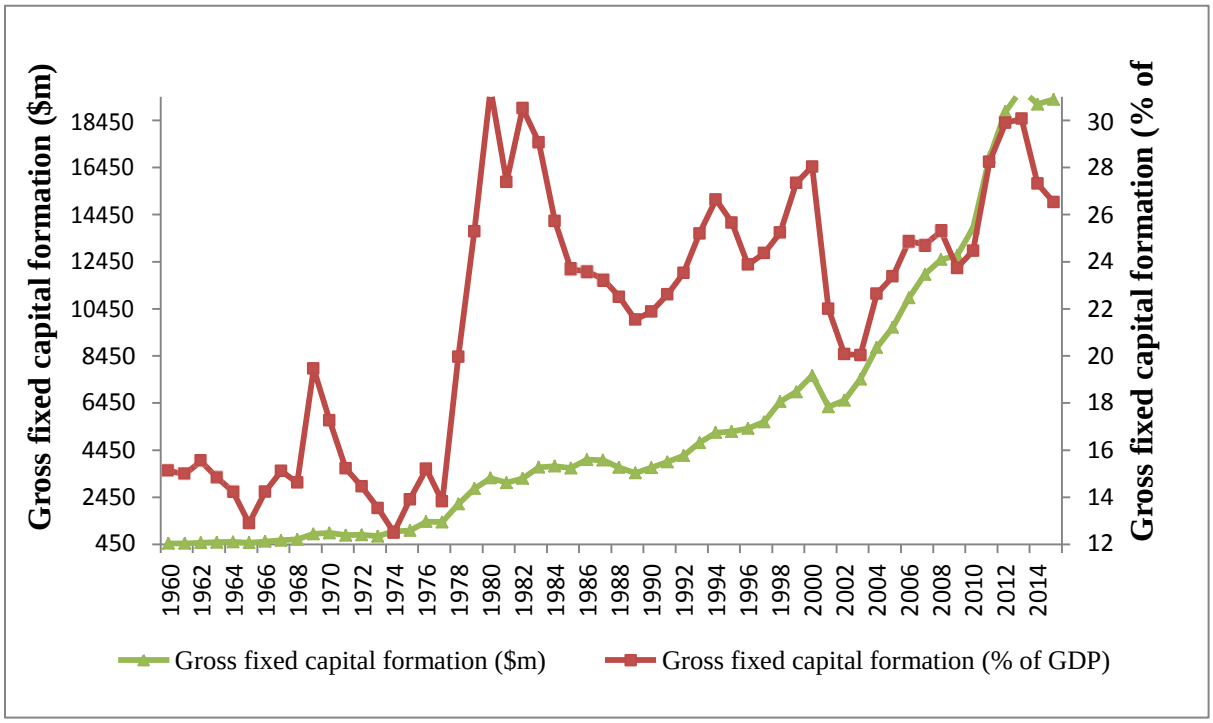


Figure 8.1: Gross Fixed Capital Formation and Share of GFCF in GDP in Sri Lanka, 1960–2015

8.5 Preliminary Data Analysis

The variables used in this study are domestic investment, FDI, GDP per capita, interest rate and war dummy. Gross fixed capital formation is total investment of private and public sector and excludes changes in stock. Domestic investment (DI) is measured by subtracting FDI from GFCF (US$m). FDI is defined as FDI net inflows in US$. GDP per capita is used (constant 2005 US$) as a proxy for economic growth. Lending interest rate (%) is used to meet the short-term and medium-term financing needs of the private sector. A dummy variable (WAR) is used to capture the effect of the civil war on domestic investment during relevant periods. The war variable takes the value 1 for the war years 1983–2009 and 0 otherwise. We use annual times

series data for the period 1978–2014. The data for GFCF, FDI, GDP per capita and interest rate are collected from *World Development Indicators (2016).*

In view of the previous studies, we could expect the relationship between FDI and DI be positive or negative as it depends on whether FDI complements (crowds in) or substitutes (crowds out) domestic investment. In other words, if FDI crowds in (crowds out) domestic investment, the relationship would be positive (negative). An increase GDP per capita may lead to increased saving, which can be turned into investment. Therefore, the relationship between economic growth and domestic investment would be positive. As lower interest rates encourage businesses to increase investment spending, the relationship between interest rate and domestic investment could be negative.

As a preliminary investigation, in Figures 8.2–8.4, the scatter plots of domestic investment are presented against each of the possible determinants; (i) FDI, (ii) GDP per capita (GDPPC), and (iii) interest rate (INT). As can be seen, there is a positive relationship between domestic investment and FDI, and GDP per capita, but a negative relationship between domestic investment and interest rate.

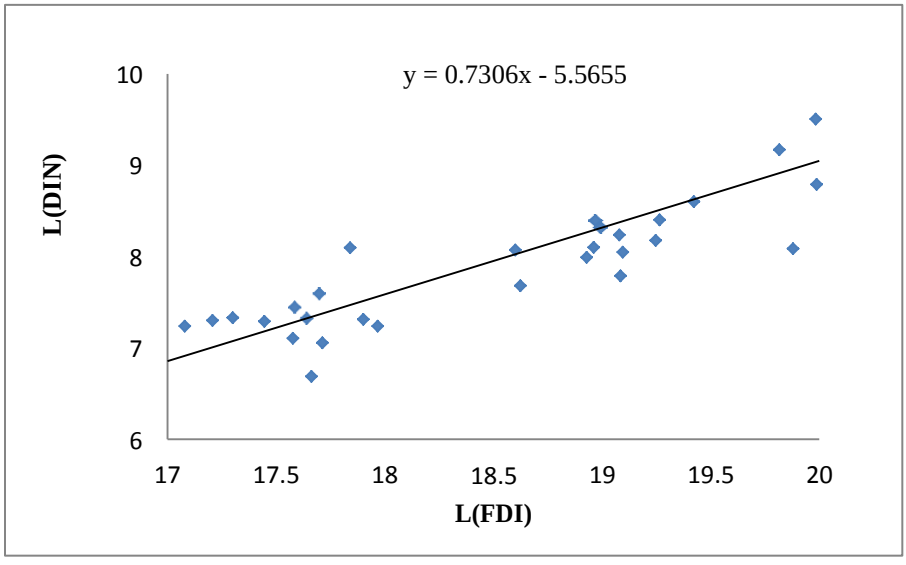


Figure 8.2: Domestic Investment vs FDI

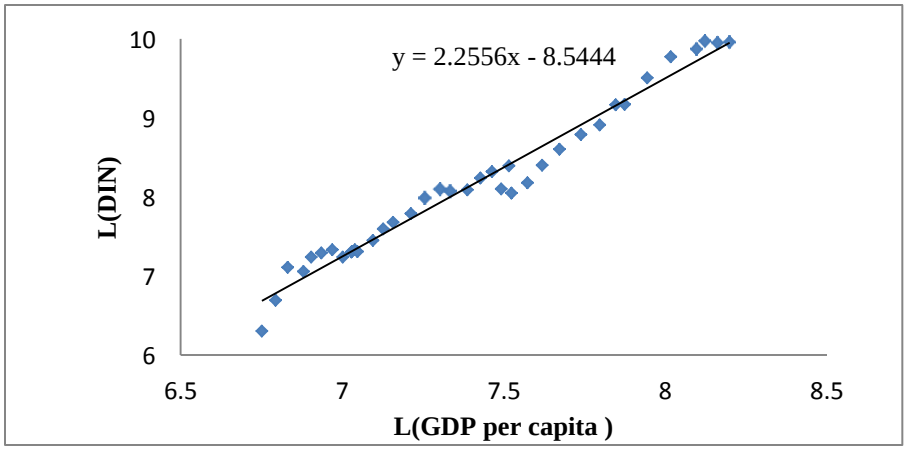


Figure 8.3: Domestic Investment vs GDP per capita

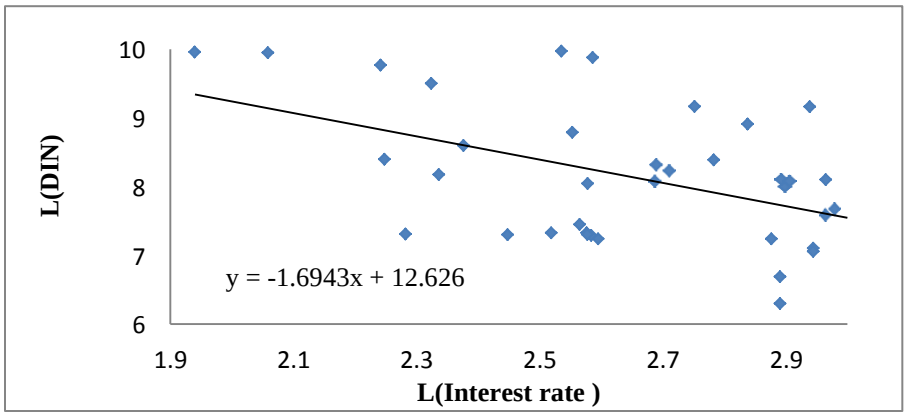


Figure 8.4: Domestic investment vs interest rate

8.6 Model Specification and Estimation

In this study, we propose Sri Lanka's domestic investment to be a function of FDI, GDP per capita (GDPPC), interest rate (INT) and WAR. As before, we treat civil war as an exogenous variable. Consequently, the framework to examine the impact of FDI on domestic investment can be written as:

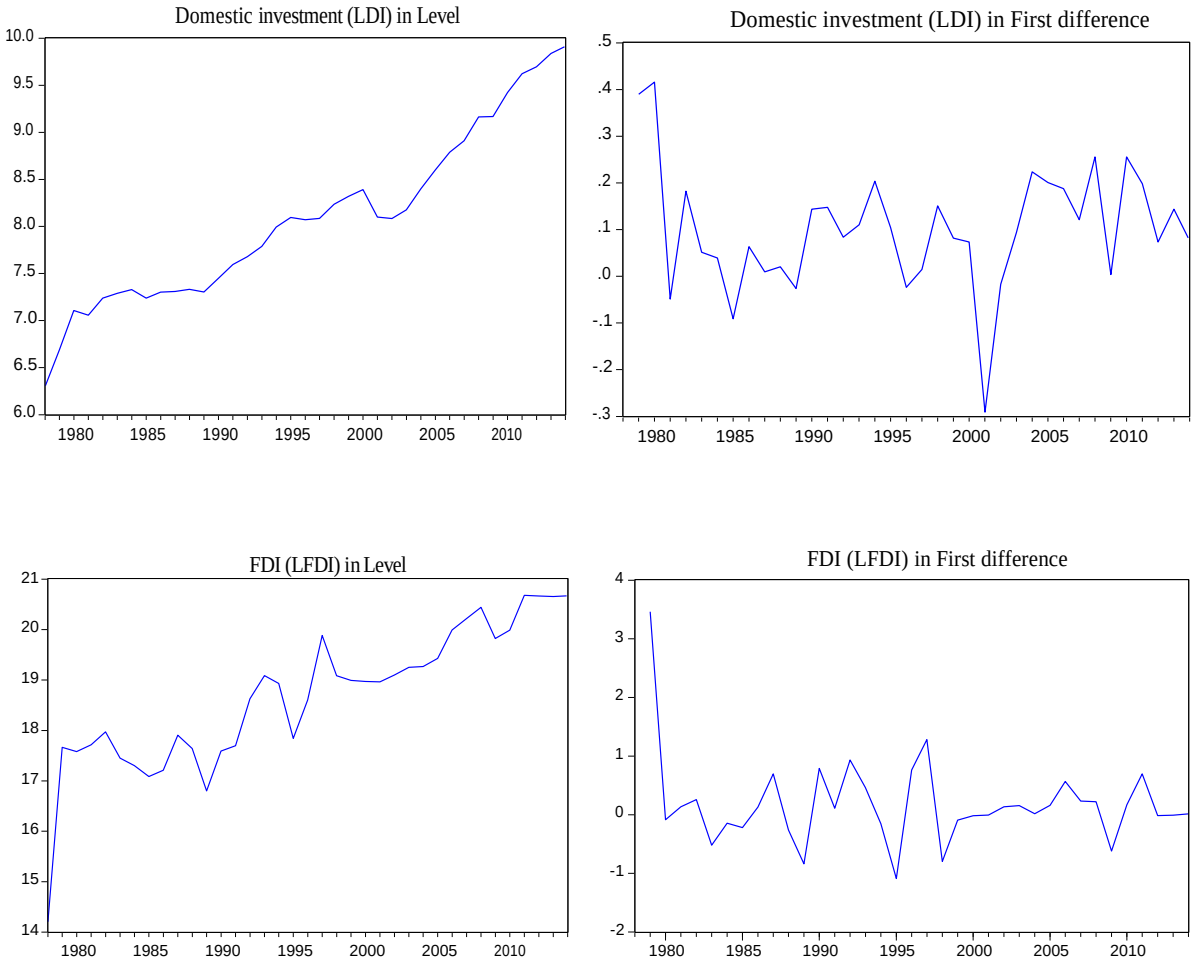
$$DI = f(FDI, GDPPC, INT, WAR) \qquad (8.1)$$

We consider Equation (8.1) in a linear regression framework as follows:

$$LDI_t = \beta_0 + \beta_1 LFDI_t + \beta_2 LGDPPC_t + \beta_3 LINT_t + \beta_4 WAR_t + \varepsilon_t \quad (8.2)$$

All the variables are in natural logarithms except the WAR variable and ε is a random error term.

Figure 8.5 plots the four variables in their level form and first difference form. As can be seen, the plots suggest that the four variables in level form appear to be non-stationary and may be stationary in their first difference form.



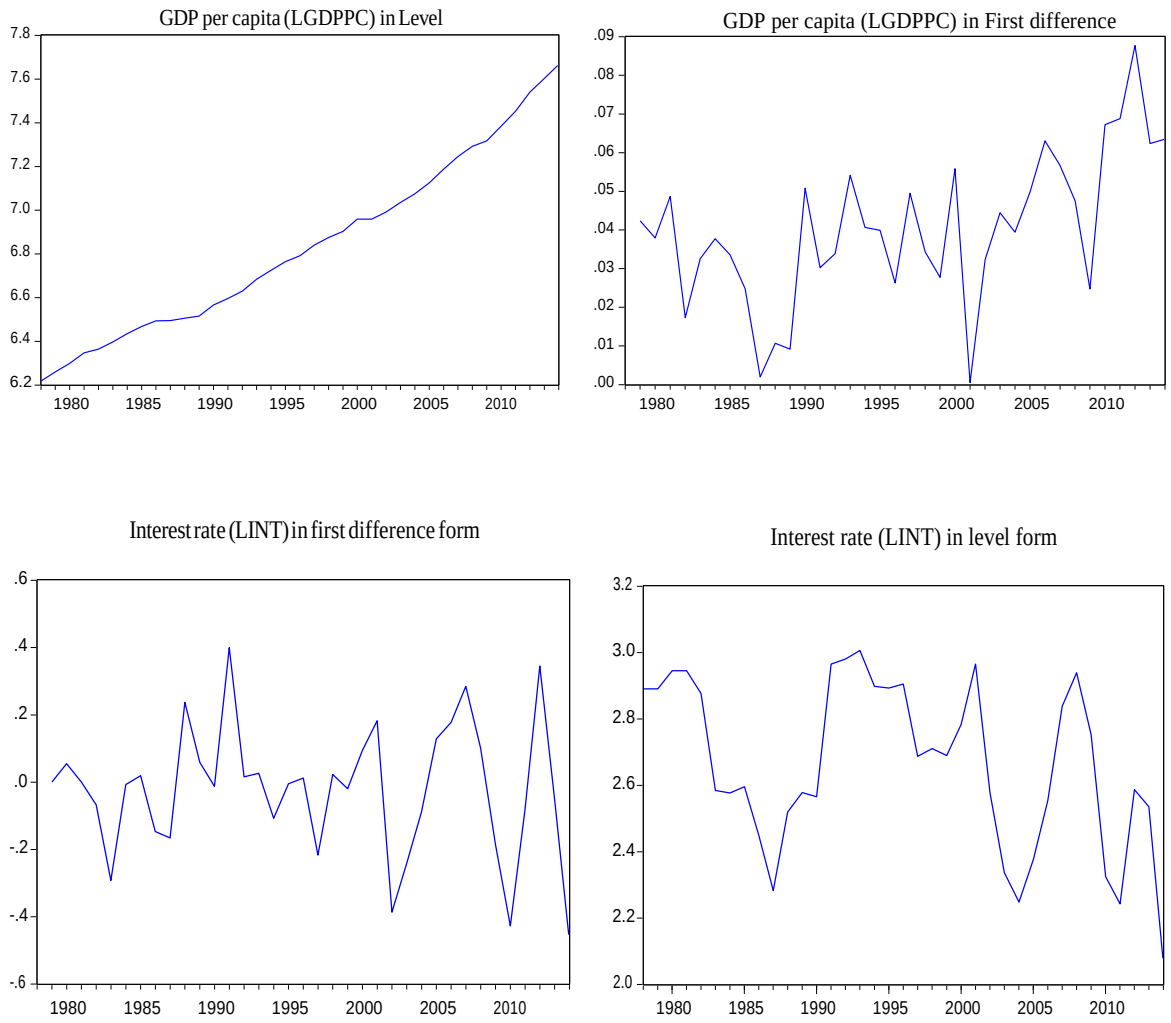


Figure 8.5: Time Series Plots of the Four Variables in Level and First Difference form, 1978–2014

Unit Root Tests

The time series properties of these data series are further formally investigated using Augmented Dicky-Fuller (ADF, 1979) and Phillips and Perron (PP, 1988) unit root tests. Table 8.3 presents the test results. As can be seen, null hypothesis of a unit root cannot be rejected for all four variables in their level form. However, at the first difference, the null hypothesis of unit root is rejected for all four variables. Hence, the results confirm that all variables are integrated of order one, *I*(1).

Table 8.3: Unit Root Test Results

Variables	ADF		PP		Order of Integration
	Levels	First Differences	Levels	First Differences	
LDI	-1.587	-4.978***	-2.088	-4.966***	I(1)
LFDI	-0.782	-5.782***	-0.987	-6.455***	I(1)
LGDPPC	1.379	-3.489**	1.184	-3.564**	I(1)
LINT	-2.751	-5.112***	-1.481	-4.849***	I(1)

Note: ** and *** indicate statistical significance at the 5% level and 1% level, respectively.

Cointegration Test

Since we find all series are I(1), then the variable represented by Equation (8.2) may represent a cointegrating relationship. This cointegrating long-run relationship has been tested using the trace and maximum eigen values tests proposed by Johansen (1988, 1991), and Johansen and Juselius (1990). Two lags have been chosen, based on AIC. Table 8.4 below presents the Johansen cointegration results.

Table 8.4: Johansen Test for Cointegration

		Trace Value			Maximum Eigen Value	
H_0	H_1	Test statistic	p-value	H_1	Test statistic	p-value
r = 0	r ≥1	54.532	0.010**	r = 1	30.302	0.021**
r ≤ 1	r ≥2	24.229	0.190	r = 2	15.715	0.241

Note: **, indicates test statistics are significance at the 5% level.

As can be seen, the null hypothesis of the no cointegration relationship is rejected against at least one cointegrating vector, in both the trace and maximum eigen value tests. These suggest that at least one cointegrating vector exists in the model. However, the null hypothesis of one coinegrating vector against the alternative hypothesis of at least 2 cointegrating vectors cannot be rejected. This implies that a cointegrating vector exists in the model. Therefore, it can be concluded that there is a long-run relationship exists among the five variables DI, FDI, GDPPC, INT and WAR in Sri Lanka.

Fully Modified Ordinary Least Squares

Having established a long-run relationship among the variables, to estimate this long-run relationship (8.2), a fully modified ordinary least squares (FMOLS) approach is employed. This FMOLS approach was proposed by Philip and Hansen (1990) to provide optimal estimates of cointegration regression, which is to account for the serial correlation and, to test for the endogeniety in the regressors that result from existence of cointegrating relationship. Table 8.5 presents the FMOLS results.

Table 8.5: FMOLS Estimation Results

	Dependent Variable DI	
Independent Variables	Coefficient	t-statistic
LFDI	0.060	0.649
LGDPPC	1.987***	7.017
LINT	0.073	0.430
WAR	-0.218**	-2.553
C	-7.724***	-7.212
R^2	0.97	

Note: FMOLS: Cointegrating equation deterministics: C
Long-run covariance estimate (Bartlett kernel, Newey-West fixed bandwidth =4.0000)
** and *** are significant at 5% and 1% levels, respectively.

As can be seen, a 1% increase in GDPPC increases domestic investment by 1.99%. WAR negatively impacts domestic investment and due to war has reduced the level of domestic investment by 0.2%. The variables GDPPC and WAR are both statistically significant. Accordingly, economic growth stimulates domestic investment in Sri Lanka while political instability (WAR) discourages the climate of domestic investment. Similar findings in relation to economic growth and domestic investment were reported in Haq and Zhu (2016). Civil war or political instability leads to a dramatic drop in domestic investment. This result is also consistent with earlier studies of Alesina and Perotti (1995) and Imai and Weinstein (2000). The influence of FDI and interest rate on domestic investment is not statistically significant.

Endogeneity and Generalized Method of Moments

Endogeneity is one of the key challenges in the econometric analysis in economic concept. In our model, there may be endogeneity between the variables (simultaneity bias/reverse causation). Past studies indicate that if there is an endogeneity problem present, then, to overcome the issues, DOLS and FMOLS can be used to make the estimation unbiased and also consistent. Moreover, previous studies also show that a better way to cope with endogeneity issues would be to apply a generalized method of moments (GMM) approach. The advantage of this GMM technique is that it observes the endogeneity of the independent variables in lagged dependent variable models. For this reason, in addition to FMOLS, GMM is also employed to deal with the endogeneity. The GMM estimation results[11] of Equation (8.2) are presented in Table 8.6. In the estimation, lagged endogenous variables are used as instruments variables. The two year lags have been selected for the FDI adjustment (Misun and Tomsik, 2002; Agosin and Mayers, 2005; Ahmed et al., 2015). These lagged values mitigate potential problems due to reverse causality. As can be seen, GMM results are very similar to the FMOLS results presented in Table 8.5.

Table 8.6: GMM Estimation Results

Independent Variables	Dependent Variable DI	
	Coefficient	t-statistic
LFDI	0.072	1.000
LGDPPC	2.242***	6.739
LINT	0.294	1.554
WAR	-0.647*	-1.868
C	-7.356***	-4.645
$\bar{R}^2$	0.96	

Note: GMM: Estimation weighting matrix: (Bartlett kernel, Newey-West fixed bandwidth = 4.0000)
* and *** are significant at 10% and 1% levels, respectively.

Diagnostic Tests

Lastly, the results of the normality, serial-correlation and heteroskedasticity tests for Equation (8.2), are presented in Table 8.7. As can be seen, there is no evidence of serial correlation, heteroscedasticity or non-normality in the model. In addition, graphical presentation of cumulative sum (CUSUM) and the cumulative sum of square (CUSUMSQ) tests are shown in

[11] GMM is estimated by Eviews 9.

Figure 8.6. These test results suggest that there exist stability in this model, as CUSUM and CUSUMSQ statistics are within the critical lines at the 5% significance level.

Table 8.7: Diagnostic Tests Results

Tests	***P*-value**
Normality (Jarque-Bera)	0.08
Serial Correlation (Breusch-Godfrey)	0.16
Hetroskedasticity (ARCH)	0.93

It can be highlighted that, in regard to breaks, the linear function in Equation (8.2) shows that the relationship is not unstable over time. Additionally, the results of diagnostic tests satisfied the requirement.

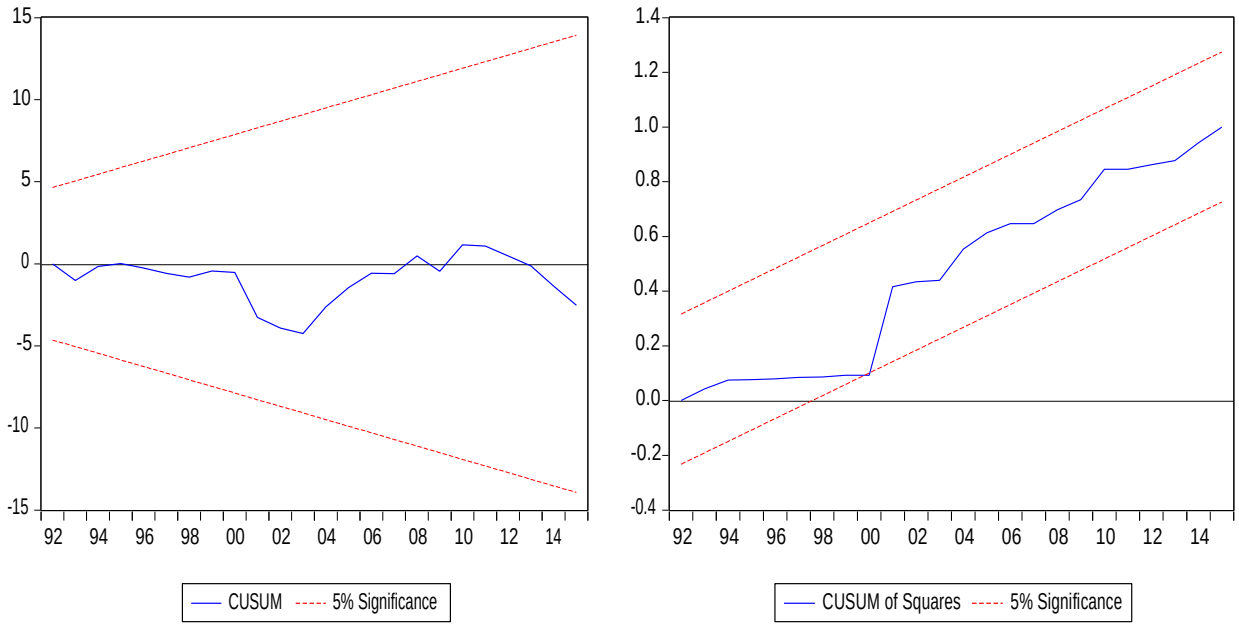


Figure 8.6: CUSUM and CUSUMSQ Tests for Parameter Stability

8.7 Conclusions and Policy Implications

The objective of the chapter was to develop an empirical framework to investigate the crowding effects of FDI on domestic investment in Sri Lanka by using time series data for the period 1978–2014. Based on the review of previous research, we identified three important determinants that generally determine domestic investment, namely, FDI, economic growth and interest rate. We also include a war dummy to take into account the effect of the civil war in Sri Lanka.

The empirical results suggest that there is long-run equilibrium among the variables; domestic investment, FDI, economic growth and interest rate. Economic growth represented by GDP per capita has a positive impact on domestic investment, as a high level of income enhances domestic investment. This indicates that Sri Lanka's economic performance has a vital role in the domestic investment level. In addition, Sri Lanka's civil war has an adverse effect on domestic investment, since uncertainty in the political environment causes a deterioration of the investment climate. Nevertheless, FDI does not have a significant effect on domestic investment. This indicates that there is no crowding in or crowding out effect of FDI on domestic investment in Sri Lanka. As a result, an increase in FDI will lead to an increase in the gross fixed capital formation, but domestic investment remains unchanged. Consequently, FDI has a neutral effect. As a consequence, FDI could certainly be encouraged in Sri Lanka as FDI does not crowd out domestic investment.

Sri Lankan policy makers could develop policies, such as the restructuring of domestic financial systems and the liberalization of financial markets, to increase the contribution of FDI to domestic investment. These incentives may allow the domestic firms to get benefit from the presence of foreign investors, in terms of domestic market mergers and acquisition activity. These activities can stimulate the domestic firms and enable FDI to crowd in domestic investment. The results of the analysis reported in this chapter, therefore, confirm that Sri Lanka could confidently encourage FDI, as it does not harm the domestic investment. At the same time, the Sri Lankan government needs to encourage a crowd-in effect of FDI on domestic investment to pave the way for economic development in Sri Lanka.

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CHAPTER 9

Conclusion

9.1 Introduction

Sri Lanka is currently on the recovery path from 30 years of civil war. With the conclusion of hostilities in 2009, one of the main priorities of the Sri Lankan government has been to focus on major infrastructure improvements to boost its economic development. FDI has been an important source of external financing for Sri Lanka since the introduction of the open economic policy in 1977. Therefore, understanding the role of FDI in the Sri Lankan economy is crucial for academic researchers and policy makers in the government and private sectors.

In this thesis, a comprehensive scientific analysis has been conducted to investigate to what extent FDI has impacted on the Sri Lankan economy over the period 1978–2014. From the review of the previous studies on FDI, we identified several gaps in the knowledge relating to the analysis of the impact of FDI in Sri Lanka. These gaps have been filled by investigating various issues in relation to FDI in Sri Lanka. We investigated the impact of FDI on various aspects of Sri Lankan economy such as economic growth, tourism, total factor productivity, income inequality and the domestic investment. The relationships between FDI and these variables have not yet been well researched scientifically, so they have become the focus of this thesis. Another important aspect of this thesis is that it includes analysis of the impact of civil war on the Sri Lankan economy during the period 1983–2009.

This thesis makes a significant contribution to the knowledge in the area of FDI and its role in the Sri Lankan economy by investigating the following seven important research questions: (1) What are the factors that influence FDI inflows into Sri Lanka? (2) Is the FDI-led growth hypothesis supported by the Sri Lankan data? (3) Is there any causal relationship between FDI and tourism in Sri Lanka? (4) Does tourism influence economic growth? (5) Does FDI induce improvement in the total factor productivity in Sri Lanka? (6) Does FDI affect the income inequality in Sri Lanka? (7) Is there any relationship between FDI and domestic investment in

Sri Lanka? We believe that answering the above research questions will, to some extent, fill the knowledge gap in the area of research surrounding the impact of FDI in the Sri Lankan economy.

The comprehensive analysis using pre-war and post-war data presented in the thesis will contribute to the FDI related literature on Sri Lanka in the following ways. This research (1) is the first attempt to investigate the impact of FDI on various aspects of the Sri Lankan economy by using more recent developments in econometric techniques; (2) constructs a composite infrastructure index using data available on telecommunication, electricity and transport, to investigate the link between infrastructure and FDI in Sri Lanka; (3) investigates the impact of civil war on FDI as well as the Sri Lankan economy; (4) is the first research to explain the relationship between FDI and tourism in Sri Lanka; (5) makes a significant contribution in income inequality issues by examining the relationship between FDI and income inequality in Sri Lanka; (6) investigates the relationship between FDI and domestic investment in Sri Lanka. Overall, the thesis has contributed towards a comprehensive scientific analysis of various FDI related aspects of the Sri Lankan economy.

9.2 Summary of Conclusions

Chapter 1 presented a general discussion of FDI and briefly highlighted the trend of FDI in the global economy, then detailed the motivation and objectives of the thesis. It also presented the seven main research questions investigated in the thesis and briefly discussed the contributions of the thesis. Finally, the chapter outlined the preview of the thesis.

Throughout Chapters 2–8, we have used recent developments in econometric time series models, namely, Autoregressive Distributed Lag Model (ARDL), Error Correction Model (ECM), Bound tests and Granger causality tests.

The purpose of Chapter 2 was to focus on the determinants of FDI. This chapter introduced the major theories of FDI and then empirically identified the factors that attract FDI to Sri Lanka. The findings from this chapter reveal that the major determinants of FDI in Sri Lanka are market size, openness, infrastructure, labour cost and political instability. It also concluded that market

size, openness and infrastructure have a positive effect on FDI while labour cost and political instability negatively impact FDI.

Chapter 3 identified the factors that contribute to economic growth in Sri Lanka. The findings show that major determinants of economic growth in Sri Lanka are domestic investment, trade, macroeconomic instability and political instability. Domestic investment and trade positively influence economic growth while macroeconomic instability (proxied by rate of inflation) and political instability (war) have a negative impact on economic growth. Moreover, FDI has a positive but insignificant effect on economic growth.

Chapter 4 investigated the causal relationship between FDI and tourism in Sri Lanka. The results reveal that a unidirectional causal relationship between FDI and tourism exists in the direction of FDI to tourism in both the long run and the short run. These results suggest that a greater amount of FDI inflows could increase the number of tourist arrivals. The chapter also found that greater open economic policies increase FDI inflows into Sri Lanka. Political instability significantly and negatively influences tourism, which means that international tourists are more concerned about political stability.

Chapter 5 dealt with the tourism-led growth (TLG) hypothesis. The causal relationship between tourism and economic growth in Sri Lanka was investigated in this chapter. The results reveal that there exists a unidirectional causality relationship from tourism to economic growth. This supports the TLG hypothesis in Sri Lanka. Additionally, as open economic policies positively influence economic growth, it confirms the validity of an openness-led growth hypothesis for Sri Lanka.

The impact of FDI on total factor productivity (spill-over effect) and the factors that influence total factor productivity in Sri Lanka was analysed in Chapter 6. The analysis of the chapter concludes that FDI is one of the determinants of total factor productivity. As a result, FDI brings positive spill-overs into Sri Lanka. Other determinants of total factor productivity are research and development, human capital, trade, technology gap, population and political instability.

Chapter 7 examined the impact of FDI on income inequality in Sri Lanka. The findings of the chapter indicate that FDI does not increase income inequality in Sri Lanka. Economic growth and international trade lead to widening the income inequality while human capital and population tend to reduce income inequality. As economic growth causes inequality in the Sri Lankan society, this result is consistent with an inverted U-shaped curve, which means that Kuznets's theory is supported by the Sri Lankan data. Based on the theory, it can be claimed that Sri Lanka is in the early development stage.

Chapter 8 investigated the crowding effect of FDI on domestic investment in Sri Lanka. The empirical results of the chapter conclude that FDI does not have a significant effect on domestic investment. This indicates that there is no crowding in or crowding out effect on domestic investment in Sri Lanka. As a result, an increase in FDI will lead to an increase in the gross fixed capital formation, while domestic investment remains unchanged. Consequently, FDI has a neutral effect. In addition, economic growth has a positive impact on domestic investment while the civil war has an adverse effect on domestic investment.

In light of these findings, the thesis concludes that, in general, FDI brings into Sri Lanka a positive externality that promotes economic growth. The positive effects occur when FDI leads to tourism, which in turn stimulates economic growth and increases total factor productivity, bringing positive spill-over effects. The neutral impacts occur when MNEs provide capital that does not complement or substitute domestic investment. Further, FDI does not lead to a change in income inequality. The overall conclusion of the thesis is that FDI plays a vital positive role in Sri Lanka's economic development. However, Sri Lanka should develop appropriate economic policies and regulations to sustain the positive effects of FDI, and to convert its neutral effects so that they become beneficial to the country (for example, crowding in effect and reducing income inequality).

Even though there is a vast pool of literature discussing the positive and negative impacts of FDI on an economy, very little research has been published on this topic in relation to Sri Lanka. This thesis empirically investigated the relationships between FDI and selected important macroeconomic variables, such as the economic growth, tourism, the spill-over effect, income

inequality and domestic investment and fills the knowledge gap in these areas in relation to Sri Lanka.

9.3 Policy Implications

The findings of this thesis will be useful for policy makers and academic researchers who are interested on the impact of FDI in an economy. There has been a lot of discussion between policy makers and academic researchers regarding the positive and negative impacts of FDI in an economy in developing and developed countries. The findings derived from the thesis are expected to be beneficial for developing countries and/or countries that have similar characteristics of Sri Lanka.

Political stability is extremely important for economic policy making, especially for the adoption of long-term policies that are vitally important for socio-economic development. To the Sri Lankan policy makers, ethnic harmony and political stability should be the main priorities on their agenda. Successive governments should have a long-term perspective on policies that would ensure sustained economic development. Moreover, there must be consistency, certainty and predictability in economic policies. Only a stable Sri Lankan authority can create political stability in the business environment, which in turn would give confidence and security to foreign investors.

Policy makers should further promote economic liberalization reforms. Implementing greater trade liberalization policies would enhance the FDI and economic growth of Sri Lanka. Macroeconomic instability makes the domestic macroeconomic environment less predictable, lowering the economic growth. In order to control the rate of inflation, Sri Lanka should adopt an appropriate monetary and fiscal policy.

To make a positive and significant relationship between human capital and economic growth, the Sri Lankan authorities should allocate a greater amount of resources to education (human capital), especially to higher education, which will make an important contribution to the economic growth process of Sri Lanka. In addition, the Sri Lankan government should consider

some incentive policies to prevent brain drain and encourage those ‘domestic elites’ to contribute to economic development in Sri Lanka rather than letting them migrate overseas.

The Sri Lankan government should continue to elevate and modernize tourism related activities to attract more tourism to result in high economic growth. Sri Lankan government should also encourage foreign investors to invest in this tourism related industries to develop new tourist venues and facilities in the less developed regions such as the North and East provinces where there are plenty of tourist attractions. Policy makers should also undertake effective polices to increase the level of R&D facilities since this would help increase total factor productivity.

There is no crowding in or crowding out effects on domestic investment in Sri Lanka. As a consequence, FDI could certainly be encouraged in Sri Lanka as FDI does not crowd out domestic investment. Sri Lankan policy makers could develop policies that will increase the contribution of FDI to domestic investment such as the restructuring of domestic financial systems and liberalization of financial markets. These incentives may allow the domestic firms to get benefit from the presence of foreign investors in terms of domestic market merger and acquisition activity. These activities can stimulate the domestic firms and enable FDI to crowd in domestic investment. Further, the Sri Lankan authorities could implement sound policies to attract more FDI, without further aggravating income inequality.

Overall, the findings of the analysis of this thesis recommend that the Sri Lankan government should create a broad reform of policy-making including regulatory reform, fiscal incentives and a stable political and macroeconomic environment to attract FDI.

9.4 Limitations of the Research

Time series analysis is represented by the sequence of observations. Due to the unavailability of longer time-series data, this thesis was able to use only a maximum of 45 annual observations covering the period (1970–2014). The reliability and generalizability of the econometric estimation results could have been improved if it had been possible to use a longer time series.

Due to the unavailability of the sector wise data (longer time-series data), the effect of FDI on the primary, manufacturing, and services sectors was not analysed in this thesis. Aggregate data for investigating the impact of FDI on the Sri Lankan economy was used in this thesis.

For the chapter on FDI and income inequality (Chapter 7), since the data for income deciles for urban and rural residents in different provinces are not available, this research performs the analysis based on aggregate data. However, this analysis could be improved when disaggregated data is available for Sri Lanka.

9.5 Implications for Further Research

We make the following recommendations for future research concerning the impact of FDI in Sri Lanka.

In this thesis, the aggregate FDI data is used to examine the impact of FDI on Sri Lankan economy as sector-wise FDI data and industry level data are not available at the time of completion of this thesis. However, analysis on the impact of FDI on the Sri Lankan economy can be improved by using sector-wise and industry level FDI data. Therefore re-estimation of the models should be conducted when sector-wise FDI data and industry level data become available.

At the completion of the thesis, provincial-wise FDI data was not to our knowledge available. Therefore, the thesis uses time series data for the country as a whole. In Sri Lanka, there are inequalities among the provinces in terms of economic conditions. Some provinces, such as the North and East, are less developed than others. We propose conducting further research using data on tourism, income inequality and domestic investment on a provincial basis.

The determinants of FDI can be classified into location-specific, ownership-specific and internalization-specific advantages. Due to data unavailability, in Chapter 2 we could not incorporate those three classifications separately into the analysis to identify the determinants of FDI. In future research, when data becomes available, these classifications could be considered.

Chapter 6 investigates the spill-over effects of FDI based on aggregate data. Such aggregate data on FDI does not allow this thesis to explore the effects of horizontal and vertical FDI. This guides an avenue for future research to investigate the effects of horizontal and vertical FDI on each industry. In Chapter 8, the crowding effects of FDI are investigated based on the aggregate data. However, crowding effects of FDI will differ between industries. As different technology levels are associated with different industries, crowding effects of FDI in industry level is an important area for future research.

This thesis only focuses on the impact of FDI on the Sri Lankan economy. However, FDI also impacts on other areas such as environment and society. Therefore future research can consider the impact of FDI on the environment and society. It is worth exploring the role of FDI in other relevant areas. It is also important to analyse the post war FDI performance to understand how investors react after the end of a long period of war. At the time of writing this thesis, only five years of post war data was available, and therefore it was too early to explore any post war effects. In future, an analysis can be done considering the impacts of FDI in Sri Lankan economy comparing war period and post war period.

Lastly, this research is based on quantitative analysis which relies primarily on the collection of secondary data. Even though secondary data usually comes from reliable sources and data collection is often guided by experts, it may not contain all required information to answer all desired research questions. Therefore, future researchers could employ additional qualitative research methodologies using survey data.