FOREIGN DIRECT INVESTMENT AND ECONOMIC GROWTH IN SMALL ISLAND ECONOMIES: THE CASE OF SOLOMON ISLANDS

A thesis presented in partial fulfillment of the requirements
for the degree of

Masters of Arts
in
Economics

at Massey University, Palmerston North,
New Zealand

Massey University

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2012

ABSTRACT

The role of foreign direct investment (FDI) has been recognised as a catalyst in the growth of developing nations in that it brings additional sources of capital investment and foreign savings. In addition to its primary aim as a source of capital formation, FDI also brings productive benefits, which include employment creation, technology transfer and associated spillover effects; skills development; trade and competitiveness; and access to foreign markets. As such, FDI is viewed in many studies as a key driver of economic growth, since it enhances profitability of domestic investment; transforms the host country's ownership structure of total investment; complements funding for domestic investment and improves the productive sectors of the economy.

This study examines several hypotheses relating to the linkage between FDI inflows and economic growth in the case of Solomon Islands. First, the study investigates the contribution of FDI to economic growth (i.e. the FDI-led growth nexus) in Solomon Islands. Second, it examines the main determinants of FDI (i.e. the growth driven-led FDI nexus). Finally, the productivity effects of FDI (i.e. the FDI-productivity nexus) on the main sectors of primary, manufacturing and services are evaluated. The directions of causality between selected variables for these three hypotheses are also examined.

Using time series data for the period from 1970 to 2010, the autoregressive distributed lag approach to cointegration is utilised to evaluate the FDI-led growth nexus and the growth driven-led FDI nexus. The Granger causality approach is adopted to evaluate the direction of causality between the selected FDI and growth variables. The FDI-productivity nexus is analysed using the stepwise and Granger causality approaches for the period 1985-2010. The empirical findings of the FDI-growth nexus show that FDI inflows, domestic investment, trade openness and labour are major influential factors of economic growth in the Solomon Islands. For the growth driven-led FDI nexus, the empirical findings show that economic growth, domestic investment, openness, exports, and infrastructure are all important determinants of FDI inflows. However, the civil strife and political instability, and high inflation deter FDI inflows and are detrimental to economic growth. In the FDI-productivity nexus, the primary and services sectors benefit the most from the productivity effects of FDI inflows complemented by better institutions, education, infrastructure and a stable political environment. The findings not only have important policy implications for the Solomon Islands but also for other small island economies.

ACKNOWLEDGEMENTS

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LIST OF ABRREVIATIONS

ADB	Asian Development Bank
ADF	Augmented Dicky- Fuller Tests
AIC	Akaike Information Criteria
ARDL	Autoregressive Distributed Lag to cointergration
ASEAN	Association of South East Asian Nations
CBSI	Central Bank of Solomon Islands
DBSI	Development Bank of Solomon Islands
DSF	Debt Sustainability Framework
ECM	Error Correctional Model
ECT	Error Correction Term
EU	European Union
FDI	Foreign Direct Investment
FIB	Foreign Investment Board
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GMM	Generalised Methods of Moments
HRPI	Honiara Retail Price Index
IFS	International Financial Statistics
IMF	International Monetary Fund
KPSS	Kwiatowski Philips Schmidt and Shin
LAR	Liquid Asset Ratio
LDC	Less Developed Country
LMIC	Lower Middle Income Country
MNCs	Multinational Corporations
NFD	National Fisheries Development
NPV	Net Present Value
OECD	Organisation for Economic Co-operation and Development
OLI	Ownership Location Internationalisation
OLS	Ordinary Least Square
OMO	Open Market Operations
PACER	Pacific Agreement on Closer Economic Relations
PP	Philips and Perron
RAMSI	Regional Assistance Mission to Solomon Islands
RGDP	Real Gross Domestic Product
SBD$	Solomon Islands Dollar
SIC	Schwarz Information Criterion
SIDS	Small Island Developing States
SINPF	Solomon Islands National Provident Fund
SINS	Solomon Islands National Statistics
SOE	State Owned Enterprises
SPICs	South Pacific Island Countries
TOT	Terms of Trade
UNCTAD	United Nations Conference on Trade and Development
VAR	Vector Autoregressive
WDI	World Development Indicators
VEC	Vector Error Correction
VECM	Vector Error Correction Model
WTO	World Trade Organisations

Map of Solomon Islands
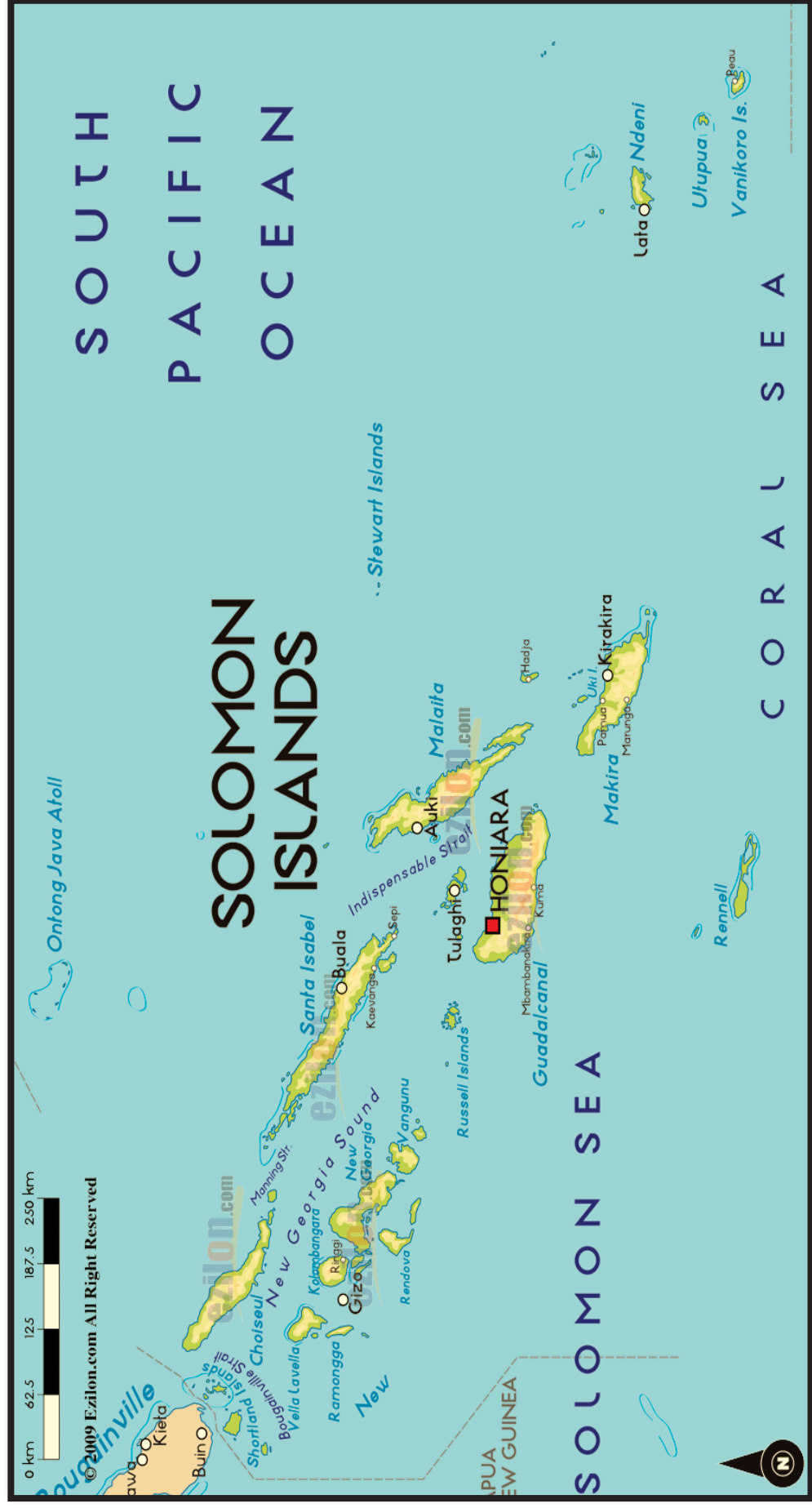
Source: Ezilon Maps.

Chapter One

INTRODUCTION

1.1 Background of the Study

This study investigates the linkages between foreign direct investment (FDI) and economic growth in the Solomon Islands. In particular, it focuses on examining the FDI-growth nexus, the growth driven-FDI nexus, and the FDI-productivity nexus.[1] In recent years, with the increase of globalisation and push by world economies for trade integration, FDI has become an important development mechanism for many developing countries, particularly for small island nations such as the Solomon Islands. Globally, FDI has made a significant contribution to the development of many developing economies. The FDI flows to developing countries increased rapidly from US$7.5 billion in the 1980s to $35.1 billion in 1990, and by 2000 and 2009, it reached US$256.5 billion and US$478.3 billion, respectively. The recent rapid increase and steady flow of FDI promulgates it as one of the most significant sources of international flows amongst others such as trade, foreign aid and remittances.

The role of FDI in accelerating economic growth is well recognized in the literature on growth (Grossman and Helpman, 1991; Lucas, 1988; Romer, 1986; Solow, 1956; Swan, 1956). In the neoclassical theoretical framework, FDI inflows may potentially influence labour growth and technological progress (considered exogenous) through increases in capital, technology transfer and capital formation (Todaro and Smith, 2006). However, the new growth theory treats technological progress as endogenous where FDI inflows through technology creation and spill over, upgrading of human capital accumulation and speedy technological advances may permanently increase growth (Grossman and Helpman, 1991). Despite these different views, both models provide a framework and an insight on the effects of FDI on economic growth.

While some studies highlight the potential drawbacks of FDI (Aitken and Harrison, 1999; Salman and Feng, 2009; Vissak and Roolaht, 2005), a majority of the empirical studies find a positive relationship between FDI and economic growth, however, this relationship depends on the 'absorptive capacity' of the host economy (Balasubramanyam, Salisu, and

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[1] FDI-growth nexus is where FDI inflows promote economic growth directly or indirectly. Growth driven-FDI nexus examines factors driving FDI inflows while FDI-productivity nexus investigates the effects of FDI on productivity.

Sapsford, 1996; Borensztein, Gregorio, and Lee, 1998).[2] The studies note the essence of the host country having the correct level of development in terms of education, infrastructure, conducive economic and investment climate, and political stability. Such pre-conditions provide the host country with the potential gains of FDI inflows and also attract high levels of FDI inflows, which in turn contribute to stimulate economic growth.

There exist a large number of empirical studies that predominately focus on FDI flows on developed and large, developing countries (e.g. the United States (US), member countries of the European Union (EU), China, India, Indonesia, Pakistan, Malaysia, Latin American and African countries) whilst due to lack of data have not examined the effects on the small island economies. The lack of consensus on the effects on FDI has been noted where the results differ not only on the significance of the relationship between FDI and growth, domestic investment, trade and productivity, but also the direction of such causal relationship (Ghazali, 2010; Srivastava, 2006; Tang, Selvanatha, and Selvanatha, 2008; Zhang, 2001). The varying results may be due to cross sectional studies and assuming homogenous characteristics of the nations but also the differences in model specifications and methodology, sample size and time period. The mixed results therefore provide an impetus to undertake country specific analysis to evaluate country specific characteristics to examine the effect of FDI on growth. The case of the Solomon Islands examines the role of FDI flows and its effects on economic growth.

Solomon Islands, like any other small island economy in the South Pacific region is predominately agriculture based. It relies heavily on trade for its exports and consumable goods and is one of the major aid recipients (Gounder, 1999; Gounder, 2002). With low savings and domestic investment, foreign investment as a source of capital, employment creation, technology transfer and market accessibility are crucial factors in the economic growth and development process of the Solomon Islands. Given the potential benefits of FDI, the government has offered a number of incentives using various economic and investment policies to attract FDI inflows. Despite, these considerable efforts, the FDI inflows from the period 1970 to 2004 has been low; however since the establishment of normalcy after the civil strife experienced during 1999-2003 period, the FDI flows have increased in the period 2004-2010. FDI inflows has risen considerably from SBD$30 million in 1985 to SBD$1000 million in 1999 to SBD$4433 million in 2010. The inherent structural and organisational problems, the lack of political will, civil strife and political

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[2] "Absorption in the FDI context means the assimilation of FDI in a given host economy, which involves two stages of absorbability... One is to bring FDI projects to the practise and the next one is to convert the benefits of FDI into host country's competences" (Nguyen, Duysters, Patterson, and Sander, 2009, p. 4).

instability factors have led to slow growth in FDI in the Solomon Islands. The increase in FDI flows in the post-2004 period is due to the presence of the Regional Assistant Mission to the Solomon Islands (RAMSI), which has been critical in restoring the confidence of foreign investors resulting in higher re-invested earnings. The streamline and simplification of foreign investment procedures and trade, and communication liberalisations more recently (i.e. in the post-2006 period) have also contributed to the positive trend. These subsequently has further led to a high FDI inflow and increased contribution to the country's economic growth activities in the island nation.

1.2 Aims and Objectives of the Study

The key aim of this study is to empirically analyse the relationship between FDI and economic growth in the Solomon Islands. To achieve this, the study analyses the FDI-growth nexus with a special focus on FDI inflows, domestic investment and trade openness. It also examines the growth driven-FDI nexus focusing on the main factors driving FDI inflows, which include market size, economic growth, infrastructure and communication facilities, inflation, trade openness, economic reforms and political instability; and the FDI-productivity nexus focusing on the productivity effects of FDI on the primary, manufacturing and services sectors.

The specific hypothesis and other issues considered in the study include the following: Does FDI contribute to the economic growth of the Solomon Islands? This hypothesis is tested using the following primary research question and a number of support questions. These are: (1) what is the relationship between FDI and economic growth in the Solomon Islands? Other support questions, to the primary research question, are as follows: (2) what is the current FDI environment in Solomon Islands and how does foreign investment policies impact on foreign investment? (3) What are some of the impediments to FDI, what are the enabling factors to attract FDI, what potential sectors could attract FDI, and how Solomon Islands can maximise benefits from FDI?

The empirical investigation of these fundamental questions is crucial for the Solomon Islands for several reasons. First, the study on the FDI and economic growth relationship has not been examined, despite its important effects on economic growth of the Solomon Islands. In particular, the impact of FDI on economic growth, the main determinants of FDI and their productivity effect on the main sectors of the Solomon Islands economy has not been empirically evaluated. Investigating these relationships is therefore crucial to provide evidence, which can be used to formulate relevant policies targeted at attracting FDI inflows. This is crucial to ensure that FDI inflows are directed to the sectors that are

more productive, which in turn may stimulate economic growth. Second, understanding the challenges and issues facing FDI may provide the government and key stakeholders with a basis to be more strategic in their approach to FDI, thus maximizing returns for both the Solomon Islands and foreign investors. Third, the study contributes to the body of knowledge in the FDI versus economic growth nexus.

To address the questions and achieve the main objectives of this study, the key hypotheses will be empirically examined using various base models. First, the FDI-growth model examines the linkages between FDI and economic growth and the direction of the relationship between gross domestic products (GDP), FDI inflows and domestic investment. Second, the growth driven-FDI model estimates the factors influencing foreign investors decisions and this include market size, economic growth, domestic investment, and inflation, quality of labour, infrastructure and communication facilities, economic reforms and political instability. It further seeks to estimate the direction of the linkages between FDI inflows, exports and per capita income. The final model is the FDI-productivity model which empirically estimates the productivity effects of FDI inflows on the main economic sectors; these are the primary, manufacturing and services sectors. The causal linkages between the productivity of each sector and FDI inflows are also examined. This is important to ensure FDI inflows are directed to appropriate sectors that has a more significant influence on economic growth.

1.3 Data and Methodology

To investigate the empirical effects of FDI on economic growth, time-series data of selected variables based on the theory for each of the parameters in the models are utilized from various sources, reports and websites for the period 1970 to 2010. This include the Central Bank of Solomon Islands (various) for the data on: GDP, GDP per capita, FDI inflows, trade openness, labour, inflation rate, exchange rate, wage rate and lending rates; the International Financial Statistics of the International Monetary Fund (various) for the domestic investment; and the World Development Indicators of the World Bank for quality of labour, telephone mainline per 100 person, gross value added in agriculture, manufacturing and services, and school enrolment in primary and secondary as a percentage of gross enrollment. Data on institutional quality are obtained from the economic freedom index of the Heritage Foundation (2011). The lack of consistency and a longer time series data for the Solomon Islands FDI inflows and socio-economic data prevent this study from including other variables in the models.

The methodology used to estimate the models is the Autoregressive Distributed Lag (ARDL) approach to cointegration. The eviews software has been used to estimate these models. The Bounds F-test developed by Pesaran and Shin (1998) is used to determine the long-run relationships amongst the variables before estimating the ARDL models and short-run error correction coefficients. The advantage of the ARDL approach is that it can determine short and long relationships and can effectively address the problems of endogenity and serial correlation for small samples (Pesaran, Shin, and Smith, 2001). This approach has also been selected following a number of recent country studies such as Gounder (2002); Jayaraman and Singh (2007); and Narayan and Smyth (2004) who adopted a similar approach to estimate the relationship between FDI and economic growth in the case of the island economies. The stepwise approach due to its simplicity has also been employed to examine the productivity effects of FDI inflows (Faraway, 2002).

Since, the direction of the causality relationships is important particularly for a selected three variable model, the Granger causality test has been employed. The tests are based on the Granger causality, which analyze the various interrelationships between the FDI inflows and the growth-enhancing variables. The details of the ARDL methodological framework, data and model specifications are embedded and discussed in each of chapters 4, 5 and 6. Also a detailed discussion of the stepwise procedure is provided in Chapter 6.

1.4 Outline of Chapters

This study is structured into seven chapters. Chapter 1 provides the background and objectives of the study. Chapter 2 presents the literature review of previous studies on FDI and its contribution to economic growth focusing on the growth models, the determinants of FDI and the productivity effects of FDI inflows. Chapter 3 provides an overview of the Solomon Islands economy since the 1970s to 2010. It includes a detailed discussion of the country's foreign investment policies and issues impacting on FDI, the flow and performance of FDI inflows by sectors and the macroeconomic policies that are implemented to support and increase FDI inflows for economic growth enhancement.

Chapter 4 presents the empirical models, methodology adopted in this Chapter and the results to ascertain the FDI-growth nexus. A discussion of the choice of variables and data sources, models and empirical results of FDI and growth enhancing factors, and the direction of the relationship between economic growth, FDI inflows and domestic investment are presented. Chapter 5 presents the empirical models and methodology adopted to estimate the growth driven-FDI nexus followed by the discussion of the choice

of variables, data sources, empirical estimates of the determinants of FDI and their likely impacts, and the direction of the relationship between FDI, exports and GDP per capita income results.

Chapter 6 discusses the empirical models and methodology utilised to estimate the FDI-productivity nexus, the choice of variables, data sources and empirical results of the productivity effects of FDI on the primary, manufacturing and the services sectors. The causality direction of the relationships between each sector's productivity and FDI inflows are also discussed. Chapter 7 presents the conclusions focusing on the key empirical findings and its associated policy implications, contributions of the study and the thesis concludes with some suggestions for further research.

Chapter Two

LITERATURE REVIEW

2.1 Introduction

The role of foreign direct investment (FDI) flows within the developing countries has grown dramatically since globalisation and a rapid expansion in the world's economy in the 1980s. FDI flows to developing countries have increased rapidly from US$7.5 billion in 1980 to US$35.1 billion in 1990 — and by 2000 and 2007 they reached US$256.5 billion and US$564.9 billion, respectively (United Nations Conference on Trade and Development, 2010). Furthermore, FDI flows to developing economies in 2009 account for 84 percent (US$478.3 billion) of total world FDI flows, thus overtaking the traditional dominance of developed economies. In 2009 Asian developing countries accounted nearly 63 percent of total FDI flows to developing countries, whilst the small island developing states accounted for only one percent of total FDI flows (UNCTAD, 2010).[3]

The economic benefits of FDI are many, but one of the most common justifications is the notion that foreign investments bring foreign capital, new knowledge, and managerial skills, in addition to creating employment and it can generate high levels of national income. FDI, as key capital resources, have promoted large theoretical and empirical studies. The effects of FDI on growth have produced mixed results and therefore these studies have noted country specific variables, in order to estimate its impact on growth.

Given the importance of FDI, most countries continue to actively seek to attract FDI, by offering generous incentives through the use of a number of investment promotion policies. When examining FDI's impact on growth, many supporters of the neoclassical growth and the new growth models have incorporated FDI, with varying outcomes. In regard to the empirical tests on the linkage between FDI and economic growth, the studies can be summarised into three mainstream groups. The first stream examines the impact of FDI on economic growth and it has expanded the growth models to include various economic and political variables (Balasubramanyam et al., 1996; Borensztein et al., 1998). The second stream focuses more on the determinants of FDI and it is comprised of a variety of economic, political and institutional variables (Adams, 2010; Choe, 2003; Zheng, 2009). The final stream focuses on the productivity effects of FDI on the main sectors, in particular, primary, manufacturing and services sectors. These theoretical and

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[3] UNCTAD is abbreviation for United Nations Conference on Trade and Development.

empirical studies have offered valuable insights into the nature of FDI and its potential contribution to economic growth.

This chapter provides a discussion of the main theories and empirical studies of FDI and economic growth relationship. It explores the vast literature on FDI in an attempt to identify the factors that attract FDI, in addition to FDI's impact on growth and its crucial impact on various sectors. The organisation of this Chapter is as follows: Section 2.1 outlines the theories of economic growth and subsequently frames the discussion on the importance of FDI inflows to a nation. Section 2.2 reviews the theories and empirical studies on the FDI-led growth hypothesis focusing on the impacts of FDI inflows and other growth-enhancing factors on economic growth. Section 2.3 concentrates on the growth driven-FDI hypothesis mainly on the determinants of FDI. Section 2.4 focuses on the FDI-productivity nexus, in particular the productivity effects of FDI on primary, manufacturing and services sectors. The significance of study in the case of Solomon Islands is discussed in section 2.5. Section 2.6 provides a summary of the literature reviewed in this chapter.

2.2 Theories of Economic Growth

This section provides a discussion on the two mainstreams of economic growth: the neoclassical growth theory and the 'new' (or endogenous) growth theory. Detailed discussions are provided within relevant and subsequent sections.

2.2.1 Neoclassical Theory of Growth

The neo-classical growth theory emerged in the 1980s due to growing dissatisfaction with earlier growth theories and in particular the international-dependency theory. The neoclassical counter-revolution theoretical approach contends that under-development is the result of resource misallocations arising from inefficient pricing and large government interference — and not as a result of heavy reliance abroad, as claimed by international-dependency theory (Todaro and Smith, 2006). In other words, the government is seen as the main cause of the inefficient allocation of resources, whilst the market is seen as the chief mechanism for the allocation of resources. As noted by Gillis, Perkins, Radelet, Snodgrass and Romer (2001), this view has arisen in support of a development approach that favours a lesser role for the state in the promotion of economic development.

In the developed nations, supporters of the neoclassical growth theory focus more on the supply side of macroeconomics and privatisation approaches. In the developing nations, proponents of the neoclassical theory call for free markets; the dismantling of public ownership; less government intervention; the promotion of free trade and export expansion; foreign investment; and a market friendly environment (Todaro and Smith,

2006). These policies favoured by the World Bank, International Monetary Fund and other organisations encouraged developing nations to move towards these goals for high growth and development.

Within the neoclassical theoretical framework, one of the key instruments used is the world renowned Solow model (1956), which is an extension of the 1946 Harrod-Domar models. Solow's neoclassical growth model assumes that growth is a function of capital (K), labour (L) and knowledge, or the effectiveness of labour (A) over time (t). In other words, within the production process, output is generated using capital and labour (Romer, 2006). This production function takes the following form:

$$Y_{(t)} = F(K_{(t)}, A_{(t)}, L_{(t)}) \tag{1}$$

Within this framework, the assumption of diminishing returns to capital implies that FDI inflows may only affect the level of income, whilst the long-run growth remains unchanged (DeMello, 1999; Solow, 1956). They argue that population growth and/or technological progress (considered exogenous) are the only means of increasing long-run growth. Given this relationship, FDI inflows may potentially influence each variable within the production function. Hence, FDI (through increases in capital) may improve labour, whilst technology transfers may raise total factor productivity, which improves the capital/labour ratios and per capita income. In this way, Todaro and Smith (2006) assert that capital-poor developing nations, through both capital accumulation and technology progress, may reach the steady state.

Whilst the Solow neoclassical growth model remains important and it has inspired many economists and policy makers, its limitations are also noticeable. One of its limitations is the rate of technological progress, which does not explain a great deal about the change in growth, since it is determined outside the model (i.e. exogenously). The rate of technological progress is said to only affect how quickly poor countries can catch up with developed countries (Szostak, 2009). As such, growth in developing countries depends substantially on the speed of progress to reach the steady state. Furthermore, openness of the economies may obtain higher levels of income convergence when capital flows from rich countries to poor countries where lower levels of government control facilitate foreign investment flows to accelerate economic growth (Todaro and Smith, 2006).

The other drawback noted in the neoclassical model is that economic policies (based either on markets or less public intervention) would not work, due to differences in the structure and types of organisations of developing countries. Gani (1996), Jayaraman (1996) and

Gounder (2002) note the need for a balanced state, where private enterprise, free markets, privatisation and the openness of island economies require caution, due to the vulnerability and smallness of these nations. Therefore, the state has a larger role in creating a favourable environment for private sector development, given the differences in size, geographic location, organisational structures and the characteristics (Gounder, 2002; Jayaraman, 1996). Facing capital shortages, a favourable investment climate is, therefore, important for developing countries, in order to attract FDI, since it brings in foreign capital or foreign exchange to the host country, which then fills the resource capital gaps.

The problems of market imperfections compounded by poor economic conditions have been noted in the less developed countries (LDC), in addition to institutional rigidity and severe socio-economic inequality. Furthermore, LDCs are more supply-orientated and supply driven, where smaller trade and low foreign exchange levels may have implications on the growth process (Thirlwall, 2002). The weaknesses of the neoclassical model have led to the development and emergence of the new growth theory, which is discussed in detail in the following section.

2.2.2 Endogenous Theory of Growth

The new growth theory that emerged in the mid-1980s promoted a vast amount of literature and research related to analysing economic growth (Thirlwall, 2002). The new or endogenous growth theory recognises that one of the main theoretical weaknesses of the neoclassical model is the assumption that the rate of technology progress is determined exogenously (or outside the model) and therefore, it cannot explain a great deal about economic growth (Romer, 2006). This shortfall has been the starting point for the new growth theory. It provides alternative views for analysing growth. However, the focus is more on analysing long-run growth, which includes an examination of the concept of convergence between poor and rich countries.

Early advocates of the endogenous growth models highlighted that externalities play a larger role on the supply-side, through generating long-term sustained growth (Thirlwall, 2002). The studies by Romer (1986), Lucas (1988), Grossman and Helpman (1991) suggest that externalities to research and development (R&D) expenditure, human capital formation (education) and trade and foreign direct investment (technological spillover), respectively for long-run growth.

There has been a stronger focus on the role of infrastructure investment and its complementarities within various types of investment. The supporters of new growth

theory strongly emphasise the importance of investment in physical and human capital and R&D, in order to enhance economic growth (Crafts and Toniolo, 1996; Sun, 1998). Their view is that when knowledge, technology know-how and skills are combined with human or physical capital, the marginal products of other products improve, as opposed to the neoclassical model of diminishing returns.

In the basic endogenous growth model, it is assumed that growth (Y) is a function of capital (K), labour (L) and technological knowledge (D) or (R&D). The production function for endogenous growth model takes the form:

$$Y = f(K, L, D). \tag{2}$$

In this model, D is an index which represents the amount of resources allocated to R & D (Grossman and Helpman, 1991). This includes 'learning by doing' or imitations, technological (knowledge) spillovers, and innovations from trade and foreign direct investment (Wei and Lui, 2001). The rationale for the inclusion of R&D in the new growth theory stems from the observation that it explains technological progress and creation, and spillovers referred to as the engines of economic growth. Thus, through accessing new technological ideas and transmitting these ideas via the production process and through various links with local companies (such as joint ventures), rapid growth may occur even if the rate of investment is falling (Wei and Lui, 2001). Most importantly, FDI can permanently increase growth rate through an increase in capital stock, the upgrading of human capital accumulation (spillovers) and speedy technological advances (Grossman and Helpman, 1991).

According to Romer (2006, p. 101) "it is plausible that technological progress is the reason that more out-put can be produced today from a given quantity of capital and labour than could be produced a century or two ago." Therefore, the state has an important role in providing the bulk of direct and indirect investment towards research and development projects, as opposed to what has been stated in neoclassical counter-revolutionary theories. In support of technological progress, advances in telecommunication technology may connect the development efforts of small island economies (Abbott, 2004). He notes that connectivity, termed as 'tyranny of distance', could link the islands and the region and allow them to interact and transact, in addition to offsetting the structural disadvantages of unequal trading arrangements and diseconomies of scale. Abbot's argument, as opposed to those advocated by the earlier growth models, is that "there is no set pattern for socio-economic development" (Abbott, 2004, p. 140). He highlights that the small island states

of the South Pacific can still gain an economic take-off (without necessarily having to undertake periods of industrialisation development) through the use of advanced telecommunication technology to capitalise on their comparative advantages, particularly in niche products and tourism.

Recognition of modern technology by the Pacific Island leaders and by creating numerous organisations to support its growth process are on-going. For instance, the use of advanced telecommunication technology is used by the University of the South Pacific (USP) to extend its teaching through distance learning packages. This has not only improved these countries' education levels (skilled labour), it has also widely integrated the Pacific Island countries internationally (Abbott, 2004). "The Pacific Islands are not only becoming increasingly dependent on the outside world for technology but are also calling for a more appropriate technology that will not displace indigenous technology" (Marjoram, 1994, p. 9). Cautious use of appropriate technologies is crucial to combine modernisation and integration of the island economies and at the same time use local technology given their limited resources and remoteness of the islands.

The extension of the neoclassical model combined with new growth theory highlight government actions. These include taxation; maintenance of law and order; regulation of international trade and financial markets; and other aspects of the economy that determine long-term growth (Barro, 1997). However, such conditions are poor or non-existent in many small island states. The small island developing states (SIDS) face the challenges of ineffective regulations; poor infrastructures; underdeveloped financial markets; political instability; corruption; and mismanagement (Asian Development Bank, 2005; Gounder, 2002). While the progress, adoption and diffusion of many growth factors depend on a society's motivation and willingness to accept them, it is not purely an economic matter (Thirlwall, 2006). Given this situation, the speed of progress will depend extensively on a country's level of development and the availability of factors for growth.

Despite these differential views the growth theories note various differences in economic and social factors and thus differential in economic growth performance in developed and developing countries. Thus, there is no one pattern or single formula for economic growth and each nation (with its unique characteristics and historical experiences) therefore creates its growth strategy relevant for long-term growth commitment and development World Bank (2008).

Overall, the two major theoretical models provide a better understanding of an analysis of economic growth. As capital is a crucial factor for growth, particularly in capital scarce nations, FDI may result in an enhanced growth performance for the recipient economy. Whilst the neoclassical growth model suggests that FDI inflows only affect output growth, through an increase in both the volume of investment and its productivity, the new growth theory, on the other hand, suggests that FDI affects growth endogenously, through an increase in human capital and technological progress via externalities and spillover effects (Kok and Erosy, 2009). This study holds the conventional position that all capital inflows complement the resource gaps and therefore contribute to economic growth.

2.3 Impact of Foreign Direct Investment on Economic Growth

Generally, it has been long argued that FDI inflows stimulate economic growth through externalities and spillover effects and it is a vital determinant for long-run growth (Grossman and Helpman, 1991; Lucas, 1988; Romer, 1986; Solow, 1956; Swan, 1956). The spillover effects may include new technology; capital formation; employment creation; the development of human capital (labour skills and employment); R&D; technology diffusion; and access to markets. However, many developing countries face shortages in their productive resources, which constrain their growth performance and overall economic development. These shortages, as suggested by the proponents of the 'two gap' or four gap models,' justify the inflows of FDI to bridge these gaps in developing countries (Todaro and Smith, 2006).

The existing literature based on new growth theory identifies four main channels through which FDI may affect economic growth in developing countries. First, FDI inflows may overcome capital shortages and complement the domestic investment resource industries, through investment in capital accumulation: both physical and human (Todaro and Smith, 2006). Second, FDI may directly bridge the foreign exchange gap through foreign capital inflows: and indirectly through export earnings. This may increase the host country's foreign earnings and its ability to increase export competitiveness (Pailwar, 2004). Third, FDI may fill the revenue gap through foreign companies' taxes (direct/indirect) paid to the government. The government may use such revenues to finance its development projects and infrastructures and other capital expenditures that stimulate economic growth (Todaro and Smith, 2006). Fourth, FDI may raise the host country's productivity, improve its domestic stock of knowledge, encourage technological changes through labour training, skills acquisition and diffusion (Wan, 2010). As such FDI is argued to have the potential to positively influence economic growth.

In addition to its positive contributions to economic growth, FDI also plays a key role in other aspects of development, such as employment and the environment (Ajayi, 2006). Thus, FDI can generate multiple effects on domestic employment and generate new employment and opportunities (through backward and forward linkages with domestic firms). Following an increase in labour use or utilisation, production increases, thereby stimulating economic growth. Another possible impact of FDI is that it may reduce poverty in many developing countries (Ajayi, 2006). Although empirical analysis linking FDI to poverty is scarce, it has been noted that FDI, as a key driver through employment and growth creation may ultimately lead to poverty reduction. As pointed out by Ajayi (2006) in this case, the trickle-down effects of growth may reduce poverty.

Although studies have noted that FDI is an important determinant of the economic growth process (2005), pessimistic views are deeply rooted in the early theories (dependency theories) of the 1950s and 1960s that see FDI as a constraint to LDCs economic performance (Aitken and Harrison, 1999; Papanek, 1973). They argue that FDI may create balance of payment problems, through profit repatriation and transfer pricing. It can also generate negative effects associated with the over-exploitation of resources, the poor generation of linkages and the under-utilisation of local inputs. Furthermore, FDI may crowd-out domestic investment and it may also generate distortions within the local economy, thereby hampering economic growth. Moreover, it may encourage foreign enclaves and (in many cases) this may lead to a loss of sovereignty for the host country.

In view of these conflicting theoretical views, many empirical studies have examined the relationship between FDI and economic growth. However, these studies have largely produced mixed results and (in some instances) the links are considered non-significant. The empirical literature has identified various channels where FDI can affect growth and these can be broadly summarised into two mainstream approaches. The first stream of studies, which relied heavily on a number of cross-country regressions, focus more on the factors that are important for identifying the positive impact of FDI on economic growth. These include Blomstrom and Kokko (1994), who suggest that FDI could have a positive effect on growth, but only if the host country has a high level of per capita income.

Studies by Balasubramanya et al., (1996), using the Ordinary Least Square (OLS) method for 46 developing countries, for the period 1970-1985, also show the positive effect of FDI on economic growth, but its effect depended largely on trade regimes and the degree of openness of the host economies. These results are consistent with Bhagwati's (1978)

hypothesis, where the growth effect of FDI is positive in export-promoting countries, whilst it is negative in import-substituting economies. In another similar study, Borensztein, et al., (1998) used the Seemingly Unrelated Regression (SUR) technique (with cross sectional data) for 69 developing countries. They found a positive effect of FDI on economic growth: but its magnitude depends on the stock of human capital available within the host country.

A similar result has also been obtained by Olofsdotter (1998), when examining the effects of FDI through technology spillovers. Using cross section data for 50 developed and developing countries, in the 1980s and 1990s, he finds that an increase in the stock of FDI affects growth positively and that the effect is stronger for host economies with high institutional qualities, such as property rights protection and bureaucratic efficiency. However, in contrast to the preceding studies, DeMello (1999) finds only a weak positive interaction between FDI and economic growth, resulting from a study of 32 developed and developing countries, for the period 1970-1990. Using time series and panel data estimation, he finds no evidence of a positive effect of FDI on growth in the non-OECD countries sample. His results also show a negative FDI impact on GDP, in the short-run.

Studies have also used causality estimation techniques, in order to focus on the direct causal relationship between FDI and growth. Unlike pure cross-sectional studies, where the focus is only on the relationship between economic growth and FDI and other economic variables (at a specified time for a given cross-country or cross-sections), Granger's causality studies tend to identify the cause and effect (direction) of a FDI-growth relationship over a period of time (Choe, 2003; Ghazali, 2010). This technique depends largely on past values of (for example) FDI, to forecast future values of (for example) GDP, given that the relationship between the variables remains stable. It uses country-specific or a pooled-cross section and time-series, in order to examine the causal link between FDI and economic growth (Wooldridge, 2009). See Table 2.1 on various selected studies.

Using Granger causality tests and a dataset for 11 developing countries in East Asia and Latin America, for the period 1960-1997, Zhang (2001) finds growth enhancement from FDI for five out of 11 developing countries.[4] However, he stresses that the magnitude depends on the host country's conditions, such as its trade regime and macro-economic stability. Similarly, Choe (2003) using a Vector Autoregressive (VAR) panel model for 80

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[4] The sample includes Argentina, Brazil, Colombia, Mexico, Hong Kong, Indonesia, Korea, Malaysia, Singapore, Taiwan and Thailand. From these countries, the five where FDI boosts economic growth are Hong Kong, Indonesia, Singapore and Taiwan in East Asia and Mexico in Latin America (Zhang, 2001).

developed and developing countries, for the period 1971-1995, finds a causal relationship between economic growth and FDI. In that the causality between the variables runs in either direction, but the effects are stronger from economic growth to FDI. Furthermore, Choe's findings suggest that fast growing economies could attract more FDI inflows.

Table 2.1 The impact of FDI on Economic Growth: Selected Studies

Study	Countries Studied and Time Period	Econometric Technique	Empirical Evidence
Balasubramanya, Salisu and Sapsford (1996)	46 Developing countries (1970-1985)	Ordinary Least Square	FDI has a positive effect on economic growth, but its magnitude depends on trade regimes and the degree of openness of the host nation.
Borensztein, Gregorio and Lee (1998)	69 Developing countries (1970-1979 & 1980-1989)	Cross country Regression & Seemingly Unrelated Regression (SUR) technique	FDI has a positive overall effect on economic growth, but this depends on the stock of human capital within the host economy.
DeMello (1999)	32 developed & developing countries (1970-1990)	Time Series and Panel Data	No evidence of the positive effect of FDI on growth.
Gani (1999)	Fiji (1976-1995)	Time Series, Co-integration & causality tests	FDI has a positive effect on Fiji's growth.
Zhang (2001)	11 developing countries East Asia & Latin America (1960-1997)	Time Series & Granger causality tests	Evidence of growth enhancement from FDI, but its magnitude depends on host country conditions: e.g. macroeconomic stability
Carkovic and Levine (2002)	72 developed & developing countries (1960-1995)	Generalised Methods of Moments	No evidence of positive effect of FDI on growth, either on human capital stock or trade openness.
Choe (2003)	80 developed and developing countries (1971-1995)	Vector Autoregression (VAR) panel model	Evidence of causality between economic growth and FDI runs in either direction, but the effects are stronger from economic growth to FDI.
Frimpong and Oteng-Abayie (2008)	Ghana (1972-2002)	Toda-Yammoto's (1995) Granger no-causality test	Evidence of FDI Granger caused GDP growth.
Ghazali (2010)	Pakistan (1981-2008)	ADF Unit Root test, Granger Causality Test & Johansen Co-integration test	FDI inflow in Pakistan supplements domestic investment and stimulates economic growth.
Tsen (2010)	China (1978-2002)	Granger Causality test	Evidence of bi-directional Granger causality between exports, domestic demand and economic growth.

Source: The nominated studies.

Carkovic and Levine (2002), using Generalised Methods of Moments (GMM), with panel data analysis for 72 developed and developing countries, for the period 1960-1995, find contradicting results to the preceding findings. Their results showed no evidence running

from FDI inflow to the host country's economic growth, or on variables such as human capital stock and trade openness. They claim the GMM method is more robust than OLS. Hence, they criticise OLS-based studies as having economic problems of simultaneity and omitting variable bias, which then results in a 'false positive' effect. However, when Blonigen and Wang (2004) use panel data and OLS estimation techniques, their findings show no positive effect of FDI on growth for developed countries. Besides, they find a positive effect on growth for developing countries, which depends on a sufficient level of human capital. They note that the use of inappropriate pooling of wealthy and poor countries (in previous studies by Carkovic and Levine, 2002) has resulted in an insignificant effect of FDI on growth.

A country-study by Gani (1999) on Fiji (a small island economy in the South Pacific) utilised time series data for the period 1976-1995, where co-integration and causality tests found that FDI had positively contributed to the growth of GDP, during the period. Similarly, studies by Frimpong and Oteng-Abayie (2008) on Ghana, which used the Toda-Yammoto's (1995) Granger no-causality test with data from the period 1972-2002, show that FDI Granger caused GDP growth, during Ghana's post Structural Adjustment Program (SAP) period. Similarly, Tang et al., (2008) using a VAR system and Error Correctional Model (ECM) for China show results that FDI inflows complement domestic investment and stimulate economic growth. Likewise, Ghazali (2010), using a Granger causality test and Johnansen co-integration method for Pakistan also reach similar finding. However, a study by Parviz (2009) on Japan shows that FDI has had no significant impact on both that country's economic growth and total factor productivity. He suggests that the results have been affected by Japan's unique and unfriendly business environment.

In a more recent study by Tsen (2010), which used the Granger causality method with time series data for the period 1978 to 2002 for China, the results indicate bi-directional Granger causality between exports, domestic demand and economic growth. These results confirm that China's economic growth has had an impact on its exports and domestic demand. Similar results were also obtained by Lamine and Yang (2010) for the Guinea Republic. Using the Granger Causality test, they find that FDI level is still too low to promote growth for the Guinea Republic, whilst GDP promotes its FDI levels. They concluded that, if GDP in Guinea increases, FDI will also increase.

2.4 The Determinants of Foreign Direct Investment

The section presents the literature that identifies a variety of variables, which have an influence on attracting FDI inflows. Most of these variables are based on formal hypotheses, theories of economic growth and capital flows of FDI, whilst other variables have also been suggested, since they make sense, intuitively (Kok and Erosy, 2009).

To see the effects of how FDI flows are driven by the host nation's economic growth, it is important to first examine the main motives of foreign investors: *Why do foreign firms invest abroad?* The existing literature identifies two main motives that drive firms to invest abroad. Firstly, according to Hymer (1960) study, based on the industrial organisation theory, the first motive is a result of foreign firms having specific-advantages, such as assets, patents, superior technology, organisational know-how and managerial skills, which enable them to compete successfully over local competitors in foreign markets. The second motive is based on transaction cost theory, where foreign firms want to avoid various trade and tariff barriers and high transactions costs for their exports. Therefore, it is more cost efficient for them to localise all (or some) of their production abroad, not only to gain profit and economies of scale but also to tap into new markets (Buckley and Casson, 1998; Carbaugh, 2011).

Although these two preceding motives remain important, the growth driven-FDI hypothesis (based on location theory) also emphasises country-specific characteristics or strong economic fundamentals for attracting FDI (Dunning, 1977; Sun, 1998). This include the availability of natural resources; importance of growing market size; improving conditions in human capital; low labour cost; high growth rate and per capita income; good infrastructures; openness; political stability; and a favourable investment environment. Advocates have viewed that fast growing economies may experience a rise in aggregate demand that stimulates higher demand for investment and FDI. Besides, better economic performances may offer FDI greater opportunities for economies of scale, market penetration and profit from growth (Kahai, 2004; Vita and Lawler, 2004).[5]

Empirical studies, which focus on the interplay between FDI and a variety of economic variables, also provide mixed results as depicted in Table 2.2. When examining the link between labour availability and FDI, Rehman, Orangzab and Raza (2011), for Pakistan, show that quality of labour has had a positive impact on FDI inflow. They affirm that the

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[5] It is also noted that determinants of FDI inflows are complex and not always liable for accurate measurement (Kahai, 2004), in addition to being sensitive (Chakrabarti, 2001). Thus, empirical studies on the determinants of FDI and other economic variables show inconsistent results (see Table 2.2).

availability of labour is crucial for foreign firms' location preferences, since it not only attracts FDI to the local economy, but it also lead to positive and significant impact on economic growth of Pakistan. However, a study by Gounder and Xayavong (2002), for Fiji (1968 to 1997) and the Solomon Islands (1970-1997), in the South Pacific region, provides contradicting results. Using dynamic simulation and time series techniques, Gounder and Xayavong note FDI diffusion through labour skills do not contribute to long-run economic growth. They suggest that this is due to a shortage of domestic skilled manpower required by foreign investors. Hence, low educational levels is the main reason (in the case of the Solomon Islands) and political instability (in the case of Fiji), which saw a mass exodus of professional and technical workers since the 1987 post-coup period.

Table 2.2 The Determinants of Foreign Direct Investment: Selected Studies

Potential Determinants of FDI	Effects on Foreign Direct Investment		
	Insignificant/Non-effect	Negative effect	Positive effect
Growth Rates	Tsai (1994)		Hansan (2004), Gani and Sharma (2003)
Openness		Wheeler and Mody (1992)	Easterly and Kraay (2000), Srivastava (2006)
Market Size			Pärletun (2008), Dauda (2008)
Labour force		Gounder and Xayavong (2002)	Rehman, Orangzab and Raza (2011)
Labour Costs	Tsai (1994)	Ramasamy and Yeung (2004)	Zheng (2009)
Infrastructure, Domestic investment	Rehman,Orangzab and Raza (2011)		Kok & Erosy (2009)
Exchange Rate	Zheng (2010)		Jajri (2009)
Tax	Blonigen and Davis (2004)	Chakrabarti (2001)	Swenson (1994)
Govt. Effectiveness, political stability, other economic & social policies		Gounder and Xayavong (2002)	Adams (2010)

Source: The nominated studies.

The empirical evidence on labour cost and FDI is highly controversial and results ranging from negative or positive, to having no significant effect at all. Wei and Lui's (2001) study on China, using panel data analysis for 28 provinces for the period 1983-98, shows that a one percent increase in the wage rate in China has been accompanied by a 0.17-0.43 percent fall in FDI flows. Conversely, studies by Wheeler and Mody (1992), on USA multinationals within the manufacturing sector, find a positive relationship. They argue that high wage rates are an indicator for the high labour quality desired by foreign firms. A comparative study by Zheng (2009) on China and India, using panel data for the period 1984-2002, also finds positive relationships between labour costs and FDI, but the attraction is due mainly to an abundant low-cost labour force in both countries. However,

Ramasamy and Yeung (2004) using panel estimation for the five major members of the Association of Southeast Asian Nations countries, for the period 1992-1999, find that an increase in the high number of unskilled labour in these countries reduced their stock of FDI from the European Union. This result contradicts the cheap labour argument. Meanwhile, Tsai (1994), utilising a cross-country data with a simultaneous equation model, obtained an insignificant result on wage rates.

Highlighting the relationship between domestic infrastructure and investment and FDI, Wei and Liu (2001), using the ratio of output of post and telecommunication services to gross domestic production (GDP), for China, find a significant impact on FDI inflows, with an FDI elasticity of 0.7- 0.9 percent for various regions in China. Jajri (2009), using co-integration techniques but for Malaysia, obtains a similar result, in that a one per cent increase in public development expenditure raised FDI inflow by 0.07 per cent. In contrast, studies by Rehman et al., (2009), for Pakistan, note that there is no significant impact of communication facilities on FDI.

The market size hypothesis, (usually measured by size and growth of GDP) has mostly been accepted as having a positive effect on FDI. Using the pairwise Granger causality test and OLS for Nigeria, for the period 1986-2006, Dauda (2008) finds that market size and its growth is a strong factor in attracting FDI. Pärleturn (2008) shows that the integration of transition economies of Eastern Europe has created a larger market size and that access to the European Common Market has attracted more FDI. Likewise, Zheng (2009), in the case of China and India, have shown that foreign investors are also driven to these countries. This was not only because of their large market size but also due to the advantages of China or India's neighbouring countries' markets.

Similarly, Hansan (2004), in a study on Malaysia using a Granger bivariate causality test, finds that a one percent increase in growth rate induced a capital flow of approximately Malaysian Ringgit, RM204 million. Hansan explains that this result confirms the growth-led strategy adopted by that country. In another similar study, Gani and Sharma (2003) also find that robust economic environment not only result in technology creation, but they also attract global corporations. However, studies by Tsai (1994) provide contradicting results, in that growth rate has an insignificant effect on FDI.

Evidence supporting the significance of trade openness (measured mostly by the ratio of total exports and imports to GDP), in determining FDI, is mixed. A study by Srivastava (2006), for India, using a Multivariate VAR framework, finds unidirectional Granger

causality, from FDI to services exports, thus reflecting the adoption of liberalisation and trade policies in India. Easterly and Kraay (2000) for small island states, also obtain similar results, i.e. openness has positive effects on FDI inflows. In contrast, Wheeler and Moody (1992) find no evidence or insignificant results on the effect of trade openness on FDI.

Evidence for the exchange rate variable is also mixed. The result by Jajri (2009) for Malaysia, using the cointergration technique, finds a positive relationship between FDI and exchange rate. The results show that an increase in exchange rate by 1 percent increased FDI by 1.27 percent. Hence, an increase in exchange rate means that Malaysia's domestic currency depreciated, which then attracted more foreign investment, since foreign currency conversion leads to higher income returns that increase FDI. The findings by Zheng (2009) for China and India show an insignificant relationship between exchange rate and FDI. He suggests that exchange rate is not an important consideration for foreign investors investing in both countries.

Tax and investment policies are also important, when determining FDI inflows in developing countries. Foreign companies are more interested in countries where tax regimes are lower (Kahai, 2004). Empirical evidence from Chakrabarti (2001) indicates that the corporate taxes of the host country have significant negative effects on FDI inflows. On the other hand, Blonigen and Davis (2004) note weak evidence on taxes affecting FDI inflow. Meanwhile, Swenson (1994), in a study on the USA using OLS regressions, finds a positive relationship between taxes and FDI, in that an increase in taxes increased FDI inflow. He explains that this outcome was due to the tax reforms adopted by the USA during the 1980s.

In examining FDI, together with a variety of other policies including political, social and economic, Adams (2010), using (SUR) method and panel data for a cross-section of 75 developing countries for the period 1985-2003, obtained mixed results. His results show that property rights protection, growth rate and the degree of openness and return on investment have positive and significant impacts on FDI. However, population, inflation and infrastructure development show an insignificant relationship with FDI. Adams explains that the reason for this insignificant infrastructure development may be related to most developing countries having a communications infrastructure, which has not yet met the required level needed to positively affect FDI inflows (Adams, 2010).

2.5 The Productivity Effects of Foreign Direct Investment

This section surveys the literature on the productivity effects of FDI on various sectors, in particular on the primary, manufacturing and services sectors. Traditionally, productivity based on the Cobb-Douglas production function is measured by labour and capital. Thus, an increase in labour and capital inputs results in an increase in productivity. [6] Recently, the new growth theory has emphasised the importance of FDI, when explaining a country's productivity. FDI increases productivity by providing greater investment opportunities and access to machineries, skills or labour training, new technologies, or upgrading existing products and processes that increase labour productivity, or value-added products, and efficiency of physical investment (Lucas, 1988; Romer, 1986). FDI not only directly affects productivity, but it may also produce externalities or spillover effects which can benefit developing countries (Balasubramanyam et al., 1996).

As FDI inflows could potentially influence productivity, through an improvement in labour productivity and technology, recent studies evaluating the FDI and economic growth relationship have further examined the FDI-productivity nexus (Alfaro, 2003; Habiyaremye and Ziesemer, 2006; Tondl and Fornero, 2008). In particular, these studies focused on the role of FDI in promoting growth within the main economic sectors, such as primary, manufacturing and services, however, the results vary greatly across sectors. Using cross-country data for the period 1981 to 1999, Alfaro examined the impact of FDI on growth in the primary, manufacturing and services sectors and found mixed results. His results show that in the primary sector, which is generally dominated by agriculture and mining, FDI inflows into this sector show a negative effect on growth and a minimal spillover effect for the host economy. However, FDI inflows to the manufacturing sector show a positive effect on growth, while the service sector has remained ambiguous, despite an increase of FDI inflows into this sector. Similarly, Habiyaremye and Ziesemer (2006), in a study on Sub-Saharan African countries note that although capital accumulation shows diversification its association with exploitation of primary commodities therefore has a minimal benefit on other sectors of the economy.

Tondl and Fornero (2008), in analysing the productivity effects of FDI for the Latin American countries, using the GMM system and stepwise procedure, find varying results across sectors. In contrast to Alfaro (2003), Tondl and Fornero find that FDI has a significant positive effect on primary productivity, particularly within the agriculture sector.

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[6] According to a World Bank study, "productivity is the key to growth-for individuals, for firms, and for the economy as a whole. Increasing productivity means producing more with the same amount of inputs" (World Bank, 2005, p. 28).

They suggest that this positive relationship is due mainly to more productive agricultural export products and FDI productivity spillover from the manufacturing and services sectors, particularly transport and communication. In the manufacturing sector, Tondl and Fornero show a positive FDI and significant impact on the manufacturing sector's productivity, but its effect is lower than that seen in the primary sector. Similar to Alfaro findings, Tondl and Fornero find ambiguous results on the productivity effect of FDI in the three service sectors. They conclude that FDI is the most important factor for productivity in Latin American countries, but factors such as institutions, education and less political risk also matter and support productivity in the manufacturing sector.

A country study by Min (2003), on Malaysia, shows that an increase in FDI to five major sectors (electronics and electrical, chemical, textiles, petroleum and metals) led production to shift from the oil and primary sectors to the manufacturing sector. This led to higher value-added production in the manufacturing rather than in primary sector. The positive effects of FDI also led to an increase in trade, which enhanced the country's export competitiveness in the world market. A study by Kokko (1996) on Mexican manufacturing industries, using a simple simultaneous system, indicates that local productivity (value added in per employee of locally-owned firms in an industry) has a significant positive impact on foreign productivity. It implies an affiliation between domestic and foreign firms which partly is explained by the behaviour of local firms. Wei and Liu (2006) in a study for China find productivity spillover from R&D, exports and FDI in China's manufacturing sector for the period 1998-2001 where the investor firms from the Organisations in Economic Cooperation and Development (OECD) countries play a major role in the inter-industry spillover.

Some studies have further evaluated the direction of causation between FDI and productivity. In a study for 66 developing countries, Duttaray et al., (2008), using the Toda and Yamamoto (1995) method and time series data, find that although FDI causes growth in several developing countries, the mechanism that made it possible varied across countries. Their results indicate that (from the 66 countries studied) FDI affected growth directly, thus causing growth, or indirectly causing exports or productivity change, which in turn caused growth in only 29 countries, with no effect on the growth of the remaining 37 countries. In Asia and Africa, export is the more important mechanism where FDI affects growth, whilst productivity growth is a more important mechanism for FDI in South America. Their study also shows that 30 of the 66 countries have reverse causality from exports and productivity to FDI rather than in the opposite direction.

The World Bank's (2009b) study notes that poor countries depending on agriculture alone will not move up to medium or high income levels since rural activities (mostly subsistence) are insufficient to produce surplus exports in the agricultural production which would benefit only a few large landowners or agribusinesses. The study points out that manufacturing sector would remain important as the gains from basic labour-intensive manufacturing have been witnessed in some regions. As countries become richer, higher consumer demand for the manufactured goods provides for diversification of manufacturing and production of trading intermediate goods with countries within the same region. The UNCTAD (2007) also notes that diversification from primary to manufacturing and services should be a priority for developing countries, such as Africa, in order to improve productivity. Attracting FDI into diversified and higher value added activities will not only improve productivity, but it would also reduce the high level of government corruption, which limits the effect of FDI on economic growth in African countries (UNCTAD, 2007).

Despite these different results, the studies have highlighted the importance of diversification from primary to manufacturing and services to improve productivity and development of the developing countries. Most of the studies also emphasised that FDI growth enhancing effects is only made possible through the host country have the right level of absorptive capacity such as a better system of law and order, strong investment in human capital accumulation, infrastructure investments, trade openness, political stability and a strong diversified production system.

Whilst the studies provide some important findings they also note some econometric limitations. First, the use of cross-sectional analysis in bringing different countries or regions under a common setting results in the problem of heterogeneity. Second, time series analysis has been constrained by unavailability of historical time series data, which has had an impact on the results. Third, determining the lag length and the criterion used to determine the lags, before carrying out the Granger causality tests, may have also impacted on the results. Too few lags may have resulted in serially correlated errors, whilst too many lags may have promoted specification bias (Gujarati and Porter, 2009). Despite these limitations, the studies provide policy recommendations that have some implications for this study.

2.6 Significance of the Study in the Case of Solomon Islands

Although the work on FDI and growth relationships is expanding, a large number of these studies have focused predominately on developed and large developing countries. Given

the scarcity of similar studies on small-islands' developing economies, this study analyses FDI and economic growth relationships for the small developing economy of Solomon Islands. The results will not only be useful for the Solomon Islands but will also contribute to the emerging FDI literature for the island nations and provide lessons for small island economies as FDI could provide scarce capital, employment and increase exports.

While conflicting views have been noted in the literature this study provides some valuable insights on the role of FDI in the Solomon Islands. Furthermore, the empirical analysis of various FDI models provide a better understanding of the factors that impact on economic growth and development and note how FDI may contribute to an enhanced growth performance of the recipient country. As the literature has suggested the type of growth strategies adopted by a country must take into consideration the country's own specific characteristics and experiences, there is no one formula or pattern that has to be followed in order to gain sustained economic growth.

The mixed results in various empirical findings that explore the FDI-growth nexus emphasise that FDI-growth linkage is not automatic. Firstly, this means that the Solomon Islands must develop appropriate policies to ensure that FDI is attracted to the country and, most importantly directed to areas (or sectors) where it will have the maximum impact. Secondly, a country specific study on various sectors of the economy is important to provide a more objective and realistic evaluation of the FDI-growth linkages. It is important for the Solomon Islands to consider the issue of absorptive capacity, given its potential to promote FDI and subsequently economic growth. Third, there is also a crucial need for the Solomon Islands to establish correct policies and policy mix; supportive legislative frameworks; appropriate development, in addition to qualify institutions and a favourable investment environment in order to attract and maximise the benefits of FDI. The study provides notes contributions of FDI, requirements of macroeconomic and structural conditions, barriers that impinge the inflow of FDI, and the ways Solomon Islands can benefit from FDI through appropriate policy consideration.

2.7 Summary and Conclusion

This chapter has offered some discussion on the two main theories of economic growth, that is the neoclassical growth theory and the new or endogenous growth theory. Although these two theories differ in their perspectives, both have one thing in common: they have been mainly drawn from the experiences of the (now) developed economies. The neoclassical economic theory on one hand places more emphasis on the crucial role of the free market and less emphasis on state intervention. In contrasts, the new growth theory

focuses more on examining the sources of long-term growth, in particular the role of FDI as an important source of human capital and technological diffusion. However, others suggest that since developing nations' characteristics differ from the developed nations, their growth strategies must tread with caution and reflect their economies. Nevertheless, the two growth theories, in one way or another, have highlighted the importance of each factor on growth, and assigning different factors in order to develop a proposed relationship for higher output levels.

The review of the theoretical and more recent empirical studies on the relationship between foreign direct investment and economic growth do not suggest a consensus on key findings. The proponents of FDI support that FDI improves developing countries' economic growth through technology transfers, employment creation, foreign exchange earnings and access to markets. On the other hand, the pessimists argue that FDI negatively impacts on economic growth through balance of payments deterioration, over exploitation of resources, poor linkage generation and the crowding-out of domestic investment.

Whilst these conflicting views continue to remain unresolved most studies note an existence of a positive relationship between FDI inflows and economic growth provided the host nation has the absorptive capacity. This includes having the correct level of human capital development, technological and infrastructure development, in addition to a well-developed financial market and trade openness complemented by a favourable economic, political, social and investment regime. Since FDI is not automatic, such a prerequisite is important for developing economies to acquire before they are able to attract and realise the potential benefits of FDI flows. The empirical models for this study are derived from the literature discussed in this Chapter. The next Chapter presents an overview of the Solomon Islands' macroeconomy and FDI inflows followed by the empirical evaluations in Chapters 4, 5 and 6

Chapter Three

AN OVERVIEW OF THE SOLOMON ISLANDS ECONOMY

3.1 Introduction

The Solomon Islands is a small open island economy in the South Pacific. It consists of six main islands and numerous small ones that cover a land mass of 27,540 square kilometres (Solomon Islands National Statistics, 2009). Since attaining political independence in 1978 from Britain, the Solomon Islands, has made reasonable progress in certain areas in its development. However, the economy has sustained some serious setbacks in terms of its social and economic development. The Solomon Islands is regarded as a less developed country amongst the Pacific Island states (World Bank, 2011). The lack of a coherent policy environment in addition to civil unrest and consequently political instability has further impeded social and economic development.

The Solomon Islands has experienced low and volatile economic growth in the past three decades. The economic growth performance, as measured by gross domestic product (GDP) since independence has registered 3.2 percent (on average) per annum. This rate is considered insufficient in a widely dispersed and fragmented economy of the Solomon Islands, with its rapid population growth rate of 2.3 percent per annum and a high inflation rate of more than 10 percent per annum (on average) (Solomon Islands National Statistics, 2009). In real terms, the GDP per capita income is US$1149 in 2010 and the nation is classified as a lower middle income country (LMIC) by the World Bank.[7] The country is relatively well endowed with natural resources and is also an aid dependent nation where it is one of the highest aid per capita recipients in the region (Gounder, 2002; Hou, 2006). Rapid growth is, therefore, crucial to promote economic development and contribute towards a reduction in poverty levels.

The Solomon Islands economy depends largely on a few primary export commodities, such as logs, fish, copra, palm oil and cocoa. However these commodities are also subject to price volatilities (Gounder and Saha, 2007).[8] Over the period 1970 to 2010 exports' contribution to GDP has represented 36.7 percent of GDP (on average), whilst the imports

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[7] According to the World Bank classifications, LMIC groups are income from $976-$3855 in 2010 (World Bank, 2010c).

[8] Gounder and Saha (2007) provide detail discussion and empirical evidence on some of the factors contributing to output volatility and vulnerability in the South Pacific Islands (including Solomon Islands). They highlighted that one of the main factors contributing to slow or weak growth in these islands is their heavy reliance on few primary export commodities which are prone to economic volatility and vulnerability.

have has a higher share, accounting for more than 52 percent of GDP.[9] Volatilities on the external market have compelled further by fluctuating international commodity prices, limited export base and a lack of diversification. In addition, the rising imports and the fluctuating export earnings have contributed to significant trade deficits and deteriorating terms of trade. This resulted in external reserves depletion and an immense balance of payment problems.

Against this backdrop, foreign direct investment (FDI), as a source of capital resource, plays a crucial role as an instrument for stimulating the country's economic growth. Whilst FDI inflows existed since the British colonial plantation days, it is only more recently that the Solomon Islands government has expanded FDI flows to other sectors.[10] This importance has been identified through various economic and investment reforms, such as privatisation, trade liberalisation, taxation incentives developed by the government in collaboration with key development partners. However, the inherent structural and organisational impediments compounded by poor economic, social and political conditions continue to pose significant challenges. Therefore, attracting foreign direct investment is still a major challenge.

The successive governments and the Central Bank of Solomon Islands (CBSI) has undertaken macro-economic reforms, through monetary and fiscal policies, however these policies posed a number of challenges. Whilst the monetary policy of the CBSI has attempted to stabilise the economy, through maintaining international competitiveness and controlling inflationary pressures, the government's expansionary fiscal policies, persistent budget deficits and high debt burden have affected the monetary policy indicators. The underdeveloped financial market system and the large subsistence sectors have also contributed to the ineffectiveness of these policies.

Whilst there are positive signs of strong economic recovery, more recently backed by the support of the Regional Assistance Mission to the Solomon Islands (RAMSI), through the donor community and foreign investors, a more realistic policy environment, a conducive investment regime, efficient governance and macro-economic and political stability, are all crucial to sustaining this economic growth.

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[9] Source, Solomon Islands National Statistics (various), Central Bank of Solomon Islands (various).

[10] FDI in Solomon Islands began since British colonised the country from 1893 to 1978 particularly in large-scale coconut plantations to support its administration (Jayaraman, 2006). Commercial logging also began during the British colonial period but escalated in the 1980s and 1990s when the Solomon Islands Government opened up the forestry, fishing and service sectors.(Tagini, 2001).

This chapter presents a descriptive analysis of the Solomon Islands economy. Section 3.2 offers a brief background of the economy, FDI performance and contributions and issues and foreign investment policy. Section 3.3 discusses FDI inflows and its role within the trade sector. Section 3.4 provides the distribution of FDI inflows by various sectors. The monetary and fiscal policies, which are important for foreign investments, are discussed in section 3.5. The concluding section discusses the important implications.

3.2 Macroeconomic Performance of the Solomon Islands

In three decades as an independent nation, the Solomon Islands economy has generally experienced low economic growth, low gross per capita income, inadequate foreign reserves and high inflation. Figure 3.1 shows Solomon Islands economic performance for the period 1970 to 2010. The economy recorded a substantial growth rate of 5.64 percent during the first decade (1970-1980). This was mainly driven by the agriculture and fishing sectors (CBSI, 1984). However, growth has gradually declined over the decades, declining to 3.36 percent in the period 1981-1990, and further falling substantially to 1.05 percent in the period 1991-2002. The peak in 1984 and 1992 was driven largely by fish and log production, respectively (CBSI, 1993).

Figure 3.1 Solomon Islands Annual Real GDP Growth Rate, 1970-2010
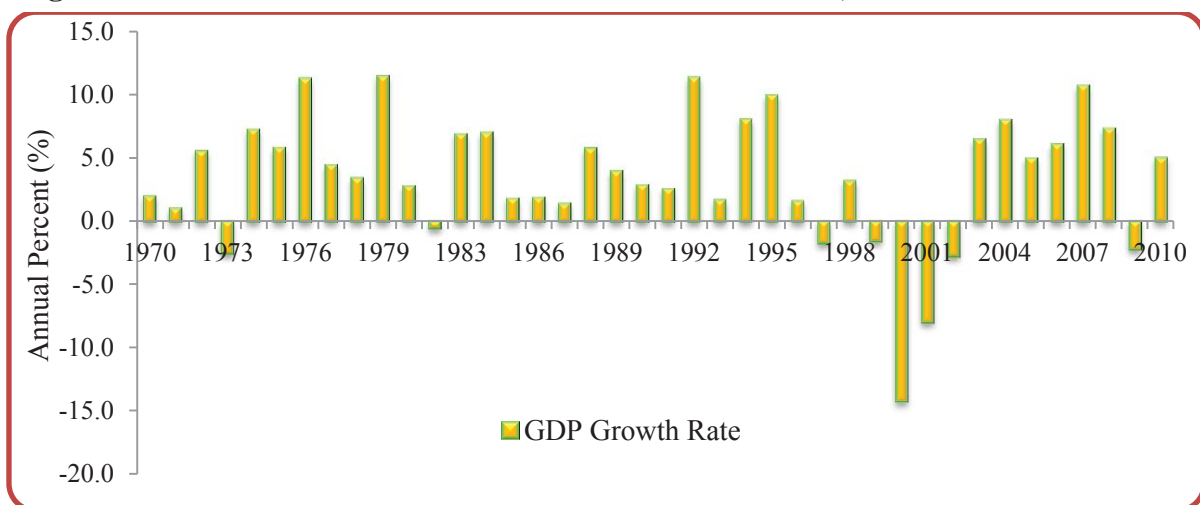
Source: Central Bank of Solomon Islands (various).

The trough in the period 1997 to 2002 was due mainly to the Asian financial crisis that affected the country's log exports and also the civil unrest between 1999 and 2003. Business confidence and donor support were at their lowest ebb during the period of civil unrest (CBSI, 2005). However, the Solomon Islands economy improved between 2003 and 2010 (except for 2009), reaching an average growth of 4.86 percent. The rapid recovery in the post RAMSI period since July 2003 came as a result of the restoration of law and order combined with an increase in donor and business confidence. The negative growth of 2.2

percent in 2009 has been due to the impact of global financial crisis (CBSI, 2009). While the economy has bounced back from a negative growth in 2009, it should be emphasised that growth is still fragile.

Despite being relatively well endowed with natural and human resources, compared to other small island countries in the region, Solomon Islands remains poor with a large portion of its population struggling to meet their basic needs (Hou, 2008). According to the World Bank (2011), income per capita for the Solomon Islands is low amongst other nations in the region.[11] Table 3.1 shows that GDP per capita for the Solomon Islands declined substantially in 2001 and 2002. The rise in income in 2008, 2009 and 2010 reached US$1,141, US$1,098 and US$1,144 per person, respectively. The civil unrest between 1999 and 2003 led to the deterioration in GDP per capita, which has only recovered but has not exceeded the 1997 level, in the post-2006 period.

Table 3.1 Selected Pacific Island States GDP Per Capita, at Constant Prices 2000 US$

Country	1997	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Fiji	1960	2108	2172	2191	2302	2308	2335	2295	2296	2244	2229
Marshall Is.	2137	2242	2304	2311	2311	2368	2405	2465	2399	2345	2437
Samoa	1276	1481	1539	1606	1678	1742	1772	1881	1806	1769	1793
Solomon Is.	1331	953	901	933	952	976	1015	1093	1141	1098	1144
Vanuatu	1403	1385	1290	1302	1323	1356	1418	1472	1524	1538	1546

Source: World Bank, 2011.

The Solomon Islands external reserves in the 1990s was minimal and even lower than the CBSI had benchmarked three months of import cover (see Figure 3 2).[12] The low external reserves stemmed largely from a high government budget deficit level, debt accumulation and rising imports which put pressure on external reserves. However, in recent years (except for 2008) the Solomon Islands has seen a continuous build up in its external reserves, to around Solomon Island Dollar (SBD) $2 billion in 2010, equalling more than nine months of import cover.[13] This is significantly higher than the CBSI's 'comfortable' position of three months of import cover. This positive rise in reserves resulted from an influx in donor assistance towards economic and financial rehabilitation, including an increase in FDI and trade receipts (CBSI, 2010). Thus, there are no immediate pressures on the external reserves, apart from those associated with increases in fuel and food prices.

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[11] Although Solomon Islands' has been regarded as poor in the region, it does not experience the kind of poverty found in some Third World countries (http:www.nationsencyclopedia.com/economies).
[12] See Cnossen (1996) report on temporary export booms, macro-economic instability and government policy in the Solomon Islands in Central Bank of Solomon Islands, Quarterly Review December, 1996.
[13] From the Investopedia website, SBD is the abbreviation for the Solomon Islands Dollar.

Figure 3.2 Solomon Islands External Reserves, 1990-2010
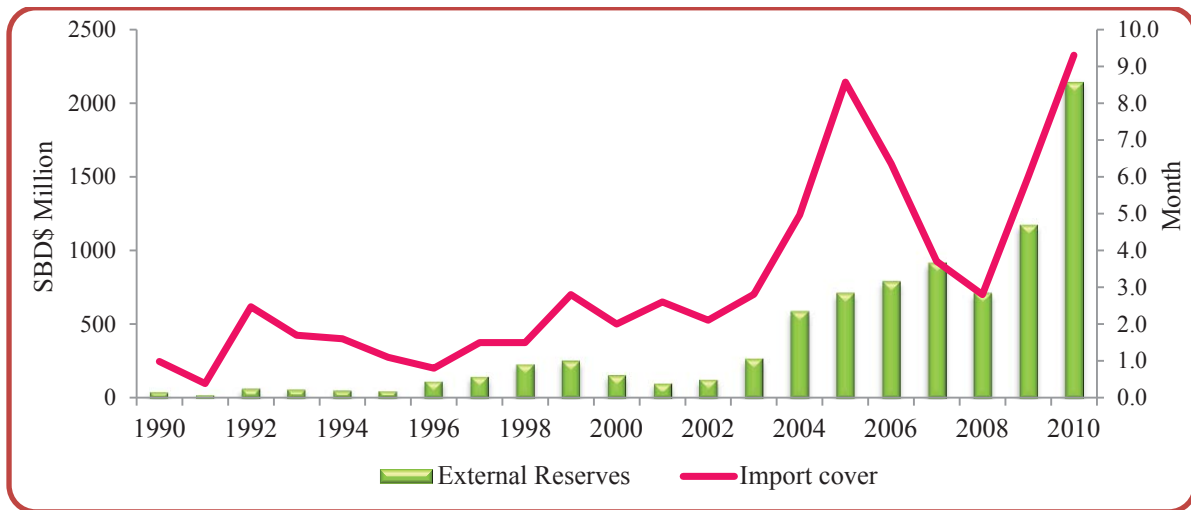
Source: Central Bank of Solomon Islands (various).

Inflation is a big concern in the Solomon Islands due to its very high levels, it not only erodes individuals' income and business profits but also impacts negatively on investors' confidence, reduces investment and undermines real economic growth. Overall, the 'rate of inflation (Figure 3.3) and its variability remains persistent and high. Mlambo (2005) affirms that high inflation levels associated with political and economic instability, and policy inconsistency create high risk and uncertainty for foreign investors. Hou (2008) notes that high inflation rates in Solomon Islands had a damaging impact on investment and growth.

Figure 3.3 Solomon Islands Annual Inflation Rate, Constant Prices 1980-2010
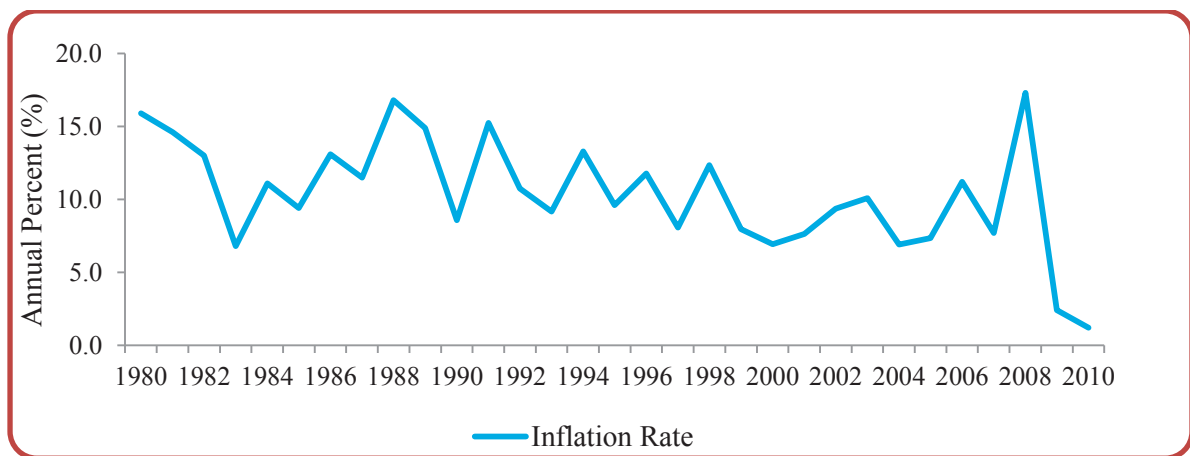
Source: Central Bank of Solomon Islands (various).

The inflation rate, measured by the Honiara retail price index has fluctuated around the 10 percent mark in the 1990s, and there has been a decline in the early 2000 period. However, in 2008 inflation rose to 17.5 percent due to the global financial crisis. There is a substantial carry-over affect from imported items to overall inflation. External shocks, such as fuel and food price (e.g. rice, flour) increased significantly, but overall inflation declined

in 2009 and 2010. The domestic component such as local market produce and domestic services among others led to price increases due to the supply side-effects. It is important to note that inflation levels in rural areas (especially for imported items) are relatively higher in the rural parts of the Solomon Islands, taking into consideration the additional costs of transporting goods from the capital to the isolated parts of the country.

3.2.1 FDI Performances and Contributions to Domestic Economy

Over the years foreign investments relative contribution has been noted towards economic growth, employment and government revenues (CBSI, 2007). Positive movements in these indicators suggest the importance of this type of foreign investment in the Solomon Islands. Figure 3.4 reflects FDI contributions to GDP. During the 1970s through to the mid-1980s, the level of FDI inflow was considered to be high in terms of its contribution to national GDP. The flow of foreign direct investment for the period 1971 to 1980 reflects a larger proportion of GDP. It peaked in 1975 at 15 percent to GDP ratio. The major foreign companies, such as Solomon Taiyo Limited, Solomon Islands Plantation Limited, and Brewer Solomon Agriculture Limited were among others that led to this increase (Solomon Islands Government Shareholding Agency, 1979). Although the world's net FDI inflow grew rapidly to US$54.07 billion in 1980 (see Appendix Table A3.1), Solomon Islands share in the same year was USD$3.3 million at 2.1 percent to GDP share (UNCTAD, 2010). This was mainly attributed to the Solomon Islands not being very open to FDI flows in the early 1980s (CBSI, 1988) and also it attained independence in 1978.

Figure 3.4 Foreign Direct Investment, Net inflows as percentage of GDP, 1970-2010
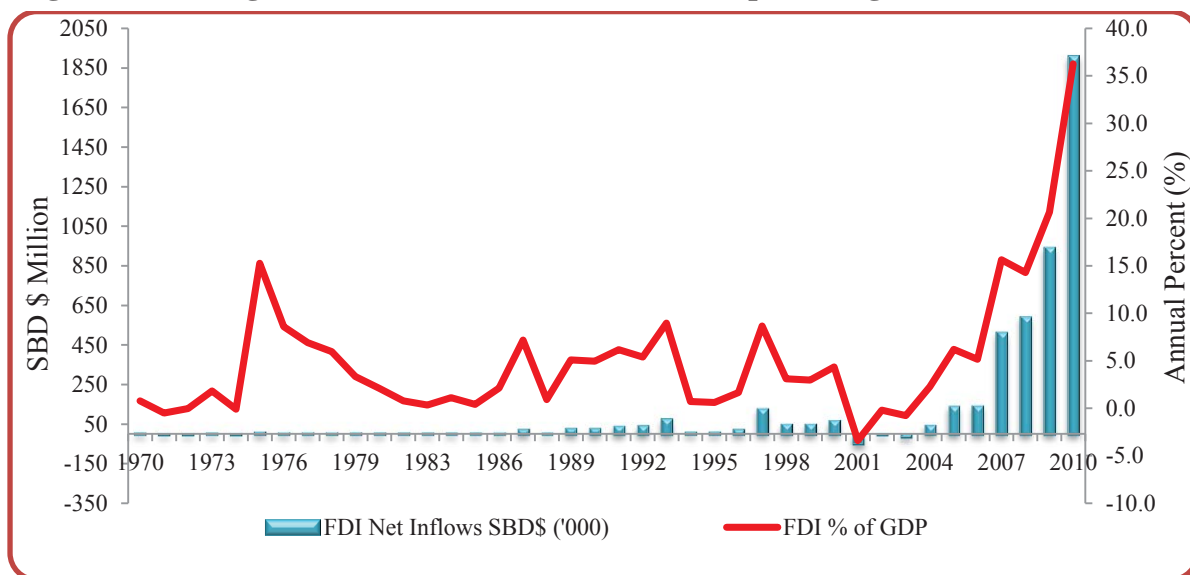
Source: Central Bank of Solomon Islands (various).

In the 1990s, policies to attract higher FDI flows led to a substantial rise in FDI inflows to SBD$74.3 million, accounting for 8.9 percent of GDP in 1993. This also marked the influx

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of FDI in the logging sector. However, this was short lived and at the height of the crisis caused by the civil unrest from 2000 and 2003 total outflows of SBD$65.5 million were seen in these years. The presence of RAMSI in 2003 brought some normalcy and confidence to foreign investors, as a result by 2010 FDI inflows registered a significant record of SBD$1.9 billion (i.e. NZ$328.7 million). This accounts for nearly 36 percent of total GDP in 2010. The positive out turn was mainly due to foreign companies' re-invested earnings, reflecting their confidence in the economy (CBSI, 2010). The outcome is also consistent with the economic reforms and the foreign investment policy, in particular the generous investment incentives offered by the government to attract FDI flows.

In terms of employment, FDI has also significantly eased unemployment rate. Although the number of employees in the formal sector is only 33,000 (on average) and accounts for only 42 percent of the total labour force (78,000 on average) in the period 1980 to 2008 (see Appendix Table A3.1), foreign companies provide a relatively significant contribution to employment. According to employment data from the CBSI, of total formal employment, private sector employment accounts for a larger portion with 72 percent (on average). In contrast the public sector accounts for 28 percent (on average) in the period 1972 to 2010.

Figure 3.5 shows the number of workers employed by foreign investors. The CBSI identifies 40 major foreign companies in the Solomon Islands of which 16 companies employ the bulk of the private sector labour force to total private sector employment.[14] In the first decade from 1970-1981, the 16 foreign companies employed around 2,829 which represented 24.8 percent of total private sector employment. This period shows the rise in employment levels in these companies. During the second decade from 1982-1991, the employment rate by the foreign companies rose considerably to 4731 on average, totalling 31.3 percent of the total private sector employment. This stemmed largely from the expansion embarked by the foreign companies. The increase in employment was also supported by the construction of the Noro Township in the Western Province which further increased employment for the Noro fish cannery undergoing an expansion at the time.[15]

In the period 1992 to 2002, although total average private sector employment rose significantly to 20961, the share of employment by foreign companies fell to 21.4 percent and again down to 14.02 percent in the 2003-2010 period. The main factors contributing to this decline has been the civil unrest in 1999-2002 period, which resulted in substantial job losses. Furthermore, redundancies and cost cutting efforts undertaken by some of these

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[14] Information obtained from CBSI survey list of major companies.
[15] See Solomon Islands National Statistics (1989) report.

companies, particularly during the 1997 Asian crisis and the recent 2008 global financial crisis also partly contributed to the decline.

Figure 3.5 Foreign Companies Share of Employment, 1970-2010
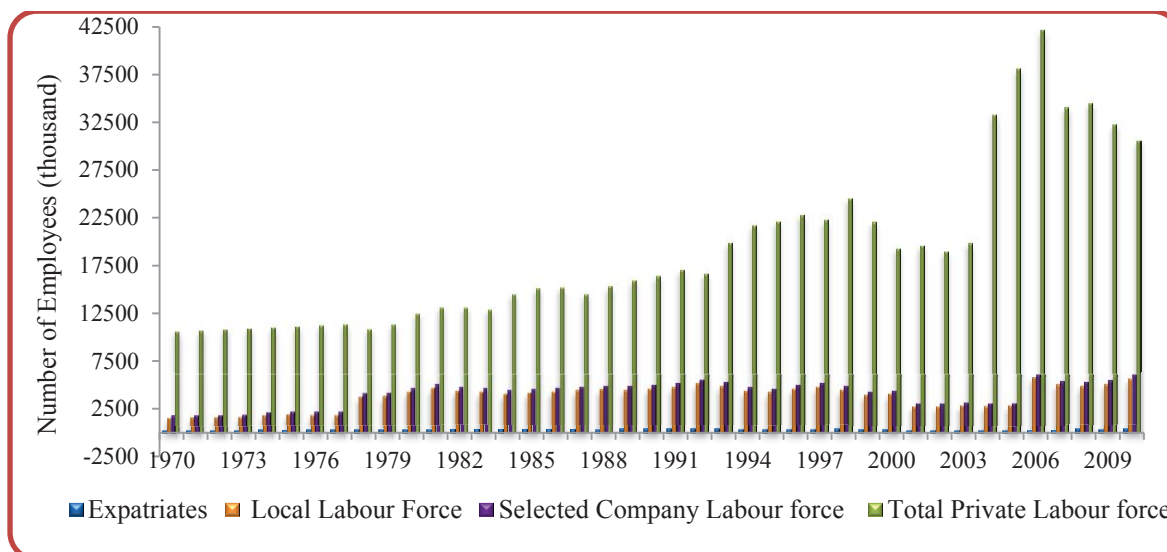
A closer look at the employment of locals and expatriates by foreign companies reveals that the locals have a larger share of employment about 91 percent on average compared to 9 percent expatriates employment. Although the share of employment by foreign companies has declined over the years, but the actual number of employees has increased. Overall this indicates the importance of FDI in terms of job creation in the Solomon Islands. Another important dimension of FDI is its contribution to government tax revenue. Thus various taxes and duties from FDI contribute towards the government expenditure to finance its development programs and expenditure. Figure 3.6 illustrates the 16 major foreign companies' contribution to government tax revenues over the period 1970-2010 and Figure 3.7 depicts the two main types of taxes (taxes associated with income and import/export taxes) of foreign investors.

In the 1970s to 1980s the share of FDI to total tax revenue was significantly high at 66.4 percent (SBD$4.6 million). This was largely driven by foreign companies' high export and import duties, which reached a total share of SBD$1.5 million (see Figure 3.7). Between 1981-1990, although the level of the contribution of FDI (on average) rose significantly to SBD$22.0 million, its average share to total tax revenue dropped considerably to 37.6 percent and declined further to 17.7 percent in the period 1991-2000. The declining trend in the share of FDI tax since 1992 may be largely due to tax exemptions and remission and may also be probably due to tax evasion as a result of weak monitoring and surveillance by the authorities (CBSI, 1999).

Figure 3.6 FDI Contributions to Total Government Tax Revenues, 1970-2010
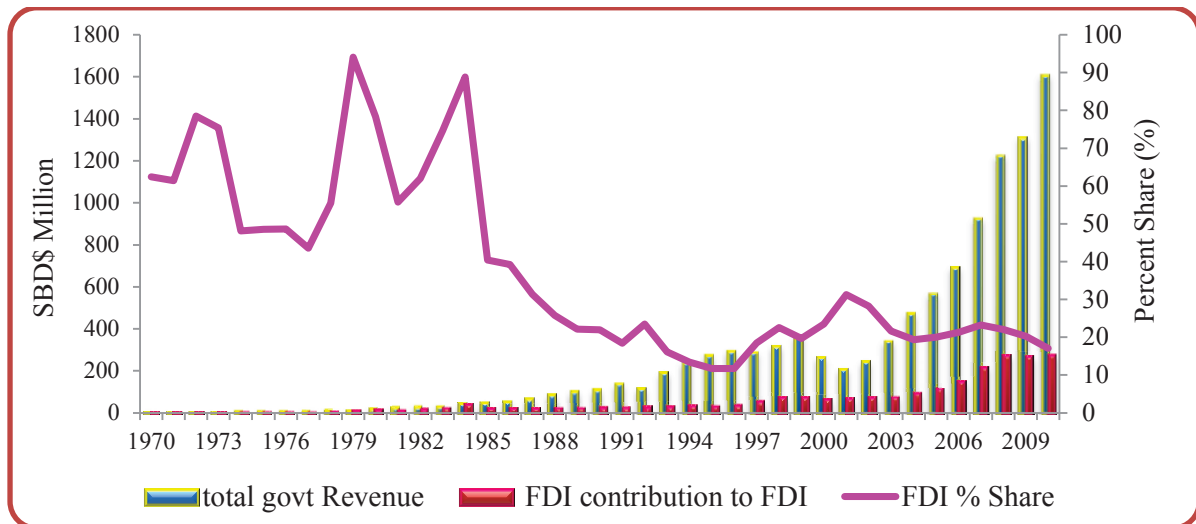
Source: Central Bank of Solomon Islands (various).

Figure 3.7 FDI main Types of Tax Contributions, 1970-2010
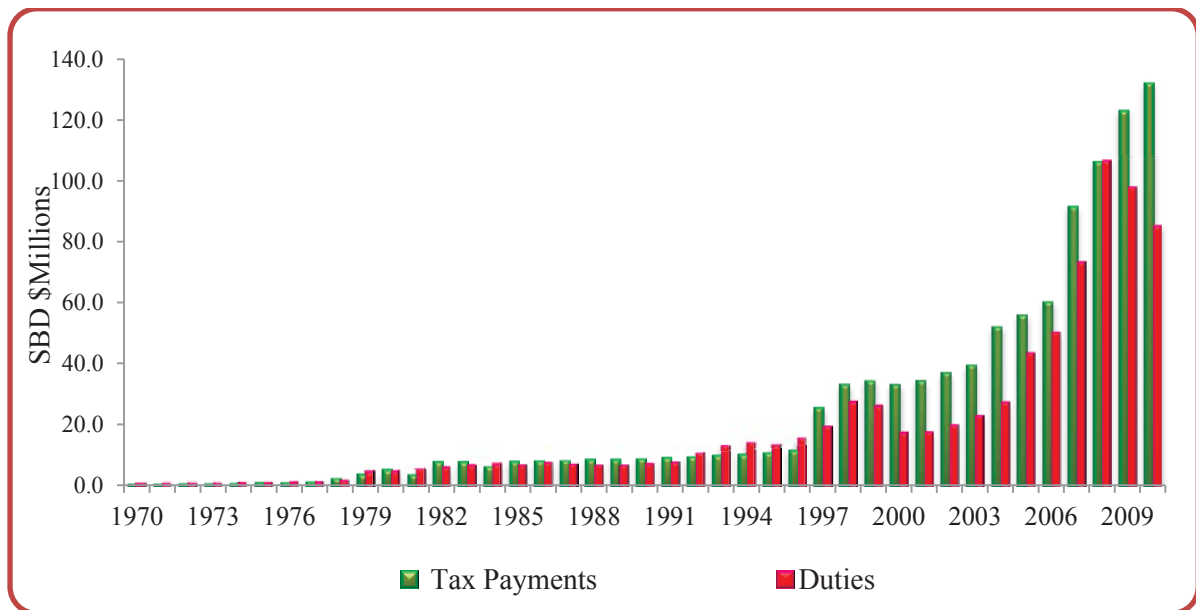
Source: Central Bank of Solomon Islands (various).

From 2001 to 2010, FDI contributions reached SBD$158.2 million (on average), accounting for 20.9 percent of the total government tax revenue. The increase was due to a rise in foreign company tax payments to the value of SBD$72.9 million (on average) during the period. The predominance of tax payments of the foreign companies since the late 1990s is evident and by 2010 it increased to SBD$132.0 million. In addition, besides various taxes from the foreign companies, the high tax contribution arose from the private sector income tax and other taxes. The increase in tax revenue also reflect the growth and expansion of these companies as well as improved revenue collection methods undertaken by the Solomon Islands Inland Revenue Department (CBSI, 2010).

3.2.2 Factors Affecting Foreign Investment Flows

Although the indicators discussed above illustrate the importance of FDI to the Solomon Islands economy, a number of factors have hindered the full potential capacity from such flows. To reduce the capacity, the government has to address several factors to maximise the returns for both foreign investors and the industries associated with FDI.

Some of the main factors that hinder the inflow of FDI to the Solomon Islands are not new and have been noted by the World Bank, International Monetary Fund, Asian Development Bank (ADB) and the CBSI. The key factors include business establishment and operations, government and financial institutions, land tenure, political instability, and the economic and social-cultural environment.

Business establishment and operational factors

In a global environment, the Solomon Islands, is a costly country in terms of establishing a business. The World Bank ranked the Solomon Islands, in terms of ease of doing business, 96 out of 183 countries in 2009 (World Bank, 2009a). The ADB (2005) notes that starting a business in the Solomon Islands is very costly, time consuming and frustrating for foreign investors. This situation arises largely from a lack of adequate public infrastructure and skilled manpower. This has further been restricted by a cumbersome registration process and requirements, which is counterproductive for FDI. In addition, the issue of corruption and other illegal activities tend to be prevalent in the government departments.[16] High utility costs associated with frequent power supply and water cuts further add to business establishment costs. These factors in turn make foreign direct investment less attractive due to high cost structures for establish business in the Solomon Islands.

Government and Financial Institutional factors

The Solomon Islands has been affected by a weak public administration associated with limited human resource capacity and poor government systems have contributed to inefficiencies in public service delivery. This has resulted to long delays in the establishment of foreign investment and also acts as deterrents or impediments to FDI (ADB, 2005; Hou, 2008). For instance, the CBSI (1989, p. 18) notes that "the delays are themselves are disincentive to investment. The Foreign Investment Board in 1989 approved forty-four applications with a face-value of SBD\$210.0 million. However, these included over SBD\$100 million of projects that were subsequently cancelled or are

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[16] The International Transparency (2009) ranks Solomon Islands as one the most corrupt countries with an index score of 2.8 compared to New Zealand which is the least corrupt country with an index score of 9.4 in 2009. High scores (out of 10) indicate a least corrupt country whilst the opposite indicates the most corrupt nations.

considered by officials to be doubtful starters". Moreover, the lack of transparency and accountability, in addition to widespread corruption has been common and continues to hinder quality performance of the government. Besides, the inconsistent treatment of various companies by the government is discouraging many foreign investors (World Bank and International Finance Corporation, 2009). It also poses substantial risk for potential investors which in turn may lower the inflow of FDI to the nation.

Furthermore weak and inefficient regulations, creates risk and uncertainty for foreign investors. According to BJS Group of companies (2010) report, the Solomon Islands legislation on intellectual property still follows the United Kingdom (British Colonial) system, although some amendments were made recently. The out-dated legislation has been inadequate in terms of protecting foreign investors' rights. Therefore, lack of clear property rights protection further poses high investment risks. In these cases, the existing foreign investors may reduce any further reinvestment or expansions and also repatriate their profits.

The underdeveloped local financial market in the Solomon Islands also reflects limited lending facilities has further constrained investment. According to Jayaraman and Choong (2010, p. 91) "the financial sector in Solomon Islands is small. Treasury Bills dominate the money market, which is shallow with few participants, just as long-term government bonds saturate the capital market. Furthermore, there are no secondary markets for short and long term debt securities". In addition, Jayaraman and Choong note that the financial sector of the Solomon Islands is dominated by the commercial banks as the non-bank financial sector institutions are still small.

Land Tenure System and Other factors

Land issues are an ongoing problem and an impediment to potential foreign investors. Land access issues especially with regard to customary land has been noted as an impediment to various development projects (ADB, 2005). While these concerns are important, any land reforms should be pursued with a great degree of caution given the sensitive and strategic importance of land to the people. Land reforms that render locals landless and inevitably marginalised would not only create further problems but would also pose risks to foreign investors in the long-term. In essence, reforms should also involve both foreign and local investors, and should be cognisant of the potential impacts on all stakeholders. There is an emerging and growing number of domestic business entrepreneurs and is crucial that the government provides for the interests of private domestic and also foreign investors legislation are transparent and accountable. Joint

venture schemes of the public-private and foreign investment would also be beneficial in addressing domestic resource use.

Political instability

Political instability is a major factor contributing to the risk in FDI inflows**.** The frequent changes in government, the civil unrest in 1999-2002 and the 2006 April riot created an atmosphere of risk and uncertainty in capital investments. It has disrupted FDI activities, which resulted in job losses and revenue. The closure of the Gold Ridge Mining Ltd and Solomon Taiyo Ltd in 2000 resulted in about 2200 job losses and significant losses of 51 percent in export earnings (CBSI, 2000). Moreover, the civil unrest contributed to a large decline in the number of new foreign investment companies down to 20 in 2002 from 100 in 1996 (see appendix Table A3.4). Thus, political instability contributed to a larger cost to both foreign investors and the wider domestic economy. Furthermore, the civil unrest affected the tourism industry with negative impacts resulting in low visitors' arrival during this period (CBSI, 2002).

Socio-cultural and labour force

An increase in social problems, low skilled labour force and a high rate of unemployment further discourage foreign investors. Rising social crime, lawlessness, damage to public and foreign investors' properties have also created an unsafe investment climate for foreign investors (CBSI, 2002). In addition, the high percentage of the population i.e. 80 percent of total population in the informal sector also tends to discourage foreign investors as their target for domestic markets and consumers do not have stable income. However, while the labour cost may be cheap the lack of skilled labour would add to the cost but training of the domestic work force would bring advantages to domestic labour force. In many of the foreign firms and industries up skilling labour addressed the shortages and creating an export market. This should also be extended by domestic firms and industries.

Economic factors

Economic risks arise from high inflation and exchange rate volatility that discourage and impede investor confidence. Inflation rose to unprecedented levels to 17.3 percent in 2008 due to very high price rise globally. This was largely related to rising oil and food prices which have translated into higher transportation costs, added costs to business operations and an increase in the demand for higher wages (CBSI, 2009).

While FDI has played a major role in the development process, however there are a number of adverse impacts as well. These are related to balance of payments affects

through transfer pricing and profit (or capital) repatriations, crowding out domestic investment, licensing and over-exploitations of the host country's natural and manpower resources. Such issues have compelled because of a weak regulatory environment and unstable monitoring systems, in addition to a lack of forward planning.

Balance of payment effects

One of the major costs associated with FDI is the capital outflows through interest earnings or profits which can adversely affect the balance of payments situation due to the lack of information. The lack of monitoring systems in the Solomon Islands has led to foreign companies' repatriating substantial earnings but has declared non-profits to avoid paying taxes.[17] However, the extent to which this is happening cannot be ascertained due to the unavailability of information. Also tax exemptions and remissions are highly common incentives to attract FDI. This affects the balance of payments situation and also results in a loss of revenue for the government. In the 1991-2000 period, the government lost about SBD$68.7 million (on average) through exemptions and remissions. The loss in revenue further increased to SBD$107 million (on average) between the periods of 2001-2010.[18] Likewise, transfer pricing activities, particularly in the logging industry where exports are being under-priced, also affect the balance of payments situation through loss of exports revenue. Hunt (2001) notes that through transfer pricing about 13% of resource rents for Solomon Islands log exports to Korea and China has been transferred to offshore log buyers. Lack of suitable and transparent monitoring system and manpower shortages (due to financial constraints) further exacerbate the problem where high volumes of exported logs may not be declared at all (Price Waterhouse, 1995).

Issue of crowding out

In Solomon Islands research supported by anecdotal evidence highlight that an increase in the number of foreign investors have caused a 'crowding out' effect on local businesses.[19] The presence of FDI forces small businesses out of the market. In many cases, foreign firms may not fully develop local employment opportunities and skill developments due to a small skilled workforce. Hunt (2001) notes that logging in Papua New Guinea and the Solomon Islands is an enclave industry with limited linkages to the rest of the economy. Foreign firms may also affect the development of domestic sources of supply for a wide

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[17] Barclay and Yoshikazu (2000) note the lack of reliable information on Solomon Taiyo Limited (a Japanese and Solomon Island Government Joint fishing Company) financial operations makes it difficult to ascertain the views that the non-profits declared by the company was due to transfer pricing.

[18] Revenue loss is author's own calculation from various CBSI Annual Reports.

[19] Parry (1988, p. 386) notes that "despite the processing policy for timber operations to be processed with the Solomon Islands, the timber industry has been dominated by foreign investors, with only limited local investment".

range of goods and services, crowding out domestic investment. Furthermore, foreign firms may also not fully optimise resource and develop skill generating activities. This has led to poor co-operation between foreign and domestic firms. Developing of domestic firms and industries with backward and forward linkages to foreign firms will be beneficial in a number of ways, i.e. create employment, reduce imports, revenue for the government and increase in domestic investment and output.

Issue of Licensing

The issuing of licensing to foreign licensed holders has recently increased. This in turn leads to license holders taking advantage in exploiting resources, particularly forest and fish resources. For instance, foreign fishing license holders may over fish in the Solomon Islands sea area since there is a lack of control and monitoring (Parry, 1988). In addition, foreign licensed holders with a highly concentrated market structure, cocoa for example may limit the returns to growers and dryers, especially in the more remote islands. The growers have limited or no bargaining power and therefore no access to trade finance. [20]

Issue of Over-Exploitation

One of the major costs related to large-scale companies, particularly within the logging industry, is that of sustainable harvest rates. Logging has been found to have exceeded the sustainable rate. For instance, according to the CBSI (1993), log production registered 686,000 cubic meters in 1993, thus, this output was significantly above the Annual Allowable Cut of 325,000 cubic meters legally permitted by the government. Due to such excessive exploitation over the years, the World Bank (2010a) has estimated that by 2014, these commercially exploitable stocks will no longer exist. The CBSI and the World Bank note that this would cause severe social, economic and financial disruption to the economy, since the logging industry is the country's main export earner and employer within the private sector.

Interference in domestic politics by foreign investors is also prevalent in the Solomon Islands. Such an involvement is not only exploiting the leaders but it means that these foreign investors can gain easy access to (and control over) domestic resources. Dauvergne (1999, p. 544) notes that foreign investors, particularly in the logging industry "have allied themselves with powerful political and local elites, channelling money, gifts and perks to key individuals. Partly through these networks of local allies, they have pressured or

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[20] For detail view, see the World Bank and the International Finance Corporation report during a Roundtable discussion in Honiara on 5th and 6th March in 2009. The meeting was attended mostly by Government officials, the Central Bank of Solomon Islands including donors and representatives of the private sector.

enticed various governments in the Solomon Islands to revise or create policies that increase and decrease environmental protection. This has contributed to lax state environmental regulations and unsuitable state policies-such as wide spread tax exemptions and insufficient tax rates". Papanek (1973) notes that such interference can lead to a loss of economic sovereignty, if foreign owners take control of a large proportion of a country's domestic capital stock.

3.2.3 Solomon Islands Foreign Investment Policy

The FDI was legislated by the Foreign Investment Act 1984 which set the framework for registration procedural and monitoring processes of all foreign investors conducted in the Solomon Islands. The Foreign Investment Board oversees to investment and administers particular the preliminary foreign investment assessment applications. The government was very defensive toward foreign investment in the 1980's with the emphasis on empowering local population. The government's FDI policies were considered as rigid, had tighter restrictions and regulations, had only and few incentives resulting in cumbersome bureaucratic procedures for business operations (CBSI, 1985). This resulted in lower FDI inflows from the 1980s (see Figure 3.4).

With respect to the types of FDI, foreign enterprises could be 100 percent foreign owned, particularly in the priority sectors.[21] However, the government has emphasised on joint ventures between the Solomon Islands citizens and foreign investors with at least more than 10 percent local shareholding. In 1984, the Solomon Islands Government Shareholding Agency held 40 percent share each in the Solomon Islands Plantation Limited and Levers Solomon Limited. It held 50 and 75 percent shares, respectively, in the two large foreign fishing companies, namely Solomon Taiyo Limited and National Fisheries Development Limited (Solomon Islands Government Shareholding Agency, 1984).

In 1990, the Foreign Investment Act 1984 was revoked by the parliament when the Investment Act 1990 was established. This Investment Act (a combination of both inward-looking and outward-looking policies) placed more emphasis on attracting FDI in the priority areas but at the same time attempted to ensure protection of domestic investment. A list of reserved sectors for the Solomon Islands people with business interests were maintained including the protected areas (National Parliament of Solomon Islands, 1996).

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[21] Priority sectors in the early 1980s include agriculture, livestock, agro-industrial industries, value-added manufacturing industries for import substitution and export, assembly industries and tourism (BJS Agencies Limited, 2006).

This led to the immergence and growth of indigenous entrepreneurs. The creation of Development Bank of Solomon Islands (DBSI), the small loans and export credit guarantee schemes, operated by the CBSI further supported local participation (CBSI, 1996).

The new elected government in 1994 led by the (late) Prime Minister Mamaloni, as part of the structural reform programs, opened up and expanded the forestry, fisheries and services sectors to foreign investors (Tagini, 2000). This structural reform was supported by numerous tax incentives which attracted new foreign investors. This led to a large inflow of Asian Investors in the logging industry. The opening up of these industries not only affected local investors but also led to unsustainable exploitation of natural resources, particularly the significant forest areas (Kabutaulaka, 2000). The 1990 Investment Act was amended and replaced by the Investment Amendment Act 1996 which has been considered to be very complex and time consuming (National Parliament of Solomon Islands, 1996).

In 1997, the government under the leadership of the (late) Prime Minister Ulufalu took several changes to promote private sector-led growth. The consolidation of economic policy reform programs such as privatisation of state owned enterprises (SOEs), public sector reforms, trade liberalisation, and the establishment of debt repayment accounts were initiated (CBSI, 1997). This led to significant increases in FDI proposals. However, towards the end of 1999, the civil unrest and political instability in the country halted many of these reforms, increased risk and uncertainty, and reduced FDI inflows (see Figure 3.4).

In 2005-2006 periods, the Foreign Investment Act 1996 was revised with an enactment of Investment Acts of 2005 and 2006. The new legislations made several amendments to the registration procedures that streamlined and simplified foreign investment policies aimed at promoting and creating a more conducive environment for foreign investment (National Parliament of Solomon Islands, 2005, 2006). The CBSI (2006) notes a significant rise in new FDI applications to 109 (worth SBD$1,474 million) in 2006 against that of 90 FDI applications (worth SBD$1440 million) in 2005 following the implementation of the provisions under 2005 and 2006 FDI Act. The increase in FDI applications in 2006 also reflects the "sound fiscal discipline; amendments to taxation policies and capacity building or the judicial and low enforcement fronts" (CBSI, 2006, p. 15).

In 2009, the additional amendments and validations were made in regard to Investment Act 2005/2006 culminating the enactment of Foreign Investment Act 2009. The primary changes evident in the new legislation were part of the registration of investment activities

to improve compliance (National Parliament of Solomon Islands, 2009). The current investment priorities of Solomon Islands government shifted to a more value added investment activities such as processing or manufacturing. These investment areas are consistent with the Government's development strategy of bottom up approach. The government aims to increase foreign investment levels in the rural areas where majority of the population lives (80 percent). With large investment opportunities in agriculture, fisheries, forestry, tourism and mining, the government has placed major emphasis on encouraging foreign investment in these priority sectors[22].

In pursuit to increase foreign investment, the government offers numerous incentives, among these are land allocation, income tax exemption, tax holidays and export relief tax spanning a 10 year period. Such incentives are given especially for investments that fully utilise local raw materials in their start up process. In addition, foreign investments in rural areas are given 100 percent full exemption with free flow of capital and profit remittances are also offered.[23]

The additional demands for freeing up of indigenous reserves or protected areas to foreign investors have been made by other international organisations such as the Asian Development Bank (ADB, 2005). The government's respond to this should be treated with caution as freeing reserved areas will not only disadvantage local entrepreneurs but could cause social tension. A more balanced programme for development is crucial for both foreign and domestic investments. A strategy proven to be successful in the case of South Korea has been to promote domestic investment and have foreign investment in the areas that foreign capital will result in higher output and growth (Todaro and Smith, 2006). Thus, drawing on best practices and successful cases in developing countries may offer some useful lessons in the approach to creating wealth through promoting both foreign and domestic investment.

3.3 Foreign Direct Investment and the Trade Sector

This section focuses on the contribution of FDI to the trade sector. It examines the country's overall trade balance and terms of trade which reflects the level of competitiveness. The better terms of trade and trade balance are crucial to Solomon Islands exports and the balance of payments.

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[22] Solomon Islands Foreign Investment Division, investment priority, www.investsolomons.gov.sb/node/11.
[23] Solomon Islands Foreign Investment Division, tax overview, http:www.investsolomons.gov.sb/node/30.

3.3.1 Solomon Islands Major Exports and Imports

The Solomon Islands continues to rely heavily on the export of few primary export commodities (logs, fish, copra, cocoa, palm oil, and mineral) as in Figure 3.8. As key export revenue earners, these commodities are highly volatile and vulnerable due to both domestic and external factors (natural disasters, weather, price volatility and low demand) (Gounder and Saha, 2007). Fish and copra products have been the leading export earners for the Solomon Islands from 1970 to 1980 with average shares of 28.3 percent and 27.5 percent, respectively. However, in the early 1990s, logs export receipts overtook fish, accounting for 56.3 percent (SBD$231.7 million) of total export earnings in 1993. Since 1993, logs have continued to be the main export earner representing nearly 59 percent (SBD$1052.5 million) of total exports in 2010. Total export earnings contributed approximately 72.5 percent to GDP in 1980; however its share dropped in 1990 to only 38.9 percent, and reached its lowest (17.3 percent) in 2001. In 2010, the total share of exports to GDP share increased to 33.9 percent. The recovery in export performance has resulted from the restoration of law and order and consequently increased public and FDI confidence in the country.

Figure 3.8 Solomon Islands Major Exports, 1970-2010
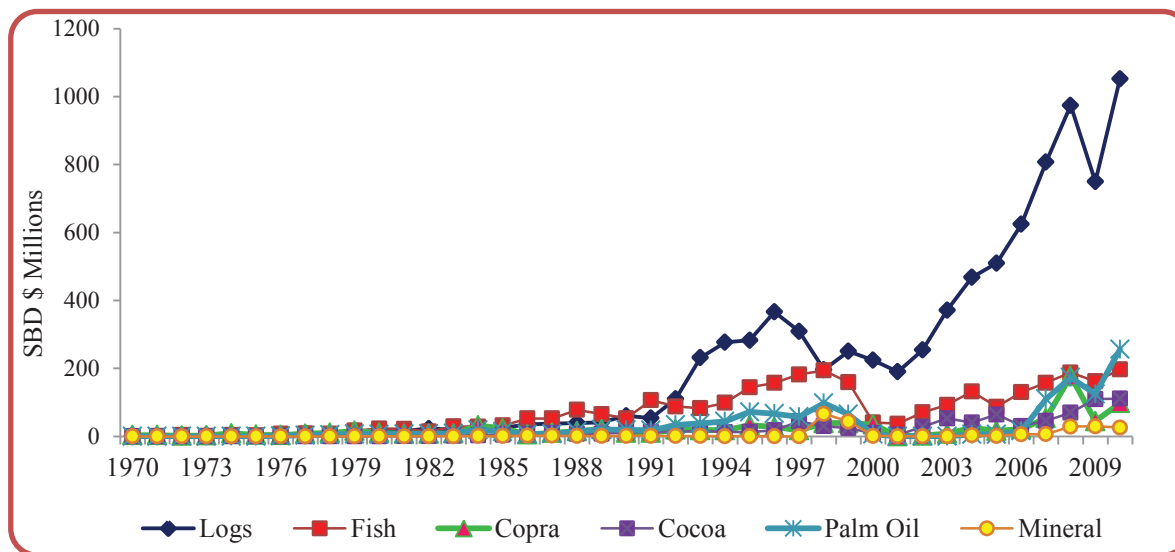
Source: Central Banks of Solomon Islands (various).

The Solomon Islands exports for the period 2000-2009 include China with 30.2 percent, followed by the Philippines with 10.4 percent and Spain with 9.9 percent. In the 1980s and 1990s Japan was the major destination for its exports with 38 percent share (on average) followed by the United Kingdom (15.3 percent). Since 2005, China became the largest importer of Solomon Islands logs (see Appendix Table A3.2). Diversification of export commodities to broaden its export base as well as expanding export markets are vital to mitigate any problems arising from primary productions particularly when logs run out.

The signing of a new agreement between the Solomon Island Government and a Taiwanese wood products manufacturing company for the processing of logs in April 2011 is a significant milestone for the logging industry (Pacific Periscope, 2011). However, Price Waterhouse (1995), pointed out that it is important that the government carefully examine such proposed investments before proceeding because similar proposals by logging companies in the 1990s have never materialised. Instead they were used as a window of opportunity to gain more tax and forest access concessions from the government (Price Waterhouse, 1995).

The main sources of Solomon Islands imports in the period 2000-2009 include Australia (31 percent), followed by Singapore (23 percent), USA (6.45 percent) and New Zealand with 6.25 percent. Since 1980 to 2008 Australia has been the single main traditional supplier of Solomon Islands imports (see Appendix Table A3.3). The Solomon Islands relies heavily on imported goods not only for its consumption but also for production of outputs. Figure 3.9 illustrates major imports of the Solomon Islands from 1970-2010. In the 1970-1990 periods, imports of machinery and transport equipment totalled at 30.7 percent, followed by basic manufacturers (19.1 percent) and food (16.5 percent) which have been driven by rapid development in capital projects. Imports of machinery and transportation equipment continue to dominate in the period 1991-2000 with 31.7 percent of total imports (SBD$ 159.5 million on average).

Figure 3.9 Solomon Islands Major Imports, 1970-2010
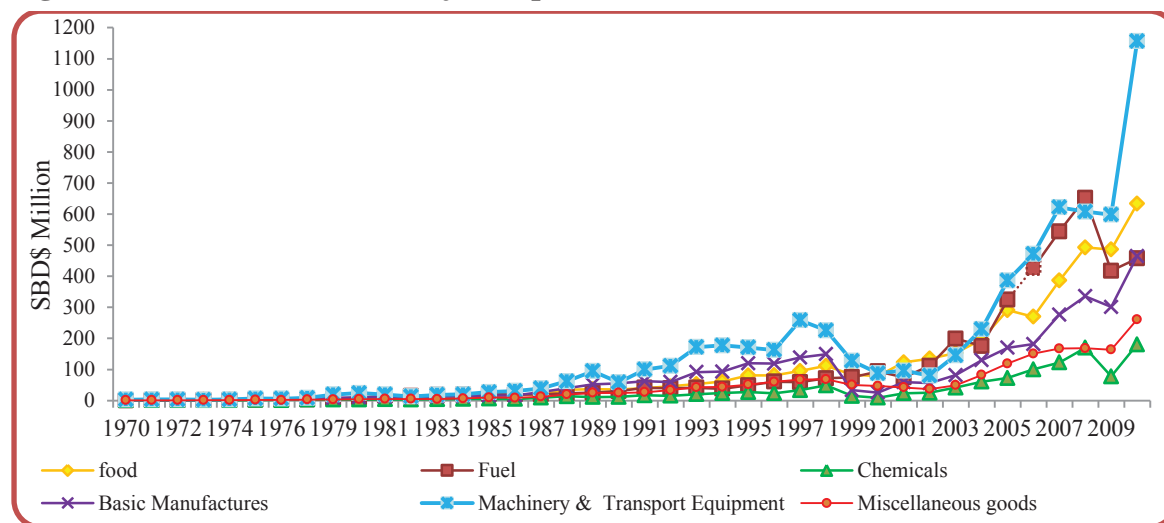
Source: Central Bank of Solomon Islands (various).

In 2001-2010 fuel become the second largest import commodity overtaking the traditional importation of food and basic manufactures as their share reduced to 19.9 percent and 12.8 percent respectively. Fuel imports increased significantly from 2001 to 2010 (SBD$316 million on average), accounting for 21.3 and 53 percent of total imports and GDP

respectively during this period. The significant rise in the value of fuel imports not only reflects high fuel prices but also higher growth in demand in the logging, fishing, shipping, aviation, and other major companies and service industries.[24] According to Gounder (2002, p. 148) "a high ratio of imports to GDP suggest that structural adjustment program in the Solomon Islands has not reduced imports, and imports has a strong bias towards consumption. She notes that fiscal discipline, forest management and development are required for a sustainable pattern of growth and development".

3.3.2 Foreign Companies Export Contributions

Foreign companies comprise of the Solomon Islands export sector from the period 1970 to 2010. The main export sectors that foreign investors are associated with include logging, fishing and agriculture. Figure 3.10 shows the export share of foreign companies' over time. From 1970 to 1980, nine major foreign companies contributed on average SBD$9.3 million towards exports. This accounts for 39.5 percent of total average export earnings. However, foreign companies' share of exports dropped considerably to 34.6 percent in the period 1991-2000, after rising strongly to 51.6 percent in the period 1981-1990. This decline was significantly affected by political instability and civil strife. Since the stability period, i.e. 2004, foreign companies' share of exports (on average) increased considerably to 37.5 percent of total export earnings.

Figure 3.10 Selected Major Foreign Companies Export Share to Total Exports
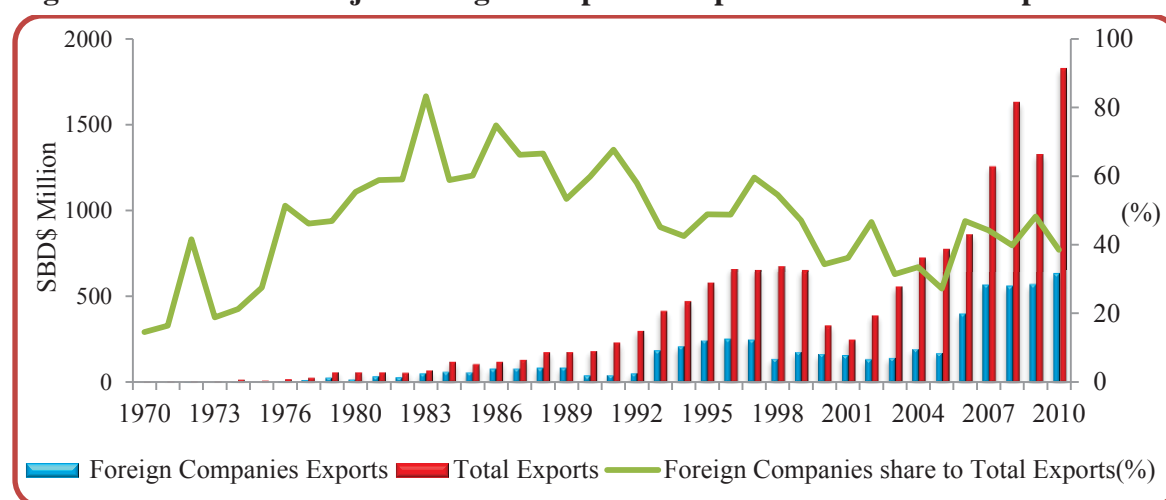
Source: Central Bank of Solomon Islands (various).

The large decline in FDI export shares over the 1991-2000 period was seen in fish exports (25.1 percent). The sharp decline in commercial fishing and canning in the Solomon Islands in the mid-1990s might explain the significant decline in foreign investors' share of

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[24] The CBSI (2007) notes Solomon Islands Electricity Authority, logging, fishing companies, Guadalcanal Plantation Palm Oil Limited, Aviation companies, RAMSI and shipping companies as major fuel consumers in 2007.

fish exports (Gounder, 2002). She also notes that the 1997Asian financial crisis, the civil unrest in 1999-2002 and falling commodity prices contributed to the decline in exports. The buoyant export growth between 2003 and 2010 reflects increased confidence from the business sector in the Solomon Islands following the post-conflict rehabilitation since 2004.

3.3.3 The Import Share of Foreign Companies to Total Imports

While foreign companies have made a significant contribution to export growth, they have also been heavily dependent on importation of heavy machinery, equipment, technology, material for the manufacturing and other industries. Figure 3.11 shows import share of foreign companies (represented by sixteen major companies excluding oil importing companies) against total imports. For the 1970-1980 period, the selected major foreign companies share of imports to total import share comprised an average of 45.8 percent (SBD$11.1 million). The high import share in this period relates to acquisition of fishing vessels, machinery, equipment, construction and building materials used for capital projects.

Figure 3.12 Selected Foreign Companies Import Share to Total Imports
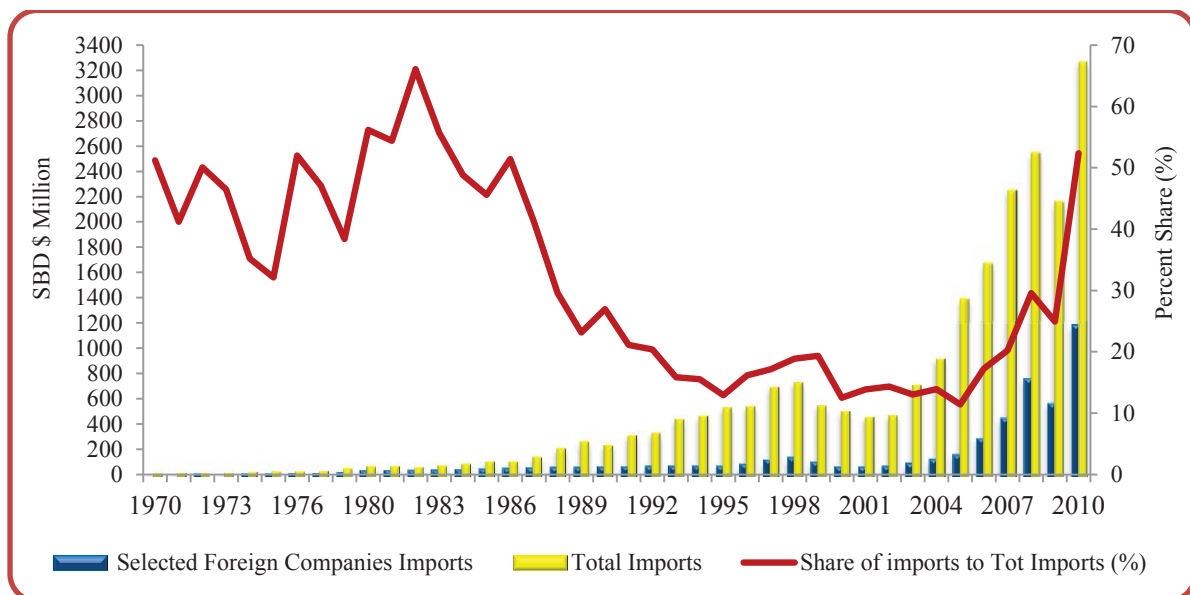
Source: Solomon Islands National Statistics Office (1985), Central Bank of Solomon Islands (various).

From 1981 to 1990, although the average import share for the foreign companies increased to SBD$49.3 million, its overall share declined to 37.5 percent and it further declined to 16.8 percent in the 1991-2000 period. The decline in import shares reflect the closure and scaling down of the major foreign companies during the civil unrest. Between 2001 and 2010, foreign companies imports increased to SBD$344.2 million, accounting for 23.2 percent of total import payments. This increase largely reflects the resumption and growth

in economic activities by these companies in the post-conflict years since 2003 (CBSI, 2010).

3.3.4 Trade Balance and Terms of Trade

The Solomon Islands is heavily dependent on imported consumables, capital equipment and factor inputs for domestic and foreign companies. This is evidenced by higher levels of imports share than exports between 2000 and 2010 (see Figure 3.12). The persistent trade deficit widened from SBD$166 million in 2000 to SBD$730 million in 2010. In 2010 Solomon Islands registered a large trade deficit of SBD$730.5 million.

Figure 3.12 Solomon Islands Trade Balance, 1970-2010
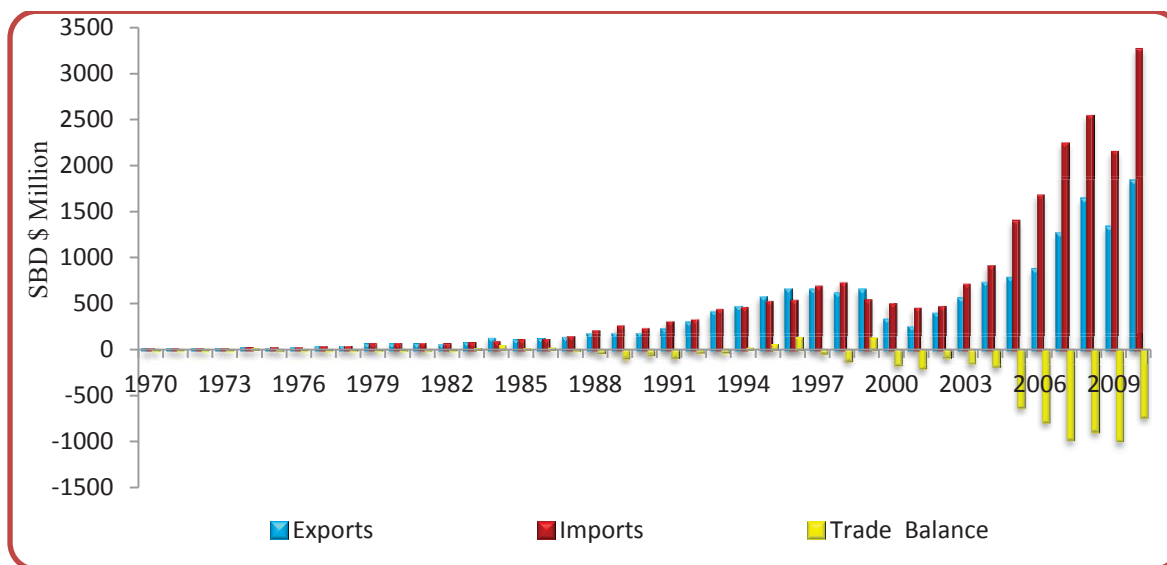
Source: Central Bank of Solomon Islands(various).

The export promotion strategies such as targeting the development of small to medium-scale enterprises and niche products and food processing for both local and overseas markets are crucial. The Pacific Island temporary worker scheme in Australia and New Zealand for the Solomon Islands could increase income to generate domestic economic opportunities (Solomon Islands Government, 2008). Trade negotiations through regional, bilateral and multilateral agreements remain vital (e.g. Pacific Agreement on Closer Economic Relations (PACER) to gain benefits for the Solomon Islands.[25]

The terms of trade (TOT) (Figure 3.13) between 1979 and 2010 shows the Solomon Islands relative import and export prices. Over this period, the Solomon Islands terms of trade (on average) is seen to be deteriorating, although in some years it shows some improvement. The period 2000 to 2010 indicate a rapid deterioration in the terms of trade, thus reflecting the rising import prices to that of its exports. This was further exacerbated

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[25] Pacific Agreement on Closer Economic Relations is a free trade agreement between New Zealand and Australia and the Pacific Forum Island countries (Pacific Islands Forum Secretariate, 2001).

by its decline in export volume (especially in 2009) due to global financial crisis (CBSI, 2010). This has resulted in a persistent trade deficit as seen earlier in Figure 3.12. Such deterioration in TOT and trade balance could have substantial adverse effect on the economy. This impact would be more from oil price increase, however in the long-term the government will need to address if such a persistence of the problem exists.

Figure 3.13 Solomon Islands Terms of Trade, 1979-2010
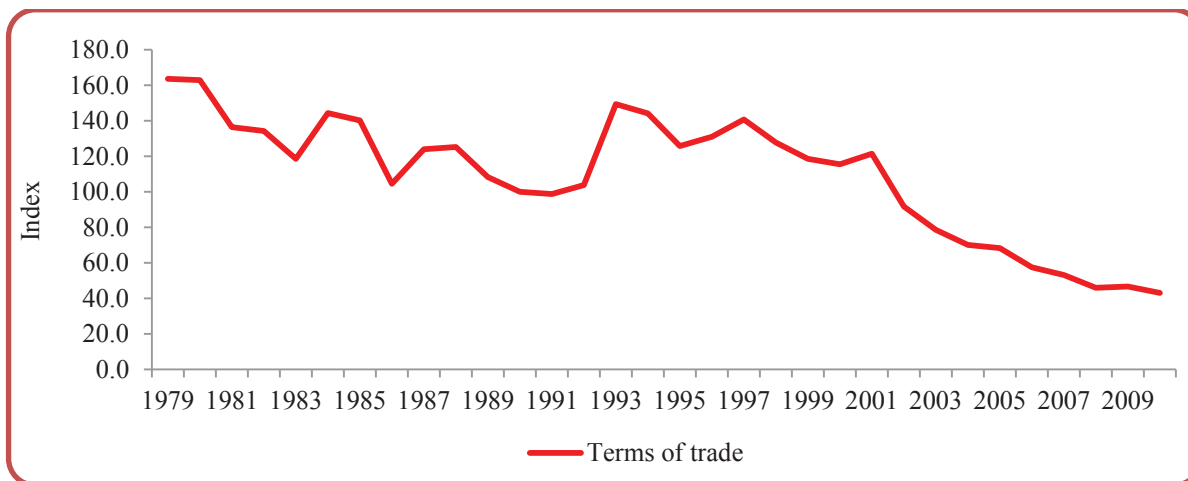
Source: Central Bank of Solomon Islands (various).

3.4 Foreign Direct Investment - Sectoral Distribution

This section provides a discussion on the foreign investors' country of origin, followed by the sectoral distribution of FDI to various sectors of the Solomon Islands economy including the foreign capital flows. This study uses foreign investment inflows and its sectoral distribution to examine its trends and possible effects on the economy. Over the years, the CBSI has been using investment proposals to gauge the investment level in the economy. A major drawback is the lack of actual investment flow and stock data and also due to the confidential nature of investment companies leads to the approximation of investment data. The study takes care in reporting such data to correctly reflect FDI, GDP share and sectoral flows from the established data sources of the World Bank (2010c) and CBSI (various).

3.4.1 FDI - Country of Origin and Sectoral Distribution

In the 1980s, the Solomon Islands traditional sources of FDI have been Australia and Japan. This was the period when Japan dominated the fishing industry. By the mid-1990s, foreign investors from Malaysia overtook Japan's share of FDI at 30 percent, which mainly dominate the logging industry. Foreign companies from Australia and New Zealand make up 40 percent of total companies. In 2000, the Foreign Investment Board approved 49 proposals of which more than 32 percent were from Australia, 16 percent from Canada, 14

49

percent from the Philippines and the rest from other countries. Of these, more than 28 percent are joint partnerships with the Solomon Island companies (see Appendix A3.4).

From 2000 to 2009, foreign investments continued to be dominated by the Australian companies reaching 39 percent, followed by Malaysia at 20 percent and China 12 percent. In 2010, there has been a decline in foreign investment from Australia down to 26 percent whilst both Malaysian and Chinese investment increased considerably to 31 and 21 percent, respectively (Figure 3.14). Joint-partnerships between the foreign investors and Solomon Islanders also declined to 19 percent in 2010. As noted the FDI in Solomon Islands is dominated by Asian countries i.e. almost 58 percent in 2010. This increase can be attributed to high GDP growth in Asia.[26] The rise in other foreign investors suggests that Solomon Islands is moving towards a more globalised than regional based markets.

Figure 3.50 Country of Origin by Foreign Investors
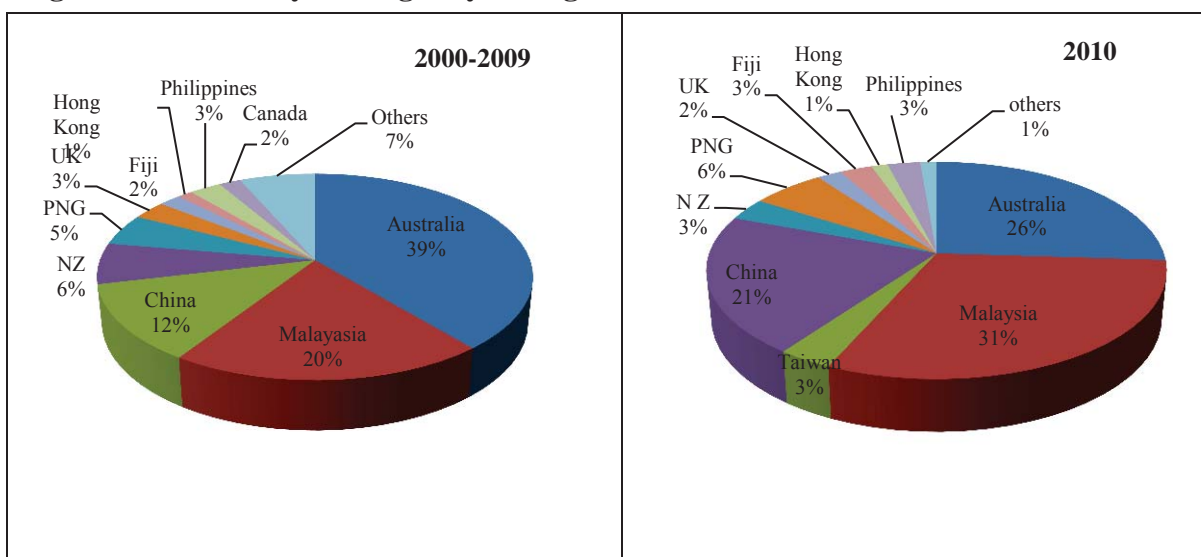
Source: Central Bank of Solomon Islands (various).

In terms of the sectoral distribution of FDI, Solomon Islands attracted medium to small investment levels. In 1985, foreign investment proposals valued at SBD$30.0 million, of which 46.7 percent was in the forestry sector while agriculture, manufacturing, mining and tourism accounted for 16 percent each. By the late-1980s, foreign investment proposals more than tripled to SBD$110.0 million. This was largely driven by inflows to the fishing sector, accounting for 31.8 percent (SBD$35 million), while the agriculture and forestry sector investments declined to 1.3 percent and 21.8 percent, respectively. New investment inflows to the construction and services sectors represented 11.4 percent and 9.1 percent, respectively in 1989 (see Appendix Table A3.5).

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[26] The European Union countries FDI has also increased in many Asian countries (Ramasamy and Yeung, 2004).

Foreign investment proposals in the early 1990s dropped considerably by 53 percent to SBD$51 million, largely due to a fall in inflow to the fishing and construction sectors. In contrast, the forestry and agriculture sector inflows increased by 52.9 percent and 5.5 percent respectively. In 1994, there was a significant increase in foreign investment proposals, valued at SBD$762.0 million. The mining sector alone represented 83 percent with the rest in the fisheries, tourism, manufacturing and services sectors. In the wake of civil unrest in 1999, foreign investment proposals drastically reduced to 20 and valued SBD$45 million only (Figure 3.15). However, foreign investment proposals increased significantly to SBD$1854 million which stemmed from the mining sector investment valued at $1.4 billion (53.9 percent), agriculture SBD$377 million (20.3 percent) and fisheries SBD$169 million (9.2 percent). This outweighed the 8.3 percent decline in the forestry sector. The mining sector investment continued to dominate in 2001 but declined substantially as other sectors falling to less than SBD$100 million. This significant decline reflects the civil unrest period which saw the outflow of capital due to uncertainty.

Figure 3.16 Foreign Direct Investment Proposals by Sectors, 1999-2010
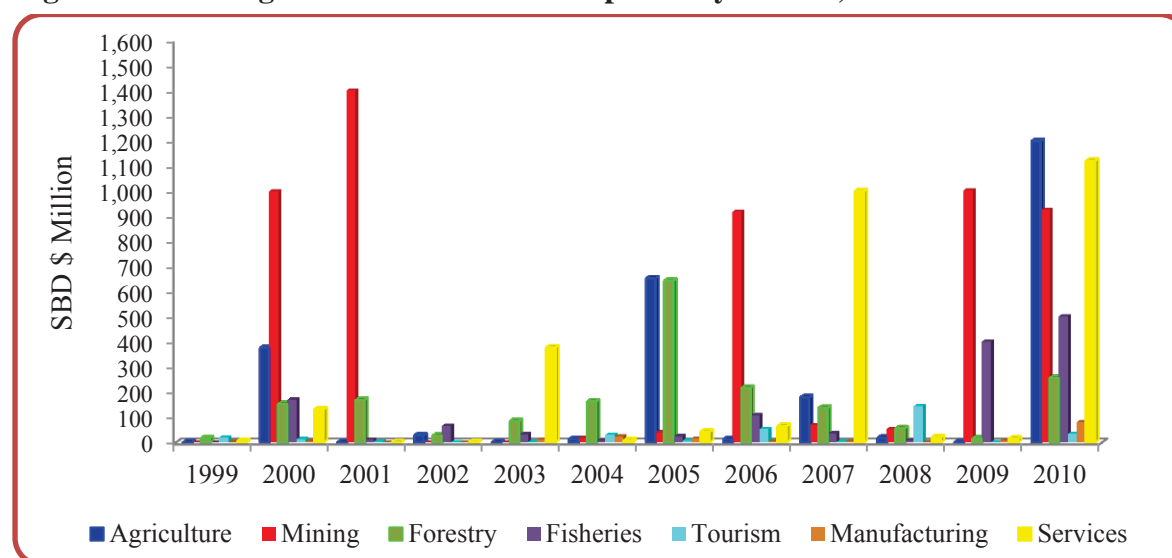
Source: Central Bank of Solomon Islands (various).

By the end of 2003, with the presence of RAMSI, foreign investment proposals registered SBD$527.8 million, this however is still below the pre-civil unrest period. The service sector achieved the highest investment proposals (71.7 percent) but the total value was less than SBD$400 million. By 2010, with more investor confidence, foreign investment increased significantly to a value of SBD$4433 million. This stemmed largely from an increase in agriculture sector rising to 27 percent, mining up 20.8 percent and fisheries up 11.3 percent. In contrast, foreign investment proposals in the services and forestry sectors declined to 25.3 percent, and 5.8 percent, respectively from their 2003 levels (CBSI, 2010).

Despite the significant number of proposals, in many cases only 75 percent of total foreign investment proposals were approved while the actual implementations have been even smaller (CBSI, 1995). The CBSI (2010), reports that only less than 5 percent of the foreign investment approvals in 2010 were implemented during the year. While the Foreign Investment Board approves investment proposals, a comprehensive database and monitoring systems are required to ascertain the level of actual foreign investment to actively encourage and benefit from the level of FDI activities.

3.4.2 Growth and Capital formation

Foreign capital flows are recognised not only as an important means of channelling foreign exchange transactions but also as a source of capital formation in the Solomon Islands. These are classified as foreign capital investments and public capital investments which complements the domestic capital investment.[27] Figure 3.16 shows both public and foreign capital investments and their total share to GDP in the period 1972-2010. From 1970s to mid-1980s, total foreign capital flows registered SBD$13 million (on average) and account for 10 percent of the GDP ratio. This is low in terms of influencing economic growth in a fragmented economy such as the Solomon Islands.

Figure 3.16 Public and Foreign Capital Investment Flows
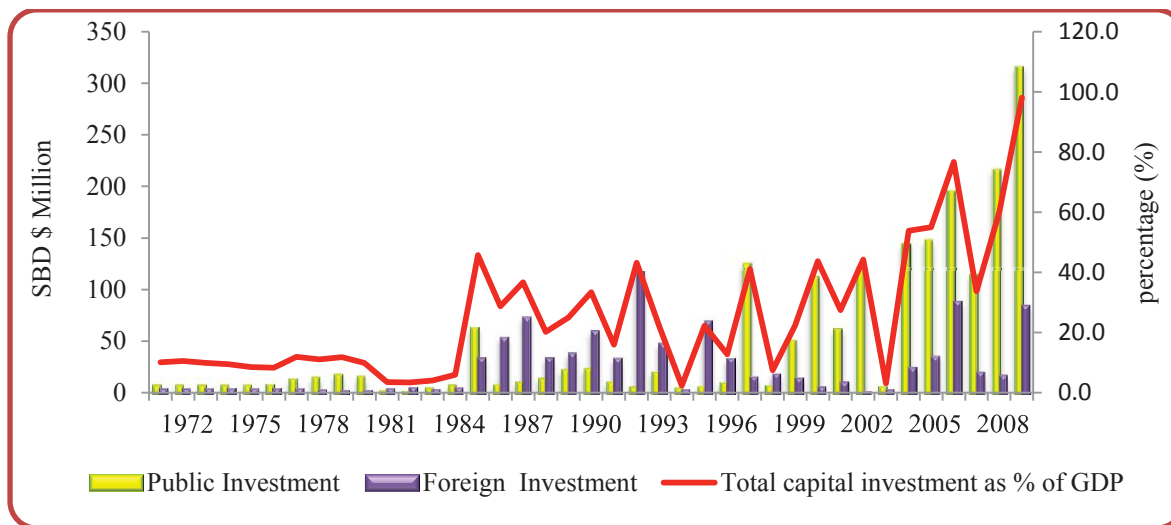
Source: Central Bank of Solomon Islands (various).

In 1986, foreign capital flows rose considerably to SBD$96.9 million, representing almost 45 percent of GDP. This stemmed largely from the public capital flows, accounting for 65 percent of the total foreign capital investments. In 1993, foreign capital flows rose further to SBD$121.6 million, representing 43 percent of GDP share. This outcome was mainly

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[27] Foreign capital investments include debt equity and capital imports used for capital projects while public capital investment relates to government fixed capital formation, mainly financed by foreign aid and loans (CBSI,1994).

attributed by a significant increase in foreign capital flows, rising to SBD$116 million (95.5 percent). The increase in foreign capital flows stemmed largely from a SBD$50 million debt equity swap in the fishing sector including investment in plant and equipment in the forestry sector (CBSI,1994). But in 1995 with the government losing its credibility due to huge debt accumulation, foreign capital flows dwindled to less than SBD$8 million. This represents only 2.3 percent of the total GDP and is even lower than the pre-1980s level. Both foreign and public investment capital flows were significantly low during the year.

In 1998, total capital flows increased considerably to SBD$344.6 million, representing 41.2 percent share of GDP. The upturn was mainly due to an increase in public sector flows, rising to SBD$126 million. Since then public capital flows continued to feature strongly and reached SBD$315.5 million in 2010. This represents about 77 percent of total GDP and is mainly driven by donor funded projects. Meanwhile, foreign capital inflows account for only 21 percent of total GDP. This positive outturn expects to rise as both foreign investors and donors continue to exhibit interests and confidence in rebuilding Solomon Islands economy (CBSI, 2010).

3.5 Monetary & Fiscal Policies

Monetary and fiscal policies are two main macroeconomic tools used to achieve economic objectives in terms of price stability, full employment and economic growth. To stimulate economic growth and combat inflation through monetary policy, money supply and interest rates variables are employed while fiscal policy tools influence aggregate demand, the level of economic activity and resource allocation through modifying government spending and taxation (Carbaugh, 2011). These two policies are said to be successful if they are integrated and well-co-ordinated, including harmonising with other economic policies. This section outlines the monetary and fiscal policy instruments used by Solomon Islands government since the 1980s which have important implications for FDI.

3.5.1 Monetary Policy Since 1980s

Monetary policy as stipulated under the Central Bank of Solomon Islands Act 1976 (and as amended in 1985) is to promote monetary stability (or price stability) through money supply and interest rates. Given the nature of Solomon Islands economy, achieving the objectives of monetary stability is challenging due to some trade-offs between the policy objectives**.**

To achieve the balanced goals of maintaining international competitiveness and to avoid excessive inflationary pressure, the CBSI adopted a fixed exchange rate regime. The

Solomon Island dollar is pegged to the basket of currencies of major trading partners. Until 2010 these major currencies included the Japanese Yen, the Australian dollar, the New Zealand dollar, the British Pound and the United States (US) dollar (CBSI, 2010). However, in early 2011, the SBD has been pegged to the US dollar, Australian dollar, Euro and the Japanese Yen (CBSI, 2011).

The exchange rate movement of the SBD$ against its major trading currencies in the 1985-2010 period (Figure 3.17) shows a gradual depreciation against the major currencies[28] In December 1997 and 2002 the Dollar was further devalued by 20 percent to mitigate the adverse effects on the economy arising from the currency crisis experienced by Asian nations and to protect external reserves due to worsening terms of trade (CBSI, 2002). Jayaraman and Choong (2010, p. 80) note that such "adjustments have contributed to keeping the real exchange rate more or less constant". From 2003 onwards, the CBSI broadly stabilised a *de facto* peg to the US Dollar at around SBD$8.0 per USD to minimize inflationary pressures and maintain a general business confidence environment (CBSI, 2010).

Figure 3.17 Solomon Islands Exchange Rates (Units of SI per Foreign Currency)
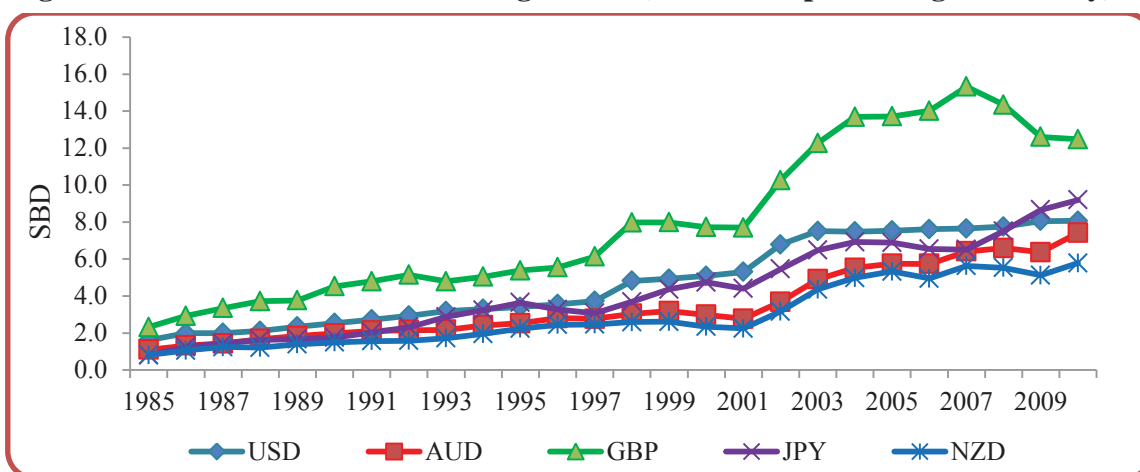
Source: Central Bank of Solomon Islands (various).

Monetary Instruments

The CBSI has, since 1980, used a combination of monetary instruments both direct and indirect to influence monetary conditions. [29] Within its regulatory powers it directly influences the commercial banks interest rates, assets and liabilities. The liquid asset ratio

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[28] From 1987 to 1993 the annual exchange rate depreciated against the trade weighted index at 10 percent following the devaluations of 6 and 10 percent in 1981 and 1982, respectively, BJS Agencies Limited (1986).
[29] Direct Monetary Instruments include Interest rate control, Statutory Liquid Ratios, Liquid asset ratio (LAR) and direct controls on credit. Indirect Monetary Instruments include reserve requirements, rediscount window, Lombard or overdraft window, open market operations and secondary. Open market operations involve primary market sale of Central Bank Paper (Bokolo Bills) and sale of government securities (Treasury Bills) (Sterne, 1996).

(LAR) that stipulates the minimum amount of liquid assets, the commercial banks can hold is geared towards financing government fiscal deficits as well as creating a useful buffer for commercial banks to enable them to have sufficient cash to meet withdrawal demands (CBSI, 1996). The LAR trend (Figure 3.18) shows that commercial banks' eligible liquid assets to total deposits have been in excess of the required LAR. However, in 1986 there was a shortage of required liquid assets which was offset by the borrowing from the CBSI. This prompted the CBSI to raise commercial banks interest rates (CBSI, 1988).

Figure 3.18 Bank's Liquid Asset Ratios, 1983-2010
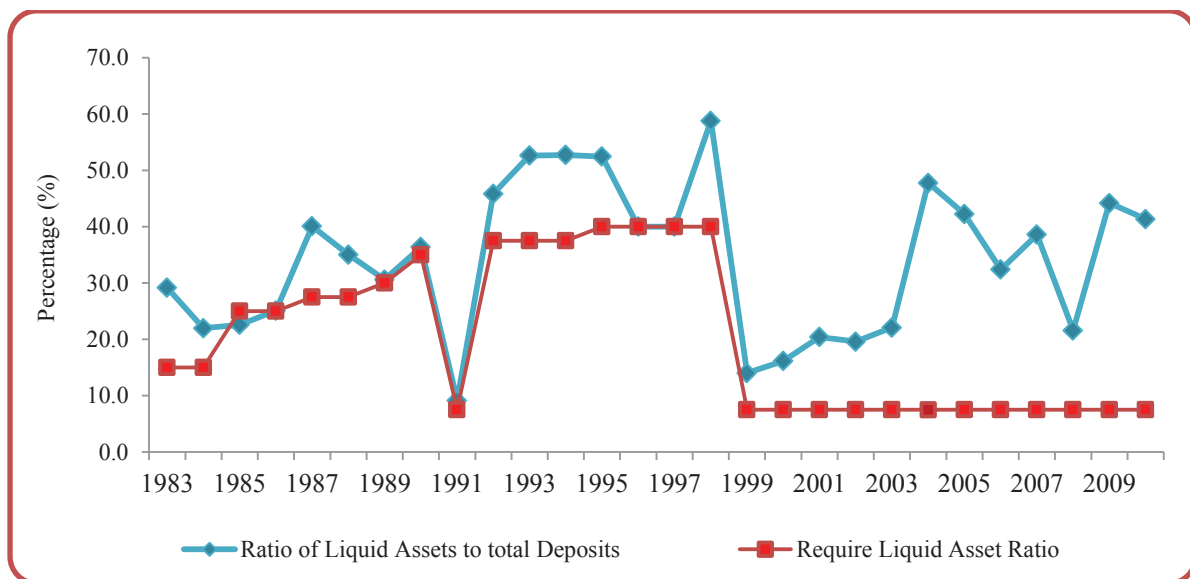
Source: Central Bank of Solomon Islands (Various).

The LAR at 15 percent in 1983 steadily reached 37.5 percent in 1989 reflecting moderate tight monetary policy pursued by the CBSI to contain inflationary pressure emanating from monetary expansion and to finance the fiscal deficit. In September 1991 the LAR reduced to 7.5 percent due to the removal of Treasury-Bills and Development Bonds as liquid assets. This led to a significant increase in fiscal deficit (CBSI, 1995). The LAR increased to 35.7 percent in 1992 (flexibility was given on liquid asset allocations to induce the commercial banks to hold government securities) and by 1995 it rose to 40 percent legal limit before declining to 7.5 percent in 1999. Since then the LAR remained at 7.5 percent. In November 2008, at the height of the global financial and economic crisis, the LAR was redefined by removing the cash component from liquid asset composition. Despite these changes, the bank liquid assets remained in excess of the required LAR making it an unattractive instrument for monetary policy over time (Jayaraman and Choong, 2010).

The indirect monetary instruments mainly target the balance sheet of the Central Bank (and reserve money) (Sterne, 1996). In the early 1980s, the CBSI relied heavily on regulating

commercial banks interest rates due to shallow financial markets and irregular trading of government securities. However, by end of 1983, the Central Bank changed the way it implements monetary policy by abolishing the direct control of commercial banks interest rates and moved towards more indirect instruments of monetary policy (CBSI, 1995).

The official interest rates on government and CBSI securities and commercial banks deposits for the period 1980 to 2010 are depicted in Figure 3.19. From 1984 to 1987 indirect instruments such as the Central Bank deposit and lending rates to the commercial banks became the dominant monetary tools. The interest rate on Treasury-bills in the early 1990s became the main benchmark for official interest rates (Sterne, 1996). During 1990, the interest rate on CBSI's lending to the commercial banks ceased while the interest on bank deposits remained, it was declined until it ceased in October 2003.

Figure 3.19 Official Interest Rates, 1980-2010
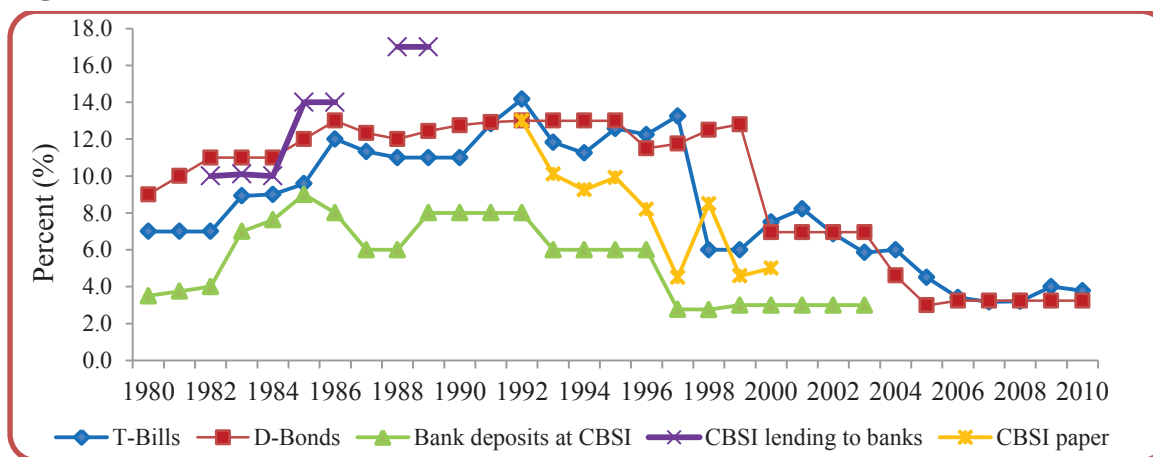
Source: Central Bank of Solomon Islands (various).

With continued high liquidity and limited monetary policy instruments the CBSI also launched open market operations (OMO) in 1989. The CBSI's own short-term securities, known as the Bokolo Bills were tendered to the commercial banks to absorb excess liquidity, and introduced weekly tendering of Treasury Bills in 1991. But, in August 1995, the government securities market collapsed due to huge debt accumulations and excess borrowing. This led both the CBSI and the commercial banks to create a *defacto* tightening of monetary policy, with no further lending by the commercial banks to both the government and private sector (Figure 3.20). This created an enormous pressure on the government activities of public infrastructure and services leading to deterioration in service delivery (Sterne, 1996).

In 1997, the CBSI reduced its interest rates on both Bokolo Bills and Bank call deposits as incentives to the commercial banks to reduce their lending rates in an effort to encourage

private sector borrowing. In spite of this, commercial banks' lending rates still remained high (Figure 3.21). The commercial banks have made a significant shift in lending to the private sector as the government is no longer able to borrow. The negative trend in net government borrowing implies that the government drawdown its deposits in the commercial banks (CBSI, 2005).

Figure 3.20 Commercial Banks Lending to the Government and Private Sector
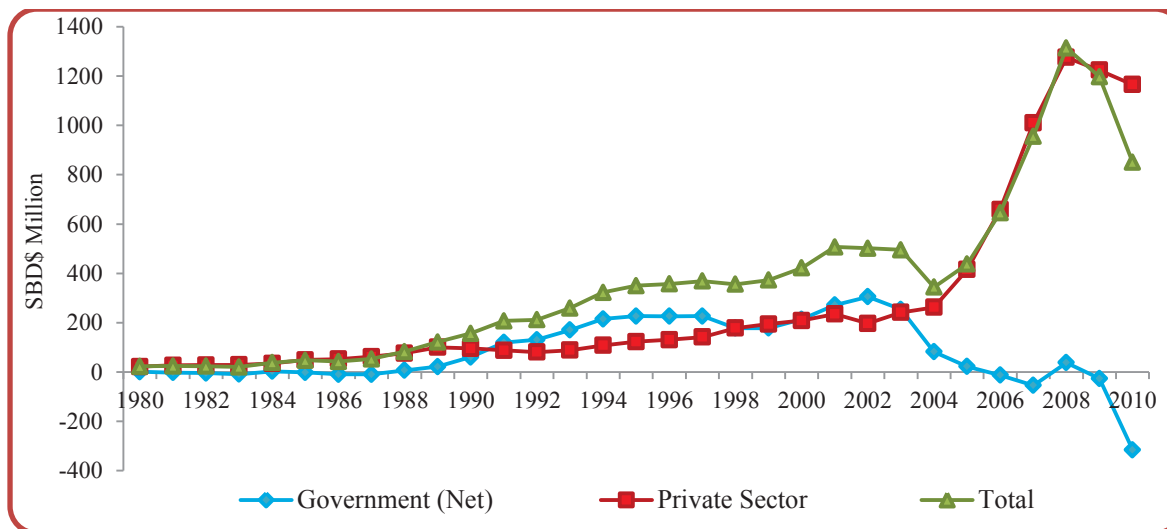
Source: Central Bank of Solomon Islands (various).

At the height of the civil unrest, the CBSI discontinued its Bokolo Bills whilst the OMO of Treasury-Bills continued but the amount was restricted to a ceiling of SBD$30 million. This reduced the Treasury-Bills interest rates to 4.5 percent in 2005 (CBSI, 2005). In 2010, the weighted average interest on Treasury-Bills further declined to 3.8 percent that saw some reduction in commercial bank deposit rates in the same period. As the lending rates of the commercial banks' remained relatively unchanged it resulted in a wide discrepancy (Figure 3.21) and extremely high borrowing costs to both individuals and investors. Wood (2010) notes that such a wide interest rate spread reflects the stickiness and unresponsiveness of commercial banks interest from changes in the domestic economy, money supply and interest rate policy.

Other monetary instruments used by the Central Bank to manage liquidity include introducing statutory reserves deposit facilities in 2006, long-term deposit facilities for financial deposits in 2007 and allowed the Solomon Islands National Provident Fund to invest abroad (CBSI, 2007). The CBSI also re-introduced its Bokolo deposits and Bills in 2008. During the recent global economic crisis with declining reserves and high inflation, the Central Bank adopted a cautious approach to monetary policy. A tight monetary policy was pursued to maintain an adequate level of external reserves and to ease inflationary pressures on the economy (CBSI, 2009).

Figure 3.21 Commercial Banks Nominal Deposits and Lending Rates
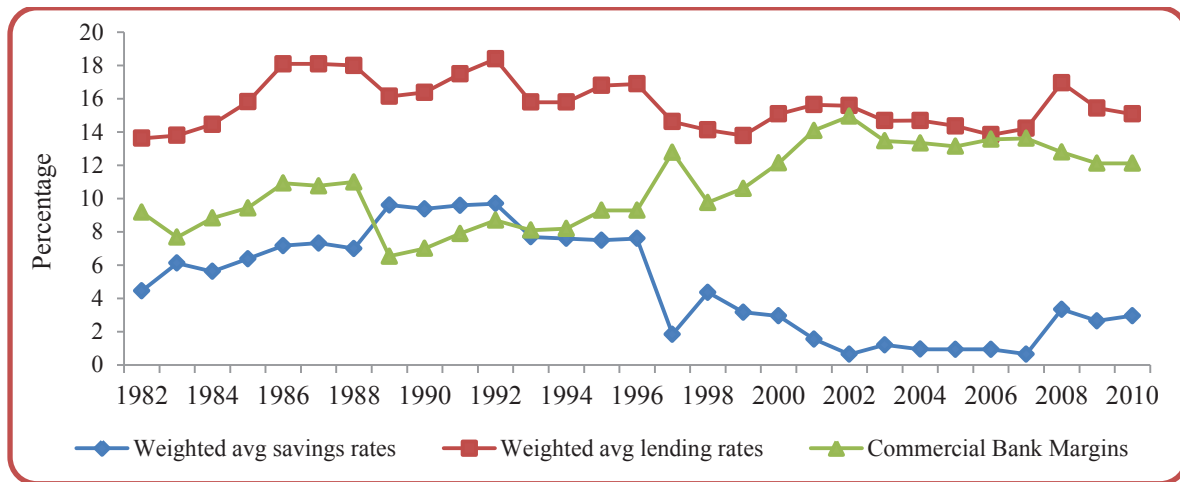
Source: Central Bank of Solomon Islands (various).

As external reserves are currently in a far more comfortable position with signs of strong economic growth and coupled with an ease in anticipated inflationary pressures, the CBSI in 2010 has continued to maintain a contractionary monetary policy to contain any expected rise in inflation (CBSI, 2010). With underdeveloped financial markets, small number of participants and immense government budget deficits, the conventional instruments for monetary policy management are not effective in the case of the Solomon Islands (Jayaraman and Choong, 2010). In other words, indirect instruments under such environment would not be a reliable monetary policy instrument. As such, combinations of some sort have to be taken with that of direct measures.

3.5.2 Fiscal Policy Measures

The Solomon Islands government has a key role in financing public, economic and social investments. This is achieved through increased spending or raising revenue via taxation to stimulate the level of economic activity. Over the years, foreign aid, tax revenues, and borrowing have sourced government revenue to finance services, national infrastructure and other development projects. This section discusses the government fiscal operations from 1985 to 2010.

Government Expenditure

Since 1985, the government has pursued an expansionary strategy in preference to fiscal tightening. Table 3.2 presents the government finance over time, 1985 to 2010. It is seen that most years since the independence 16 years had a budget deficits compared with budget surplus (9 out of 25 years). Social and economic development activities were the key development strategies the nation started since independence. The budget deficits of SBD$8 million and SBD$21 million, in 1985 and 1986 respectively mainly due to

expenditures targeted to overcome high revenue losses and devastations caused by cyclone Namu in 1986 (CBSI, 1988).

Table 3.2 Solomon Islands Government Finance

Year	Government Revenue (SBD$M)	Government Expenditure (SBD$M)	Budget Surplus/ Deficit (SBD$M)	Government Debts (SBD$M)	Ratio of Govt debt to GDP (%)	Ratio of debt to Govt Revenue (%)	Debt Servicing (SBD$M)
1985	52	60	-8	117	58	225	10.8
1986	57	78	-21	134	67	235.1	11.1
1987	77	71	7	210	71.8	272.7	9.7
1988	95	94	1	245	62.8	257.9	14.4
1989	116	115	1	277	59.7	238.8	17.0
1990	124	139	-15	312	65.9	251.6	23.0
1992	174	224	-50	469	76.7	269.5	32.6
1993	206	289	-83	549	66.2	266.5	44.9
1994	272	141	131	626	64.3	230.1	0.0
1995	310	387	-77	775	69.5	250	31.8
1996	337	355	-18	700	54.2	207.7	40.7
1997	315	412	-98	812	58.4	257.8	1.9
1998	385	277	107	916	63.3	237.9	85.1
1999	425	413	12	987	62.4	232.2	43.4
2000	318	415	-97	979	67.5	307.9	38.4
2001	273	410	-138	1154	80.3	422.7	28.6
2002	305	425	-119	1557	101.9	510.5	19.7
2003	453	600	-147	1683	94.0	371.5	40.9
2004	703	609	94	1756	84.9	249.8	67.7
2005	621	739	-118	1681	72.1	270.7	81.7
2006	822	851	-29	1693	61.6	205.9	89.7
2007	1123	1195	-73	1557	47.5	138.6	145.7
2008	1574	1681	-196.4	1469	35.7	93.3	163.2
2009	1706	1701	4.6	1449	31.9	84.9	104.5
2010	2261	1872	390	1334	25.4	59.0	117.6

Source: Central Bank of Solomon Islands (various).

In the late 1980s the government switched to a more tight fiscal strategy resulting in budget surpluses. Between 1990 and 1993, a more expansionary strategy saw to non-development expenditures and weak government systems put pressure on its financial position. These included an excessive number of public sector employees, a multi-level system of government expansion, a lack of co-ordinated financial planning and additional expenditures arising from the spillover effects from the Bougainville crisis (CBSI, 1993). Consequently, this led to three consecutive years of budget deficits. In 1994, the export boom from log exports switched the fiscal budget deficit to a significant budget surplus of SBD$131 million. However, the collapse of government securities, excess borrowing, uncontrolled expenditures, and the Asian financial crisis reversed the buoyant growth resulting in budget deficits in the 1995-1997 periods (CBSI, 1997).

The government moved to a more contractionary strategy in 1998 and 1999 resulting in budget surpluses. This stemmed largely through cost saving measures and efficiencies achieved from public sector reforms, consolidation of government ministries and privatisation of state owned enterprises (SOEs) (CBSI, 1999). The gains achieved were however short lived as the ethnic crisis catapulted the country into political chaos and deep financial ruin. It resulted in huge budget deficits in 2000-2003 period which also led to drawing its savings from the commercial banks. The government budget during the period also came under huge pressure from illegal financial claims and demands from the civil strife crisis (Hou, 2004). The post-global crisis period, however, has not affected government financing with adopting of a more fiscal discipline, complemented by significant foreign aid, foreign investment inflows and higher export earnings. The budget surpluses of SBD\$4.9 million and SBD\$390 million in 2009 and 2010, respectively, saw to the reverse of the budget deficits experienced in the period 2005 to 2008 (CBSI, 2010).

Government Borrowing

The government has borrowed excessively both from external and domestic sources to promote economic and social development (see Table 3.2). Foreign borrowing constitutes a larger portion, accounting for 69.5 percent of the total average borrowing during the period 1985-2010. The foreign loans were used to finance capital imports to improve infrastructure and other facilities, increase employment opportunities as well as to improve external reserves in the years when high balance of payments deficits (CBSI, 1995).

Over the 1985-2010 period, the government debt accumulations rose much faster than debt servicing ratio. The debt stocks further exacerbated during the civil crisis period peaking in 2004 at SBD\$1756 million. The Net Present Value (NPV) of government debt to GDP ratio and government revenue in 2004 was at 84.9 percent and 249.8 percent, respectively. The ratios were considered to be significantly higher than the Debt Sustainability Framework (DSF) thresholds of 30 percent net of the present value of debt ratio to GDP (CBSI, 2010). Following the 'Honiara Club Agreement' in October 2005 there was a freeze on new government borrowing, thus government debt stock has been declining however it is still higher than the pre-crisis level.[30] On average, for the period 1985 to 2010, NPV of government debt ratio to GDP and government revenue is at 64.8 percent and 179.8 percent, respectively. The CBSI (1993) points out that the fundamental cause of the governments' excessive borrowing is due to its persistent failure to control recurring expenditure.

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[30] See www.mof.gov.sb/Government Finances/DebtManagement.aspx for the Agreement's detail.

Government Taxation

As part of its broader fiscal policy, government revenue is generated from the imposition of two types of taxes, i.e. direct and indirect taxes.[31] Taxation policy in this context is important to send positive signals to foreign investors, the private sector and the community at large. The direct taxes of export and import duties have been a major source of government revenue. On average, since 1980-2009, tax on import and export make up nearly 63.3 percent of total government tax revenue, followed by company tax with 16.3 percent, license fees and exercise duty with 14.3 and 5.8 percent, respectively (see Figure 3.22).

Figure 3.22 Solomon Islands Tax Revenues, 1980-2009
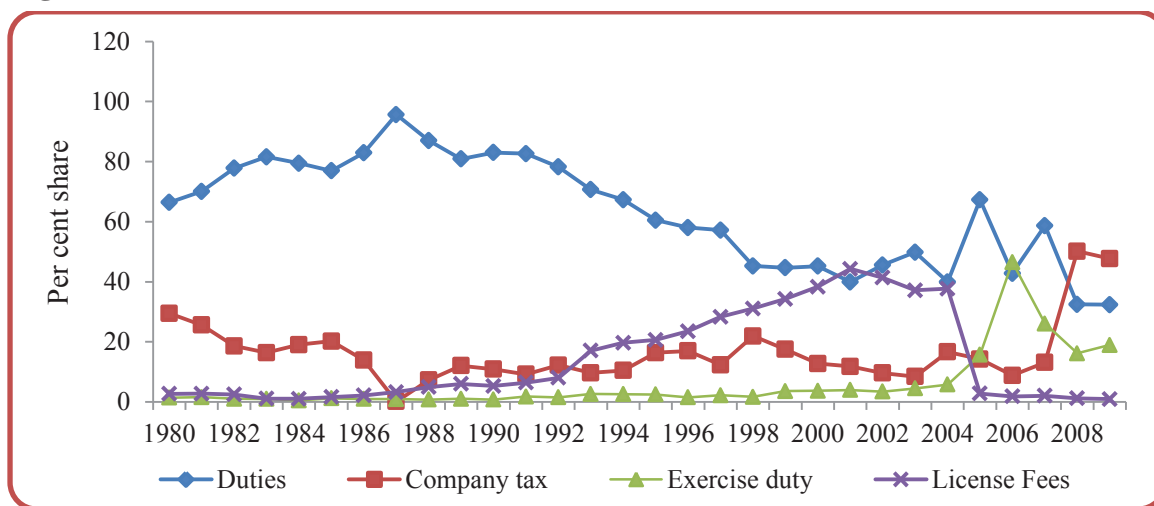
Source: Central Bank of Solomon Islands (various).

An international integrated tax system was established in 1990. Import taxes were collected from import duties, insurance and freight. This led to high revenue from import duty. Import duty represents nearly 80 percent of trade tax revenue and 66 percent of total tax revenues in 1990. A 3 percent levy was also introduced on all foreign exchange transactions in 1990 which increased to 10 percent in 1992. The increase resulted in higher prices for imported items which also contributed to inflation (see Figure 3.3).

In 1996, taxation reforms saw to reductions in import and export duties. The corporate tax decreased to 15 percent for local companies from 35 percent and foreign companies' tax dropped to 40 percent from 50 percent (CBSI, 1996). Accordingly tax revenues from import and export duties also declined significantly as seen in Figure 3.22. The company tax has been reduced further to 30 percent for foreign companies in 1996. The export duties for selected exports including sawn logs are in the range of 35-38 percent and the

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[31] The direct taxes amongst others include company tax, income tax, sales tax, goods tax and trade tax (import and export) and excise duties while indirect taxes includes such as license fees (BJS Group of Companies, 2010).

smoked fish at 20 percent. The reductions in tariffs are consistent with the World Trade Organisations rules (Integrated Framework Partnership, 2009).

The Intergrated Framework Partnership (2009) notes that not until 2007 that Solomon Islands tax policy (reform) became an important part of investment. Following the unilateral tariff reduction in 2007, the government further reduced the tariff structure index to 1.60 percent. The study affirms that this rate is now below the regional or low-income countries and is even below Australia's and New Zealand's rate of 3.89 percent and 4.2 percent respectively. The government now uses a single tariff structure with most duties now in the range of 5-10 percent (see Appendix Table A3.6) for most commodities except for motor vehicles. In 2010, some high duties were also reduced such as those for motor vehicles reducing from 17 percent in 1991 to 15 percent in 2010 (BJS Group of Companies, 2010).

In recognition of FDI as a key player in the private sector-led growth and economic development, the government also offers significant tax exemptions and incentives to foreign businesses investing in the Solomon Islands. This exemption has resulted in revenue losses, but wastages in resources through rent-seeking activities and administrative costs have led to corruption as well. For instance, since 1980-2010, the government lost about SBD$82 million (on average) through exemptions and remissions, i.e. 64.5 percent (on average) of total value of duties (Figure 3.23).

Figure 3.23 Duty Exemptions and Remissions, 1980-2010
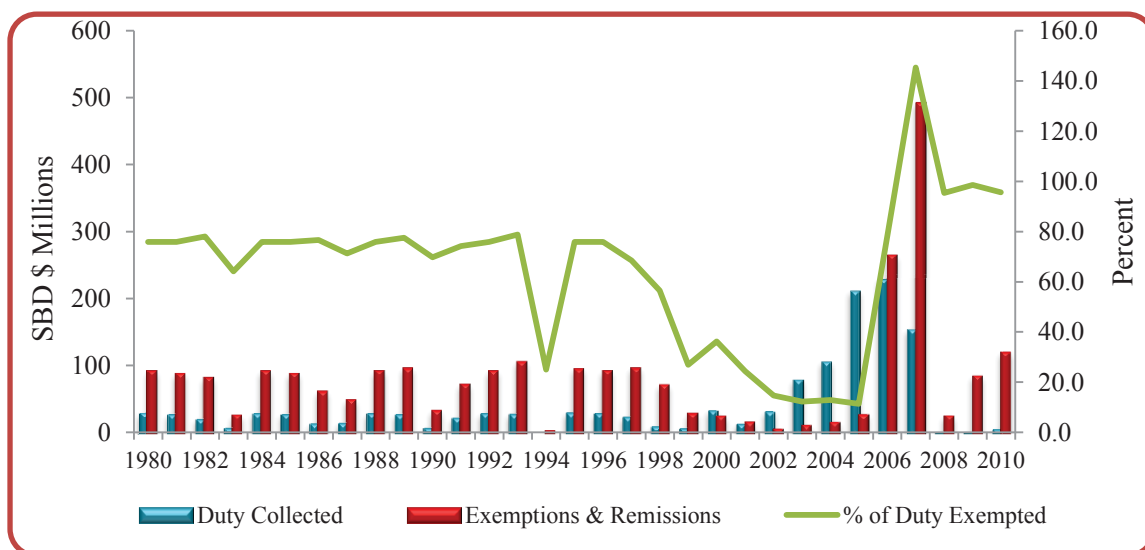
Source: Central Bank of Solomon Islands (various).

As shifts in government taxation policies lead to potential costs, benefits and trade-offs, it is vital to consider these changes thoroughly. This is vital as direct or indirect taxes may translate immediately to the cost (price) of imported and domestic goods. This may raise

the rate of inflation and create potential demands for wage increases which may adversely affect competitiveness. The ADB (2005) notes that high tax rates in Solomon Islands have create a disincentive to foreign investors, undermines their competitiveness against other companies producing similar products in other tax free countries and provide a source of delay in development projects and deter potential foreign investors.

While high tax rates tend to discourage foreign investors, studies done for the Organisation for Economic Co-operation and Development (OECD) countries by Görg, Molana and Montagna (2009) provide useful lessons. They suggest that relatively high tax rates in OECD countries still successfully attract FDI. This happens provided that revenue is used to fund projects that create a favourable investment climate. Such a lesson is useful in the case of Solomon Islands. While there is some reduction in tax rates for foreign investors, the government expenditure deriving from tax revenues was mainly spent on non-economic projects. Government expenditure from tax revenues in the productive public goods and other development projects can potentially create an attractive environment for FDI.

3.6 Implications for Foreign Direct Investment

The Solomon Islands has attracted higher levels of FDI in recent years which was affected in the earlier period by the weak macroeconomic factors such as low economic growth, low income per capita, high inflation, poor infrastructure, lack of skilled labour and the civil strife and political instability. The high establishment cost and risks associated with political, economic and social effects affected investment decisions. The major amendments to the foreign investment legislation led to a surge in FDI inflows, yet it needs to address the inherent structural and institutional impediments.

FDI has various benefits for growth and development in the Solomon Islands. This include employment generation, development of infrastructures, increase in skills and training, higher exports and new export markets, and revenue for the government. Although the exchange rate policy had a one-off devaluation to restrict import which benefited the local and foreign investors in the export sector, importers however have been adversely affected through increased import prices and reduced domestic investment. This in turn has raised capital costs and low capital investment or even suspend any planned expenditures.

The monetary policy is vital for monetary stability and control of inflation. However, the governments' expansionary fiscal policy hampered growth in some years while using a tight monetary policy has crowded out private sector investment through low levels of

credit to the private sector. In these situations trade-offs have to be carefully considered, thus in recent period, a firmer monetary policy, addressing liquidity swings, credit growth and lowering inflation in 2009 and 2010 have encouraged FDI inflows.

Given the development challenges faced over the last decade, the nation needs to address its fundamental social and economic problems. The presence of RAMSI has resulted in the restoration of law and order, and increased public and business confidence, which has consequently led to a significant improvement in FDI inflows. However, a sound macroeconomic management, good governance and political stability and sustainable economic growth would further lay the foundations for a sustainable FDI inflow to the Solomon Islands. A vital factor that the government requires to address is the over exploitation of natural resources. Rules and regulations, and monitoring of these production outputs are crucial for long-term output. Foreign investors and government collaboration in adhering to these issues will sustain the scarce resources for the nation's long-term growth and development.

Chapter Three Appendix

Table A3.1 Formal Employment and Total Labour Force

Year	Total formal employment	Total labor force	Year	Total formal employment	Total labor force
1980	19831	45408	1995	33103	70178
1981	20988	46307	1996	34098	73025
1982	20847	47960	1997	33349	76408
1983	21132	48865	1998	34061	79235
1984	22688	50756	1999	31061	82593
1985	23996	52754	2000	28286	88207
1986	24026	53230	2001	28826	93299
1987	23793	55225	2002	27876	97296
1988	24845	57138	2003	28376	99832
1989	25102	58601	2004	59741	102150
1990	26122	60919	2005	60737	105084
1991	26631	62758	2006	61262	107817
1992	26842	62062	2007	61584	110019
1993	29577	66498	2008	59745	112549
1994	32519	68222			

Source: World Bank (2010b), Central Bank of Solomon Islands (various).

Appendix Table A3.2 Selected Major Destination of Solomon Islands Exports (%)

Country	1980s	1990s	2001	2005	2008	2009
Japan	38.9	38.6	23	4.0	2.0	3.0
UK	12.2	18.3	1.0	2.0	0.17	4.3
Thailand	12.1	4.3	1.0	4.0	1.64	2.07
China	-	-	3.5	30.7	46.3	40.5
Spain	-	-	-	-	12	7.8
Philippines	-	-	12.9	4.9	14.3	9.4
Singapore	1.2	3.1	2.0	3.0	12	1.8
Australia	3.4	2.1	1	4	3.7	4.10
USA	3.2	0.5	6.4	3.3	0.2	0.2
NZ	0.1	0.3	1.0	0.02	0.9	1.1
Fiji	2.2	0.9	0.31	2.52	0.1	0.3

Source: Central Bank of Solomon Islands (various), Solomon Islands National Statistics (various).

Appendix Table A3.3 Selected Major Sources of Solomon Islands Imports (%)

Country	1980s	1990s	2001	2005	2008	2009
Australia	36	39	44	27	33	20
Singapore	13	15	12	23.9	34	23
NZ	8.3	9.3	6	5	6	8
Japan	17.3	13.4	5	7	7	4
USA	2.6	3.3	2.6	4.2	9	10
China	-	-	3.3	3.9	5.0	9.8
Malaysia	-	-	2.2	7.7	4.8	3.4

Source; Central Bank of Solomon Islands (various), Solomon Islands National Statistics (various).

Appendix Table A3.4 Foreign Investors Country of Origin

Country	1999	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010
Australia	8	16	13	18	26	16	22	47	60	49	39
USA	0	0	0	1	1	2	1	1	1	6	1
Malaysia	3	2	1	10	11	10	5	23	40	37	46
Japan	1	0	0	0	0	0	2	6	2	0	0
Taiwan	1	0	0	1	1	0	6	6	7	2	5
China	1	3	1	0	0	2	4	16	37	20	31
N Z	1	3	1	0	7	1	5	6	11	10	5
PNG	0	1	0	1	2	4	3	7	10	6	9
UK	2	2	2	0	2	1	4	1	6	2	3
Fiji	0	2	0	2	2	1	1	1	3	1	4
Philippines	0	7	0	1	3	0	1	0	1	6	4
others	4	13	2	5	5	0	3	11	15	8	2
Total	21	49	20	39	60	37	57	125	193	149	151
Joint Venture(SI)	5	14	12	5	14	9	26	na	61	40	29

Source: Central Bank of Solomon Islands (various), Solomon Islands Foreign Investment Division (various).

Appendix Table A3.5 Foreign Investment Proposals Sectoral Distribution (%) share

Sectors	1985	1989	1992	1994	1999	2000	2001	2003	2006	2008	2009	2010
Agriculture	16.0	1.36	5.49	0.00	0.00	20.33	0.00	0.00	0.84	4.47	0.10	27.08
Mining	16.0	0.00	0.00	83	0.26	53.93	85.74	0.00	62.67	12.47	68.77	20.88
Forestry	46.7	21.82	52.94	0.00	37.37	8.30	10.34	16.17	14.86	13.34	1.15	5.81
Fisheries	0.0	31.82	5.49	8.27	0.00	9.17	0.64	6.21	7.41	1.94	27.49	11.33
Tourism	16.0	0.00	0.00	4.07	43.51	0.70	0.15	0.34	3.64	33.93	0.06	0.77
Manufacturing	16.0	0.00	5.49	3.02	3.19	0.25	0.00	2.04	0.27	0.28	0.47	1.83
Construction	0.0	11.36	5.49	0.00	4.01	0.00	0.00	3.13	0.04	0.66	0.06	0.31
Services	8.3	9.09	5.49	1.05	11.33	7.13	0.00	71.69	4.49	4.86	1.05	25.31
Consultancy	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	6.40	0.11	0.25
Retail/Wholesale	0.0	0.00	0.00	0.00	0.33	0.00	2.81	0.30	0.29	1.81	0.53	0.97
Transport	0.0	0.00	0.00	0.00	0.00	0.20	0.32	0.00	1.21	19.71	0.08	0.90
Electrical/Energy	0.0	1.36	0.00	0.00	0.00	0.00	0.00	0.13	4.23	0.12	0.14	4.56

Source: Central Bank of Solomon Islands (various), Solomon Islands Foreign Investment Division (various).

Appendix Table A3.6 Solomon Islands Tariff

Commodity	Rate (2010)
Live animals	5%
Meat, fisheries	10%
Other food stuffs (varying according to processing luxury)	20% 5%-10%
Cigarettes	SB $1.25/stick
Chemicals, Pharmaceuticals	5% 10%
Iron and steel	5%
Works of Art	10%
Manufactures	10%
Motor vehicles	15%

Source: BJS Group of companies (2010).

Chapter Four

ECONOMIC GROWTH AND FDI: EMPIRICAL INVESTIGATION

4.1 Introduction

This chapter empirically examines the relationship between foreign direct investment (FDI) inflows and economic growth in the Solomon Islands. In particular, its main focus is to explore the causal link between FDI inflows, domestic investment (DINV) and economic growth. The models utilized here evaluate whether FDI inflows, labour, domestic investment and trade openness affect growth. The models further evaluate the causal links by testing the direction of the FDI-led growth nexus. An overview of the Solomon Islands' economy discussed in Chapter 3 indicates the importance of FDI inflows in various sectors that stimulate economic growth factors. This occurs through capital formation, employment creation, technology transfer, and access to foreign markets. In these cases, FDI inflows based on the FDI-led growth nexus could play a crucial role in improving the rate of growth of the Solomon Islands.

As discussed in Chapter 2, the majority of recent empirical evidence suggests a positive and causal relationship between FDI inflows and economic growth in the developed and also large developing countries such as China, India, the Latin American countries and Pakistan (Ghazali, 2010; Srivastava, 2006; Tang et al., 2008; Zhang, 2001). These studies also note not only the traditional single-directional causality but also a bi-directional causality between FDI inflows, domestic investment and economic growth. There is no empirical evidence for the FDI-led growth hypothesis, in the case of Solomon Islands. Therefore, evaluating whether or not the FDI-growth nexus exist would ascertain the validity of this hypothesis for Solomon Islands. Thus, examinations of these issues are critical as they have crucial policy implications for the Solomon Islands particularly with respect to understanding the dynamic link of FDI inflows to the domestic economy, and how it can enhances economic growth. This study utilizes time series econometric techniques to estimate the relationships of the FDI-growth nexus and the causal direction of these relationships.

The FDI-growth nexus is estimated along with domestic resources such as labour force, domestic investment and trade that are major influential factors of economic growth. While the results indicate a bi-directional causality between FDI inflows and domestic investment, that FDI inflows increases domestic investment and in turn domestic investment induces FDI inflows, single-directional causality from economic growth to FDI inflows and to

domestic investment is also positive and significant for the Solomon Islands. This established uni-directional causality suggests that a FDI inflow is the main instrument which stimulates domestic investment and contributes to economic growth. As such, FDI inflows not only affect the level of capital formation in the Solomon Islands, but it has also stimulates economic growth through complementing domestic investment.

The chapter is structured as follows: Section 4.2 provides a brief overview of the economic growth and FDI relationship. The analysis is undertaken in the context of the existing FDI-led growth literature, incorporating insights drawn from recent empirical studies. Section 4.3 discusses the specifications of the models and the choice of variables to estimate the FDI-growth nexus for the period 1970 to 2010. Details of data and econometric methodology used in this analysis are discussed in Section 4.4. Since time series data can be non-stationary, the relevant econometric methodologies were applied, in order to avoid spurious results. Empirical analysis for time series data are undertaken using the autoregressive distributed lag (ARDL) approach to co-integration and the pair-wise Granger causality techniques. Section 4.5 presents the results and Section 4.6 offers the conclusion.

4.2 Economic Growth and FDI: Brief Literature Review

The role of FDI has been recognised as a catalyst in the growth of developing countries, in that it brings additional sources of capital investment or foreign savings (Lucas, 1988; Romer, 1986). In addition to its primary aim as a source of capital formation, FDI also brings productive benefits, which include employment creation; technology transfers and associated spill over effects; skill development; trade and competitiveness; and access to foreign markets (Kahai, 2004). In these cases, FDI is viewed, by many researchers such as Bosworth, Collins and Reinhart (1999), Ghazali (2010) amongst others, as a key driver of economic growth since it increases the profitability of domestic investment; transform the host country's ownership structure of total investment; and it supplements funding for domestic investment. This situation where FDI improve the rate of economic growth of the host economy is best described as the FDI-led growth hypothesis.

However, studies by Aitken and Harrison (1999); Papanek, (1973); Salman and Feng, (2009); Vissak and Roolaht (2005) highlight some potential drawbacks of FDI effects on economic growth. Critiques of FDI argue that it is associated with the deterioration of a country's balance of payments, through transfer pricing, capital or profit repatriation and increasing imports than exports (Salman and Feng, 2009) which consequently increases trade deficits. FDI is also identified to have played a significant role in the over-

exploitation of resources, poor generation of linkages and also under-utilisation of local inputs, therefore reducing its impact on domestic investment (Papanek, 1973). Additionally, FDI may also 'crowd out' domestic investors that would not compete with foreign investors and the taking over of businesses that would otherwise have been provided by local entrepreneurs (Parry, 1988). Furthermore, FDI may also generate distortions of the local economy through raising wage and local supply input prices, thereby hampering economic growth and reducing employment.

Whilst these differential views remain unresolved, the present consensus appears that the relationship between FDI inflows and growth can be positive if the host country has the 'absorptive capacity'. This includes having the correct level of human capital development (Borensztein et al., 1998), technological and infrastructure development (Hansen and Rand, 2007), and domestic firms and financial systems (Nguyen et al., 2009) in addition to various types of trade regimes and a degree of openness (Balasubramanyam et al., 1996). Accordingly, the United Nations Conference on Trade and Development (UNCTAD) (2003), affirms that there is a positive relationship between FDI inflows and growth; however, its volume and magnitude differs from country to country. This variation is mainly due to differences in each country's level of development or absorptive capacity. In other words, these studies have stressed the need for developing countries to reach a certain level in their development, before they can realise the potential benefits associated with FDI.

Based on the endogenous growth model, FDI inflow has been added as an additional input in the production process. The theoretical expectation for this inclusion is that FDI inflows can influence growth-enhancing factors directly and/or indirectly. Although, there is a large body of literature on the FDI-growth relationship, only a few studies have analysed the effects of FDI inflows on a home country's specific macroeconomic variables. In this study, instead of limiting the analysis only to FDI inflows and economic growth, the investigation is further broadened to include the causal link of FDI inflows on key economic variables. Whilst the conventional view held is that FDI inflows complements domestic capital resources, the interaction of variables in different countries (with different characteristics) as noted in previous studies may lead to different results.

The recent empirical studies on the direction of the causal link between FDI inflows and economic growth have not only considered the traditional assumption of a one-way causal link from FDI inflows to growth but have also considered the possibility of a two-way (bidirectional) or non-existent causality among variables of interest. For instance, Tang et

al., (2008) using a cointegration time series techniques for China found a two-way causal effect (bi-directional causality) between domestic investment and economic growth and only one way causal effect (uni-directional causality) from FDI inflows to domestic investment and economic growth. They affirm that FDI inflows complement domestic investment and together their effects boost gross domestic product (GDP). Similarly, Ghazali (2010) for Pakistan found a bi-directional causality between FDI inflows and domestic investment and bi-directional causality between domestic investment and GDP growth. He concludes that FDI inflows have complementary effects on domestic investment, and that long-run economic growth is positively associated with FDI.

In noting the results in various studies of the FDI-growth nexus, it is useful to analyse the movement of foreign capital flows to GDP and domestic investment in the case of Solomon Islands. Hence, the importance of FDI inflows can be measured by its contribution to GDP and domestic investment. Table 4.1 presents the ratios of FDI inflows to GDP, domestic investment (DINV) to GDP and FDI inflows to DINV for the period 1970-2010.

Table 4.1 Domestic and Foreign Investment to GDP Share (%)

Year	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
FDI/GDP	0.2	0.2	-0.1	4.2	-0.2	27.5	12.5	9.7	8.2	5.1	3.5	0.3	0.9	0.4	1.14
DINV/GDP	4.9	8.5	34.7	30.9	21.5	27.6	23.9	24.7	27.0	22.7	25.4	26.5	28.9	30.1	21.7
FDI/DINV	4.8	2.8	-0.2	13.7	-0.9	99.6	52.2	39.2	30.3	22.4	13.9	0.99	3.12	1.33	5.2

Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
FDI/GDP	0.5	2.8	7.2	0.9	5.9	5.6	7.6	6.8	9.0	0.7	0.6	1.6	9.1
DINV/GDP	23.8	28.8	20.4	31.3	27.6	28.4	27.1	23.6	17.8	21.8	19.7	20.2	20.3
FDI/DINV	2.2	9.7	35.2	2.9	21.2	19.6	27.9	28.8	50.2	3.3	3.2	8.1	44.7

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
FDI/GDP	3.4	3.1	4.6	3.4	0.2	0.8	2.2	6.0	5.2	15.6	14.3	20.7	36.3
DINV/GDP	21.6	21.3	21.7	22.4	23.8	32.0	34.5	36.7	31.8	28.0	23.4	22.2	20.2
FDI/DINV	15.5	14.5	21.1	15.3	0.8	2.4	6.3	16.4	16.2	55.9	61.2	93.1	159.6

Source: Central Bank of Solomon Islands (various), International Monetary Fund (various).
Note: FDI is foreign direct investment, GDP is gross domestic product, and DINV is domestic investment.

In 1970, FDI inflow to Solomon Islands as a percentage of GDP was 0.2 percent, which increased dramatically to 27.5 percent in 1975, but fell considerably to 12.5 percent in 1976. This ratio remained, at less than 10 percent until 2007 and increased to 15.6 percent, and by 2010, it reached a peak of 36.3 percent. It is seen that since independence in 1978, the ratio of FDI inflows to GDP has been growing, but at marginal rate. At the height of the crisis, the ratio of FDI inflows to GDP reduced significantly to 0.8 percent in 2002 from 21.1 percent in 2000. The post 2007 period indicates a significant rise in FDI flows

following the intervention of the Regional Assistance Mission to the Solomon Islands (RAMSI) in July 2003 that returned normalcy and investors' confidence.

The proportion of DINV to GDP was higher and above 15 percent except in 1970 and 1971. The ratio of DINV to GDP rose considerably to 34.7 percent in 1972 before declining to 22.7 percent in 1979. This ratio remained, on average at 24.1 percent, since 1980 until 2003 rising to 32.0 percent, and by 2005, it peaked at 36.7 percent, and gradually decreasing to 20.2 percent in 2010. Meanwhile, the proportion of FDI inflows to DINV share has increased dramatically from 4.8 percent in 1970 to 99.6 percent in 1975, after which, it declined and reached its lowest level to 0.99 percent in 1981. This ratio remained below 30 percent until 1992 which rose considerably to 50.2 percent in 1993. It remained low between 1998 and 2006. Since 2007, the proportion of FDI inflows to DINV increased significantly, and reached a peak of 159.6 percent in 2010. This increase indicates that FDI inflows have a greater magnitude of impact on economic growth through its influence on domestic investment.

Figures 4.1–4.3 shows the plots for DINV against FDI inflows, GDP against FDI inflows, and GDP against DINV, respectively. Figure 4.1 clearly depicts a positive relationship between FDI inflows and DINV but at a slower rate. Figure 4.2 and 4.3 also indicate a positive relationship between FDI inflows and GDP, and GDP and DINV, respectively, and both FDI and GDP are increasing at a higher rate than domestic investment (Figure 4.1). Thus, the larger the FDI inflows are, the higher the rate of improvement in GDP. Likewise, higher the domestic investment (DINV) is, the greater the level of economic growth. However, concluding any firm causal relationship from such a scatter plot can provide uncertain results. As such, an econometric analysis is utilized to further ascertain these relationships.

Figure 4.1
DINV versus FDI
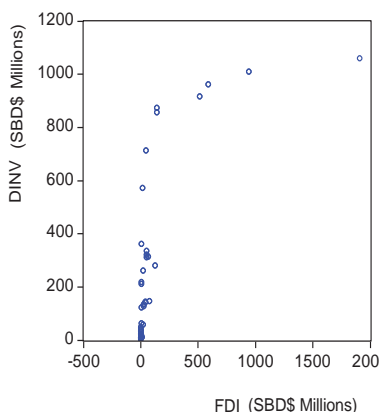
Figure 4.2
GDP versus FDI
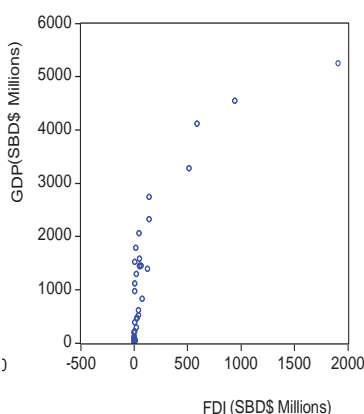
Figure 4.3
GDP versus DINV
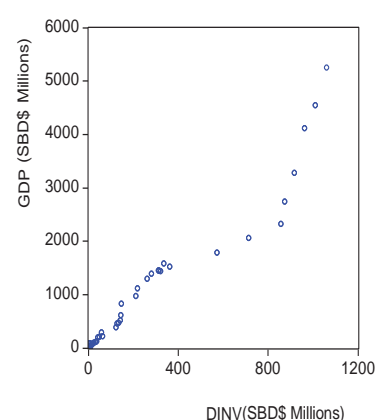
4.3 Empirical Models

This section presents the empirical models used to examine the relationship between FDI inflows and economic growth in the Solomon Islands for the period 1970 to 2010. The study employs two models to estimate this relationship. The first model is the FDI- growth model, which estimates the effects of FDI inflows and other key variables on the Solomon Islands' economic growth. The second model is the causality model, which is used to identify the direction of causation between variables of interest namely FDI inflow, GDP and DINV. The importance of examining these variables separately is to understand how domestic and foreign investment components contribute to economic growth, which is crucial for policy-makers in small island economies, such as the Solomon Islands. The specification of each model is described in detail in the subsequent sections.

4.3.1 Growth and FDI Models

During the last three decades, the Solomon Islands has experienced a gradual increase in FDI inflows. To test whether FDI inflows contributes to economic growth in the Solomon Islands, this study has developed a model based on the endogenous growth theory. It follows the tradition of the work by Balasubramanya et al., (1996) where FDI inflow is introduced as an additional input, which directly contributes to output production, via new technologies and other inputs: and indirectly through improving human capital or labour and trade openness. The explanatory variables which are likely to influence economic growth of the Solomon Islands include domestic investment, trade openness, labour and FDI inflow. These variables are expected to have a positive relationship with GDP. In examining the growth-enhancing factors, the basic neoclassical production function is identified as follows:

$$GY_t = \alpha_0 + \alpha_1 LF_t + \alpha_2 LDINV/Y_t + \alpha_3 LFDI/Y_t + \alpha_4 LOPEN/Y_t + \varepsilon_t \qquad (4.1)$$

where GY is growth in gross domestic product, LF represents growth in labour force, LDINV/Y is the log of domestic investment to GDP ratio, LFDI/Y is the log of foreign direct investment inflows to GDP share and LOPEN/Y is the log of trade openness (sum of export and imports to GDP ratio). As applied in many empirical growth studies, the dependent variable (GY) is the measure of economic growth, whilst the independent variables are labour, domestic investment, FDI inflows and trade openness. These are transformed into logarithmic form except labour force and growth.

The analysis of FDI and growth-enhancing hypothesis has been extended to include an ethnic strife and political instability dummy variable (e.g. equation 4.2). The dummy variable in the production function captures the effects of the civil unrest and political

strife and the implementation of RAMSI to stabilise the economy. A value of 0 is assigned to the years prior (and after) the civil unrest and political strife: and the value of 1 is assigned for the period during this crisis from 1999 to 2006. The measure for civil unrest and political strife has been used in many related studies experiencing political instability such as that of Gounder and Xayavong (2002), who note that *coup* in Fiji, had a negative effect on economic growth and investment. Taking this into account as well as to obtain the predicted change in economic growth due to the changes in domestic and foreign resources, model (4.2) takes the following form:

$$GY_t = \alpha_0 + \alpha_1 LF_t + \alpha_2 LDINV/Y_t + \alpha_3 LFDI/Y_t + \alpha_4 LOPEN/Y_t + \alpha_5 DV_t + \varepsilon_t \quad (4.2)$$

where GY is growth in real GDP; LF is growth in total labour force; LDINV/Y is domestic investment to GDP ratio; LFDI/Y is the FDI inflows to GDP ratio; LOPEN/Y is trade openness (export plus imports to GDP ratio); α is the coefficient which represents the elasticity of output, in terms of the variables in question, whilst ε is the error term. The subscript (t) is time. In equation (4.2), the dummy variable (DV) determines whether the civil unrest and political strife adversely affected economic growth. All variables are transformed into logarithmic form except for DV, LF and GY. The estimated coefficient of the log explanatory variables shows the percentage change in the dependent variable resulting from a 1 percent change in the corresponding regressor. The estimated coefficient for the variables in non-logarithmic form is multiplied by 100, showing the percent change in the dependent variable (Wooldridge, 2009).

4.3.2 Causality between Growth, FDI and Domestic Investment

The existing literature shows that, whilst a positive link between foreign direct investment and economic growth is widely supported, the direction of causation remains highly questionable. This means that the causality between FDI inflows and GDP growth could go either way, for instance, FDI inflows could promote further GDP growth, or rapid GDP growth could attract the inflow of FDI. To examine the possible causation between GDP, FDI inflows and DINV, the estimated model for economic growth based on the autoregressive framework can be specified in the linear form as follows:

$$LGDP_t = \sum_{i=1}^{n} \alpha\, LGDP_{t-i} + \sum_{j=1}^{n} \beta_j\, LFDI_{t-j} + \sum_{k=1}^{n} C_k\, LDINV_{t-k} + \mu_t \quad (4.3)$$

where LGDP is the dependent variable, which means that it responds to LDINV and LFDI in a lapse time. The coefficient of β signifies the impact, since it gives the change in the mean value of LGDP relative to the per unit change in LDINV and LFDI, within the same time period. $LGDP_{t-i}$ denotes the distributed-lag and μ represents the error term. This

model includes other dynamic variables. In addition, it shows the time trend of the dependent variable with regards to its past values. A priori, it is expected that $\beta j > 0$ or < 0 depending on the direction that exists between LFDI and LGDP and LDINV.

4.4 Data and Methodology

This section presents the data and methodology used in the determinants of economic growth and FDI inflows and the causality between growth and FDI inflows. The study employs annual data for the 1970-2010 period. The methodology used includes the stationary test for time series data and the cointegration techniques to avoid spurious result.

4.4.1 Data

The growth model analyses the effect of FDI inflow on growth and includes other factors of the neoclassical growth model. This includes annual data on gross domestic product; labour force; foreign direct investment (LFDI) inflows; domestic investment (LDINV) and trade openness (LOPEN) which are sourced from the Central Bank of Solomon Islands (CBSI), the Solomon Islands' National Statistics, World Bank, International Financial Statistics (IFS), a publication of the International Monetary Fund (IMF). The lack of consistency and a longer time series data for the Solomon Islands prevent this study from including a long time period.[32]

Data for domestic investment (is gross fixed capital formation data) sourced from IFS. It is expected that domestic investment will have positive link with economic growth and FDI. Export and import data used as a proxy for trade openness, GDP a measure for economic growth and FDI net inflows are sourced from various annual reports of the CBSI while data for labour force is extracted from World Bank (2011) database. FDI inflow data may have been understated during the period 1970-2005, since it was compiled and based on commercial banks' foreign exchange transactions (FET), which does not take into account foreign investors' re-invested earnings. Problems related to misclassification of foreign exchange capital inflows might also have contributed to the understated data (CBSI, 1984). It is only since 2006, that re-invested earnings have been re-classified and incorporated as part of the FDI inflows (see Appendix Table A4.1-A4.5 for descriptive statistics).

4.4.2 Econometric Methodology

Since the literature identifies various channels where FDI inflows can impact on economic growth, both directly and/or indirectly, it is important to firstly evaluate the contributions

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[32] According to Jayaraman and Ward (2006), the lack of an established and a satisfactory statistical database is a common feature in island countries.

made by each of the variables to economic growth. Secondly, it is important to determine the direction of causation between the variables, in particular the three variables of interest: FDI inflows, DINV and GDP. In this study, cointegration techniques are used to estimate the models in the ARDL framework model. A number of recent country studies have adopted a similar approach to estimate the relationship between FDI and economic growth-enhancing factors. See for example, Gounder (2002), Jayaraman and Singh (2007) and Narayan and Smyth (2004).

A number of steps are considered; first, the time series property of each variable is investigated by implementing Augmented Dickey-Fuller (ADF) test for the unit root (nonstationarity) and the Kwiatowski, Phillips, Schmidt, and Shin (KPSS) tests for the absence of unit root (stationarity). Second, if these tests confirm stationarity of the variables, equations (4.1) and (4.2) are estimated appropriately by the ARDL method. In the basic regression analysis, the need to check for stationarity of data is important, since non-stationary of any time series may cast serious doubts on the consistency of the estimated coefficients (Gujarati and Porter, 2009). Third, the Bound F test is used to indicate the long run relationship between the variables. Finally, a pair wise Granger Causality test is employed to identify the direction between FDI inflows, domestic investment and economic growth. A detailed discussion of this process is provided next.

Unit Root Test

To test for the impact of the variables and the direction of causality, the time series variables in models (4.1), (4.2) and (4.3) are required to be stationary. To avoid "spurious" results, Granger and Newbold (1974) point out that where data is non-stationary conventional tests may tend to be biased towards having a significant relationship amongst variables in levels when actually none exists.[33] Therefore, conducting unit root tests is a crucial requirement, in order to confirm the stationary time series data. Testing normally includes a deterministic trend and the stochastic type of trend represented by a unit root.

This study uses the traditional Augmented Dickey Fuller (ADF) test as the primary test for unit roots, both in levels and in first differences.[34] The purpose of the ADF test is to test the

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[33] See also Schlitzer (1996).

[34] The ADF test for stationary are performed under two regression models, as specified: Constant and no trend model, i.e. $\Delta y_t = \alpha_0 + \gamma\, y_{t-1} + \sum_{i=1}^{k} \beta_t \Delta y_{t-i} + \varepsilon_t$, and Constant and trend model as $\Delta y_t = \alpha_0 + \alpha_{2t} + \gamma\, y_{t-1} + \sum_{i=1}^{k} \beta_t \Delta y_{t-i} + \varepsilon_t$, where y is the variable under consideration; $\Delta y_t = y_t - y_{t-1}$ denotes the first difference of the series y_t; $\Delta y_{t-1} = (y_{t-1} - y_{t-2})$ is the first difference of y_{t-1}, etc; α, β and, γ are parameters to be estimated; k is the number of lags in the dependent variable which indicates a maximum lag order of square root of n; t is the time or trend variable; and ε is a stochastic disturbance term. Time trend t is included in each equation, to capture the effect of deterministic trend in level variables. The number of lagged terms selected to ascertain the errors are uncorrelated (Gujarati and Porter, 2009).

significance of the coefficient γ on y_{t-1}. If the variable is not statistically different from zero, there is evidence of a presence of unit root. The ADF unit root test is given as: the null hypothesis (Ho: $\gamma = 0$) which indicates a unit root or time series is non-stationary versus the alternative hypothesis (H$_1$: $\gamma < 0$), which indicates the time series is stationary. Rejecting the null hypothesis would mean either y_t is stationary with zero mean i.e. integrated of order zero, I(0), or y_t is stationary with non-zero mean, i.e. integrated of order one I(1) (Gujarati and Porter, 2009). The test for unit roots developed by KPSS is used as a secondary tool and it complements the ADF test (Kwiatkowski, Philips, Schmidt, and Shin, 1992).[35]

Following these hypothesis, the KPSS test (similar to ADF test) will also run the regression of y_t over a constant and no trend and a constant plus a time trend. According to Kwiatkowski et al., (1992), the main reason for testing both the unit root hypothesis and the stationarity hypothesis is to observe series that tend to be stationary; series that tend to have a unit root; and series where the data (or the tests) are insufficiently informative to ascertain whether they are stationary or integrated. The strength of either the ADF or KPSS test is obtained by comparing the statistical significance of both tests. Therefore, applying both tests i.e. the rejection of the null in the ADF test and accepting it in the KPSS tests provides strong evidence that the series used are stationary and consistent. The ADF test is preferred, in the case where contradicting results are obtained from both tests.[36]

Growth and FDI models

The methodology used to estimate the FDI-growth nexus is the cointegration ARDL regression techniques for equations (4.1) and (4.2). The choice of the ARDL is based on the advantage that it allows testing for the existence of a cointegrating relationship amongst the variables in levels irrespective of whether these variables are I(0) or 1(1) (Pesaran and Shin, 1998). Another advantage of the ARDL approach as noted by Pesaran, Shin and Smith (2001) is that it allows for testing for long-run relationships amongst the variables when the sample size is small and can correct for possible endogenity of explanatory variables. Given the relatively small sample size in the case of Solomon Islands employing the ARDL is therefore appropriate.

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[35] The specification of this test (adapted from Kwiatkowski et al.,) is: $y_t = \gamma t + r_t + \varepsilon_t$ and $r_t = r_{t-1} + \mu_t$, where μ_t and ε_t are uncorrelated white noises. The hypothesis to test the significance of the coefficient γ on y_{t-1} using the KPSS unit root test, are given as: the null hypothesis (Ho: $\gamma = 0$), which assumes the null hypothesis of no unit root or time series is stationary around the constant, versus the alternative hypothesis (H$_1$: $\gamma \neq 0$), which the time series is non-stationary or trend-stationary (Kwiatkowski et al., 1992).
[36] Schlitzer suggest that "while the ADF test strongly supports the unit root hypothesis, either the KPSS or the combined procedures provide a much less definite conclusion", (Schlitzer, 1996, p. 327).

Gujarati and Porter (2009), demonstrate that a distributed lag model includes the present and past values of the explanatory variables (Xs) whilst an autoregressive model involves one or more lagged values of the predicted variable (Y) amongst its regressors.[37] Since a non-stationary process may occur; the non-stationary variables have to be differenced before combining with other stationary variables. This is to minimise the possibility of estimating spurious relations whilst retaining long-run relations between the variables. Thus, the application of ARDL method to the specified equations are appropriate only if the residuals and the variables are stationary, or if the variables are co-integrated. Following Pesaran and Shin (1998), the ARDL estimates include lagged dependent and independent values on the right hand side as the regressors to estimate the long-run relationship with the dependent variable.

The ARDL procedure involves two steps. The first step is to examine the long-run relation among the variables concerned using bound F testing approach (Pesaran et al., 2001). Examining the significant of the lagged levels in equations (4.1) and (4.2), the null hypothesis is expressed as, H_0: $\alpha_{1i} = \alpha_{2i} = \alpha_{3i} = \alpha_{4i} = 0$' meaning there is no long-run level relationship. The alternative hypothesis is H_1: $\alpha_{1i} \neq \alpha_{2i} \neq \alpha_{3i} \neq \alpha_{4i} \neq 0$' showing there is a long-run level relationship. The computed critical values are compared against the estimated F test value. For the estimated F value, the critical values corresponding to I(1) determines the success or failure of the critical values to reject/accept the null hypothesis of no cointegration (Pesaran et al., 2001). Of the values of the computed F test statistics are above the upper bound of the critical values it indicate rejection of the null hypothesis of no cointegration, therefore shows the existence of cointegration. Conversely, the estimated F statistics below the lower bound of the critical values shows the null hypothesis of no cointegration cannot be rejected, therefore no existence of long run relationships among the variables in the model. The test is inconclusive if the estimated F-test values fall within the lower and upper bound, in which case conducting of unit root tests is necessary (Pesaran et al., 2001).

Once the existence of co-intergration among the variables is confirmed, the next step is to estimate the coefficients of the long-run relationships (Pesaran and Shin, 1998) and the short-run relationships. The error correction term (ECT) based on Engle and Granger (1987) is used to examine the short-run effects of the growth-enhancing factors on

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[37] Thus, $Y_t = \alpha + \beta_0 X_t + \beta_1 X_{t-1} + \beta_2 X_{t-2} + \mu_t$ denotes a distributed lag model with current and lagged values of the Xs (i.e. X_t, X_{t-1}, X_{t-2}) and $Y_t = \beta X_t + \lambda Y_{t-1} + \mu_t$ represents an autoregressive model with only the lagged values of Y (i.e Y_{t-1}) included as a regressor along with the current values of the Xs.

economic growth. The short-run estimated models for equations (4.1) and (4.2) are written as follows.

$$\Delta GY_t = \alpha_0 + \sum_{i=1}^{k} \alpha_{1i} \Delta GY_{t-i} + \sum_{i=1}^{k} \alpha_{2i} \Delta LF_{t-i} + \sum_{i=1}^{k} \alpha_{3i} \Delta LDINV/Y_{t-i} + \sum_{i=1}^{k} \alpha_{4i}$$
$$\Delta LFDI/Y_{t-i} + \sum_{i=1}^{k} \alpha_{5i} \Delta LOPEN/Y_{t-i} + \alpha_6 ECT_{t-1} + \mu_t \qquad (4.4a)$$

$$\Delta GY_t = \alpha_0 + \sum_{i=1}^{k} \alpha_{1i} \Delta GY_{t-i} + \sum_{i=1}^{k} \alpha_{2i} \Delta LF_{t-i} + \sum_{i=1}^{k} \alpha_{3i} \Delta LDINV/Y_{t-i} + \sum_{i=1}^{k} \alpha_{4i}$$
$$\Delta LFDI/Y_{t-i} + \sum_{i=1}^{k} \alpha_{5i} \Delta LOPEN/Y_{t-i} + \sum_{i=1}^{k} \alpha_{6i} \Delta DV + \alpha_6 ECT_{t-1} + \mu_t \qquad (4.4b)$$

where ECT_{t-1} is the error-correction term, $í=0, 1..., k$ are the lag orders of α's, Δ is the difference operator, μ_t is the white noise error term and t denotes the years. In equations (4.4a) and (4.4b), the variables are cointegrated if the parameter α's of the error correction term in each equation are negative and statistically significant in terms of their associated- t values. This show the models can return to long-run equilibrium during the short-term shocks.

Granger Causality

To capture the possible causality relationships between GDP, FDI and DINV, the Granger-causality tests are applied. Although the literature offers different statistical methods to determine the optimal lags in Granger causality tests, this study will utilise the Schwarz Information Criterion (SIC) to determine the optimal lag in the ARDL models. According to Lutkepohl (1985), SIC has a good small sample properties as well as having the advantage of selecting the appropriate order more often. Applying appropriate method is therefore important to avoid spurious results.

Following studies by Dauda (2008), Frimpong and Oteng-Abayie (2008) and Ghazali, (2010), this study examines the direction of causality between the variables of interest, i.e. FDI inflows, DINV and GDP. In a three-variable Autoregression (AR) framework, there are several ways where FDI inflows can cause economic growth. The first hypothesis is that, FDI inflows Granger-causes domestic investment which in turn Granger-causes growth. This uni-direction can be written as FDI→DINV→GDP and in such a case, it implies domestic investment, as the mechanism through which FDI inflows causes' growth. The second hypothesis is that FDI inflows can cause economic growth, through some unspecified mechanism (i.e. apart from domestic investment), in which case FDI→GDP. Similarly, the causality from economic growth to FDI inflows (and the mechanism through which this causation comes about) can be also examined. Finally, there could also be a positive feedback (bi-directional) causality between the variables, i.e. FDI↔DINV↔GDP and vice versa. Note the arrow points to the direction of the causation. The causality

models can be tested using the error correctional model (ECM) of the following VAR systems.

$$\Delta \text{LGDP}_t = a_1 + a_{\text{gdp}}\, \hat{e}_{t-1} + \sum_{i=1}^{k} \alpha_{11}\, \Delta \text{LGDP}_{t-i} + \sum_{i=1}^{k} \alpha_{12}\, \Delta \text{LFDI}_{t-i} + \sum_{i=1}^{k} \alpha_{13} \Delta \text{LDINV}_{t-i} + \varepsilon_{\text{gdpt}} \tag{4.5a}$$

$$\Delta \text{LFDI}_t = a_1 + a_{\text{fdi}}\, \hat{e}_{t-1} + \sum_{i=1}^{k} \alpha_{21}\, \Delta \text{LFDI}_{t-i} + \sum_{i=1}^{k} \alpha_{22}\, \Delta \text{LGDP}_{t-i} + \sum_{i=1}^{k} \alpha_{23} \Delta \text{LDINV}_{t-i} + \varepsilon_{\text{fdit}} \tag{4.5b}$$

$$\Delta \text{LDINV}_{t} = a_1 + a_{\text{dinv}}\, \hat{e}_{t-1} + \sum_{i=1}^{k} \alpha_{31}\, \Delta \text{LDINV}_{t-i} + \sum_{i=1}^{k} \alpha_{32}\, \Delta \text{LFDI}_{t-i} + \sum_{i=1}^{k} \alpha_{33} \Delta \text{LGDP}_{t-i} + \varepsilon_{\text{dinvt}} \tag{4.5c}$$

Where Δ indicates differenced series established by the unit root test. The disturbances or the error terms $\varepsilon_{\text{gdpt}}$, $\varepsilon_{\text{fdit}}$ and $\varepsilon_{\text{dinvt}}$ are assumed to be uncorrelated. Equation (4.5a) shows that current GDP is related to both its own past values and that of FDI inflows and DINV: and equation (4.5b) and (4.5c) also shows similar behaviour of FDI inflows and DINV.

The VECM results show the difference between short-run and long-run Granger causality. The coefficient of the lagged error correction term shows a long-run causal relationship between LGDP, LFDI and LDINV. In addition, it shows how fast LGDP, LFDI and LDINV return to their long-run equilibrium. If α is statistically significant in equation (4.5a) it indicates that LFDI and LDINV Granger cause LGDP. If the opposite happens in equation (4.5b), it means that LDINV and LGDP Granger cause LFDI. A significant α in both equations shows a bi-directional relationship between LGDP and LFDI. This process also applies to equation (4.5c).

4.5 Empirical Results

This section presents the results of the statistical analyses obtained from the estimated equations. In order to obtain valid statistical inferences and meaningful policy analysis, the time series unit root for properties of all the variables used are addressed, by employing both ADF and KPSS tests. The bounds tests are applied to investigate the existence of a long-run FDI-growth relationship. The specifications of the ARDL models are selected by the SIC. Results for the FDI-growth nexus model and the causality between FDI inflows, domestic investment and economic growth are presented in the subsequent sections.

4.5.1 Unit Root Test

The ADF and KPSS tests of unit roots tests are reported for the impacts of growth-enhancing factors in Table 4.2.[38] Results of the ADF and KPSS tests, for constant and no

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[38] The number of lags in the ADF unit root test is determined by SIC whilst the number of truncation lags in the KPSS unit root test is determined by Newey-West Criterion.

time trend and constant and time trend are reported for both the levels and differences of the variables. For the ADF test, the null hypothesis states that the series contains a unit root, with the inverse hypothesis being that the series is stationary. For the KPSS test the null hypothesis states the series is stationary, whilst the inverse hypothesis contains a unit root.

Table 4.2 Unit Root Test Result

Variables	Constant and No Trend		Constant and Trend	
Level Series	ADF	KPSS	ADF	KPSS
GY	-6.99***	0.32	-8.08***	0.28***
LF	-2.03	0.40	-1.76	0.17
LDINV	-2.42	0.13	-2.36	0.07
LFDI	-0.54	0.24	-0.59	0.11
LOPEN	-3.50**	0.17	-3.85***	0.13
LGDP	-6.25***	0.12	-6.16***	0.12
First difference				
GY	-6.28***	0.28	-6.09***	0.03
LF	-14.47***	0.09	-14.48***	0.06
LDINV	-4.79 ***	0.04	-4.67***	0.05
LFDI	-8.20 ***	0.17	-8.34***	0.11
LOPEN	-6.18***	0.27	-6.49***	0.11
LGDP	-7.17***	0.27	-7.05***	0.04

Note: *** and ** denotes significance at the 1 and 5 percent levels respectively. The critical values for the ADF test for constant and no trend are -3.61 and -2.93 at the 1 and 5 percent significance levels respectively. The critical values for the ADF test for constant and time trend are -4.21 and -3.53 at the 1 and 5 percent significance levels respectively. The maximum lag length is set to 2. The critical value for the KPSS test for constant and no trend is 0.73 and at the 1 percent significant level. For constant and time trend, the critical value is 0.216 at the 1 percent significance level.

Legend: GY is growth in real gross domestic product, LF is labour force, LDINV is log of domestic investment, LFDI is log of foreign direct investment flow, LOPEN is log of trade openness and LGDP is log of real gross domestic product.

The results of the ADF tests indicate that GY, trade openness LOPEN and LGDP are stationary in their level forms, for both constant and no trend and constant and time trend. The ADF test detects unit roots in the variables LF, LDINV, and LFDI in their level forms, for both constant and no trend and constant and time trend. The variables in differenced form are stationary using the ADF test. The KPSS test suggests that all variables, GY, LF, LDINV, LFDI, LOPEN and LGDP are stationary in level form for both constant and no trend and constant and time trend, except for variable GY, which exhibit to be non-stationary for constant and time trend. The ADF and KPSS tests are consistent with one another for the variables GY, LOPEN and LGDP for both constant and no trend and constant and time trend, which are integrated in level I(0) except for variable GY under KPSS test for constant and time trend. Overall, the results indicate that all variables are stationary, after the first difference. Hence, all variables are integrated of order one I(1).

4.5.2 Co-integration Test

The ARDL technique first establishes the existence of a long-run relationship. The variables GY, LF, LDINV, LFDI and LOPEN shown in equations (4.1) and (4.2) are tested using the bounds test for long-run relationship. The ARDL *F* test result presented in Table 4.3 shows that there is a long-run relationship amongst the variables concerned. For equation (4.1) the calculated *F*-statistic of 5.18 exceeds the upper bound value of 2.75, thus, the null hypothesis of no long-run relationships is rejected. This provides strong evidence that a long-run relationship exist amongst the variables (equation 4.1). This result is statistically significant at the 90 percent level. Likewise, in equation (4.2), the calculated *F*-statistics of 3.34 exceeds the upper bound value of 2.72; therefore the null hypothesis of no co-integration is rejected. This indicates that there is a long-run relationship amongst the variables in equation (4.2).

Table 4.3 Bounds F-Test Results for FDI and Growth Nexus in Solomon Islands

Model	K-degrees of freedom	90% Critical value bounds		Estimated F test value	Pass/Fail
		I(0)	I(1)		
Equation 4.1	9	1.63	2.75	5.18	Pass
Equation 4.2	10	1.60	2.72	3.34	Pass

Note: The critical value is from Pesaran, Shin and Smith (2001). K is the number of regressors.

4.5.3 FDI-Growth Nexus: Results

The ARDL procedures to cointegration are used to estimate the FDI-growth nexus. Table 4.4 presents the estimated long and short-run relationship amongst the variables of both equations (4.1) and (4.2). Both models confirm the prior expectation. The equations show a high explanatory power and the *F*-statistics are statistically significant which means that all the dependent variables jointly explain the economic growth in the Solomon Islands.

The estimated labour force (LF) coefficient is positive and statistically significant. This provides evidence that increase in labour force by 1 percent will increase growth by 23 percent. The significant coefficient for growth in labour force takes one year lag to potentially influence growth but it is insignificant in the long-run. The lack of significance in the long-run is due to low participation rate (only 15 percent of the total population are engaged in the formal sector) it does not add to the productive sectors or increase economic growth. This also reflects a low rate of growth of labour in the Solomon Islands. According to Gounder and Xayavong (2002) the shortage of skilled manpower, associated with low educational attainment, had affected investment opportunities in the Solomon Islands.

Table 4.4 Results for FDI-GDP Growth Nexus

Dependent variable: GY							
	ARDL Estimates		Long-Run Estimates		ECM Short-Run Estimates		
Variable	Coefficient		Coefficient		Variable	Coefficient	
	(4.1)	(4.2)	(4.1)	(4.2)		(4.5a)	(4.5b)
GY_{t-1}	0.019	0.101			ΔGY_{t-1}	0.23	0.21
	(0.123)	(0.609)				(1.57)	(1.37)
GY_{t-2}	0.009	0.07					
	(1.48)	(1.11)					
LF	-0.15	0.108					
	(-1.17)	(0.90)					
LF_{t-1}	0.231	0.196	11.59		ΔLF	0.015	0.02
	(1.79)*	(1.23)	(0.85)			(0.14)	(0.17)
LDINV	-0.05	-0.067					
	(-1.65)	(-1.04)					
$LDINV_{t-1}$	0.94	1.99	47.14	16.76	$\Delta LDINV$	-0.04	-0.05
	(1.81)*	(2.02)**	(4.6)***	(2.7)**		(-1.22)	(-1.32)
LFDI	0.24	0.19	12.24				
	(1.84)*	(1.57)	(4.15)***				
$LFDI_{t-1}$	0.37	0.17			$\Delta LFDI$	0.128	0.126
	(2.05)**	(0.99)				(1.27)	(1.19)
LOPEN	2.729	2.196	136.4	17.5	$\Delta LOPEN$	2.87	2.95
	(2.19)**	(2.46) **	(2.93)**	(1.82)*		(4.84)***	(4.75)***
DV		-0.16			ΔDV		-0.02
		(-0.44)					(0.97)
Constant	3.278	7.37			$\Delta Constant$	0.98	1.11
	(3.11)***	(2.14)**				(1.15)	(1.25)
					ECM_{t-1}	-1.25	-1.21
						(-5.15)***	(-4.77)***
R-squared	0.41	0.45				0.70	0.69
DW	2.04	1.84					
F-statistics	2.21**	2.17**					
$SC x^2$ (1)	0.60	0.56					
$FF x^2$ (1)	0.01	0.14					
$NN\ x^2(2)$	0.65	0.07					
$H x^2$ (1)	0.13	0.55					

Note: ***, **, * significant at the one, five and ten percent level, respectively of the t-ratios written in brackets. Legend: GY is growth in real gross domestic product, LF is growth in labour force, LDINV is log of domestic investment, LFDI is log of foreign direct investment, LOPEN is log of trade openness, DV is dummy variable for civil unrest and political instability. DW stands for Durbin Watson. SC denotes serial correlation. FF is Functional Form. N is Normality of residuals and H stands for Heteroskedasticity.

As expected, the domestic investment coefficient is positive and statistically significant at the ten percent significance level overtime. The long-run estimated LDINV coefficient indicates that a one percent increase in domestic investment leads to 47.1 percent increase in economic growth. The high magnitude of the impact of domestic investment supports the view that domestic investment plays a crucial role in economic growth, which is vital in the early stages of economic development. This result is also consistent with the existing empirical findings of Ghazali (2010); Tang et al., (2008). However, although domestic investment is positively and significantly related to economic growth, improvement in the GDP growth rate depends much on the inclusion of past changes of at least one year in domestic investment. In the short-run the LDINV coefficient is negative but insignificant

implying that low domestic investments in a widely dispersed economy could not have much influence on economic growth in the short-term.

The LFDI coefficient is a crucial factor that increases economic growth is positive and statistically significance at the one percent level. The estimated FDI to GDP share coefficient suggests that a one percent increase in FDI inflows is associated with an increase in the GDP growth rate of almost 12.2 percent in the long-run. This indicates that FDI inflows are significantly important to Solomon Islands economic growth. This finding differs from the results of Gounder (2002) who found that FDI inflow to Solomon Islands' although positive was not statistically significant.[39] While the FDI inflow to GDP ratio is positive and significant, its influence is lower than that of domestic investment (47.1 percent versus 12.2 percent) in the long-run. This reflects the slowdown in FDI flow to the Solomon Islands. The short term LFDI is insignificant in influencing economic growth supporting the view that FDI impact is not automatically translated.

In both the long-run and the short-run, the estimated LOPEN coefficient, a measure for the degree of trade openness, shows the strongest positive impact on economic growth. The estimated trade openness to GDP ratio coefficient implies that a one percent increase in trade openness raises economic growth by 136.4 percent increase in the long-run and 2.87 percent in the short-term period. This suggests that openness of the economy complements foreign investment; trade liberalisation and tax incentives; and opening up of various sectors of the economy, which support exports, imports and growth. This finding is similar to that of Gounder and Saha (2007) where they find that openness of the economy for the six South Pacific Island countries (SPICs), including Solomon Islands, contributes to growth. Given that most investment projects are directed towards the tradable sector, the degree of openness to international trade exerts a major influence on economic growth in the case of Solomon Islands.

The equation (4.1) has been re-estimated by including the dummy variable (DV), to capture the impact of the civil unrest and political strife. The estimated final equation 4.2 in Table 4.4 shows a good fit of the model and the value of R^2 has a relatively high explanatory power. The F-statistics is also statistically significant at the 5 percent level providing strong empirical evidence of the impact on economic growth. All the estimated coefficients have the expected positive sign at the conventional levels.

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[39] These results were for the period 1975-1999. It is seen that this period had a low level of FDI to GDP share, see Table 4.1. Gounder (2002) also note that investment climate has been affected by civil strife and political instability.

The civil unrest and political strife, which caused risk and uncertainty is measured by the dummy variable (DV) for the period 1999 to 2006. The estimated DV coefficient has the expected negative sign but is insignificant in both the long and short-run. Hence, the negative estimated coefficient implies civil unrest and political instability has an adverse effect on economic growth. This period was marked by chaos, risk and uncertainty which led to decline in FDI flows and hindered other growth enhancing factors. This is similar to the findings in studies by Gounder and Xayavong (2002) and Gounder (2001) where political instability reduces economic growth in the Solomon Islands and also in Fiji, respectively. The findings in the case of Solomon Islands also renders some support to the view that political instability in the host country leads to discouragement in the flow of FDI, particularly where FDI is mostly in the private sector. The intervention by the Regional Assistant Mission to the Solomon Islands (RAMSI) in July 2003 which returned the country to normalcy could explain the insignificant effect of civil unrest and political instability on economic growth. This also confirms the ECM result which indicates that the models can achieve any long run relationship and return the economy back to normal during short-term disturbances.

Although all the estimated coefficients are positive, the size of the coefficient for FDI inflows declines considerably from 0.24 in equation (4.1) to 0.19 in equation (4.2) that adversely affects foreign investment due to civil strife and political instability. The negative evidence of civil unrest and political uncertainty has a deleterious and damaging impact on foreign investment, through the decline in both FDI inflows and re-invested earnings. The scaling down or closure of some of the large foreign companies operating in Honiara and also in Guadalcanal province resulted to an outflow of SBD$65.5 million (CBSI, 2005). Since, majority of the large companies including the main business services are in Honiara and Guadalcanal province the investment sector has been badly affected during the civil unrest period.

The coefficient for LOPEN remains the same in both the long-run and the short-run and is significant at 17.5 percent and 2.95 percent, respectively, with the inclusion of the DV. This outcome reflects the importance of trade openness on economic growth, where FDI inflows play a leading role in the tradable sector. This confirm the earlier results and demonstrated that the liberation of FDI and trade policies (undertaken recently in Solomon Islands) has indeed increased investment opportunities and allows foreign investors to take advantage of the country's comparative advantage in the export sector. Thus, this supports the view that a more open trade policy framework promotes the efficient allocation of

investments to productive sectors that have comparative advantages in trade; thereby complements economic growth (see also Balasubramanyam et al., 1996). The results also support the view of an indication of Solomon Islands moving towards increased integration with the region and the world economy.

4.5.4 Causality Results

Using the Granger causality test, the results between FDI inflows, DINV and GDP are presented in Table 4.5. The Granger causality tests show the direction of causal links between the variables as bi-direction, uni-directional and no causality. For the results (Column 1) where LFDI is the dependent variable, both LDINV and LGDP are statistically significant at the 1 percent level. The causality test rejects the null hypotheses that "*LDINV does not Granger cause LGDP*" and vice versa that "*LGDP does not Granger cause LDINV*". This suggests that there is a bi-directional causality between LDINV and LGDP and in turn, they Granger cause LFDI. The established bi-directional causality provides evidence that both domestic investment and economic growth plays an important role not only in promoting FDI inflows but also in building up the absorptive capacity of the host economy to enhance the benefits of FDI inflows.

Table 4.5 Results of Granger Causality Test among FDI, DINV and GDP

Dependent Variables	$\Delta LFDI_t$ (Column 1)		$\Delta LDINV_t$ (Column 2)		$\Delta LGDP_t$ (Column 3)	
	F-Stats	Probability	F-Stats	Probability	F-Stats	Probability
$\Delta LFDI_t$			0.436	0.803	12.46	0.002***
$\Delta LDINV_t$	21.95	0.000***			13.37	0.001***
$\Delta LGDP_t$	34.85	0.000***	7.92	0.09*		
ECT_{t-1}	-0.33	0.08*	-0.18	0.03**	0.07	0.103
Conclusion Causality	DINV⟷GDP		GDP ⟶ FDI		DINV⟷FDI	

Note***, ** and * indicates significance at 1 percent, 5 percent and 10 percent respectively.

In Column 2, with the LDINV as the dependent variable, the null hypothesis that *"LGDP does not Granger cause FDI"* is rejected at the 10 percent significance level. This means the direction of causality is from economic growth to FDI inflows, than in the opposite direction. In other words, there is sufficient evidence to state that GDP causes FDI inflows which in turn Granger causes domestic investment. The uni-direction (LGDP→LFDI→LDINV) in such a case implies that foreign direct investment is the mechanism through which economic growth causes domestic investment. This support the

view by DeMello (1999) that FDI's growth enhancing effect is possible only when it stimulates domestic capacity of the host economy and that FDI inflow is complementary to domestic investment. In other words, FDI inflows provide more investment opportunities to increase domestic investment. Hence, the results are consistent with the empirical findings provided in the literature, which states that fast growing economies attract significant FDI inflow (Dauda, 2008; Srivastava, 2006; Zheng, 2009).

In Column 3, with the LGDP as the dependent variable, the null hypothesis that *"LFDI does not Granger cause LDINV"* is rejected at the 1 percent significance level. The causality test also rejects the null hypothesis that "*LDINV Granger does not cause LFDI*" at the 1 percent level. This means that there is a bi-directional causality between LFDI and LDINV and in turn, they Granger cause LGDP. In other words, both domestic investment and FDI inflows to the Solomon Islands are growth enhancing. This indicates that domestic investment is one of the most crucial factors or channels for driving FDI flows. It also act as a catalyst for economic growth which means that higher capital accumulation causes higher economic growth and paves the path of resource availability (e.g. better infrastructure, labour, markets) for FDI. These results re-affirm the regression results of the FDI-growth nexus (Table 4.3) and lend support to the theoretical viewpoint that FDI inflows have a complementary effect on domestic investment, and that both have complementary effects on economic growth (Tang et al., 2008).

The estimated long-run lagged error correction term in Column 1 (LFDI as the dependent variable) is significant at the 10 percent level. This re-affirms the results from the bounds test for co-integration and the short-run results and indicates that in the long-run both LDINV and LGDP Granger cause LFDI. This suggests that the linkage runs interactively through the error correction term from domestic investment and economic growth to FDI inflows. The coefficient of the lagged error term for LDINV for the dependent variable in column 2 is also negative and significant at the 5 percent level. This suggests that LGDP Granger cause LFDI and in turn cause LDINV, implying that the linkage runs interactively through the error correctional term from economic growth to FDI inflows to domestic investment.

4.6 Conclusion

This study provides an empirical estimation of FDI-growth nexus and its causality relationship with domestic factors in the Solomon Islands. The empirical findings show that FDI and the main growth-enhancing factors like domestic investment, labour and trade openness have a positive and significant impact on economic growth with a much stronger

influence from trade openness. The findings suggest that a highly open economy and domestic investment is important during the early stages of economic development as it stimulates growth in trade and FDI inflows, thus leading to higher economic growth. The results also affirm that civil unrest and political strife adversely affect economic growth in the Solomon Islands. FDI inflows have been highly affected by the crisis which provides strong evidence that such investment is highly vulnerable to domestic political instability and civil strife. In addition, this may lead to capital flights and low re-invested earnings.

The Granger causality results show that the direction of causality is from economic growth to FDI inflows and to domestic investment. These established uni-directional causal linkages suggest that economic growth has a large influence on FDI and domestic investment and is vital to increase growth enhancing factors. Thus, high economic growth will attract more FDI inflows and this in turn will stimulate domestic investment. The results also show that there is a bi-directional relationship between economic growth and domestic investment. This suggests that economic growth promotes domestic investment and vice visa domestic investment promotes economic growth and jointly they cause FDI inflows. Furthermore, the results show that there is a bi-directional relationship between FDI inflows and domestic investment. This suggests that FDI inflows affect domestic investment and domestic investment itself exerts a major influence on the level of FDI inflows. In other words, by stimulating domestic investment, Solomon Islands can promote inflows of FDI and this in turn will have an additional positive impact on domestic investment and economic growth.

Overall, as the findings of this study shows that economic growth has been largely driven by domestic investment, trade openness, labour and FDI inflows it poses some important implications for policy-makers in the Solomon Islands. The government has to address the issues of civil strife and political instability. The post-civil unrest and political instability period shows that Solomon Islands has made positive progress in its economic recovery as evident in the upward trend in FDI inflows. However, the Solomon Islands still faces some serious challenges of recovery particularly in improving domestic investment and attracting higher levels of FDI inflows and providing skilled labour force. Whilst no earlier studies have found a definitive results of FDI-economic growth nexus, and that domestic and foreign factors are vital for growth process in the Solomon Islands, the empirical findings provide an indicative view that the nation needs to adopt relevant policies to improve domestic investment and ensure that the country remains an attractive and a secure foreign direct investment destination.

Chapter Four Appendix

Appendix Table A4.1 Descriptive Statistics, Equation 4.1 (1970-2010)

	GY	LFDI	LDINV	LOPEN	LF
Mean	2.469	3.023	3.158	4.464	0.840
Median	2.740	3.411	3.168	4.569	0.956
Maximum	4.315	4.475	3.604	4.973	1.916
Minimum	-0.075	-2.198	1.588	2.995	-6.016
Std. Dev	1.009	1.056	0.350	0.379	1.161
Skewness	-0.805	-2.983	-2.706	-2.417	-5.158
Kurtosis	3.465	15.643	12.372	9.432	31.179
Probability	0.091	0.000	0.000	0.000	0.000

Appendix Table A4.2 Descriptive Statistics, Equation 4.2 (1970-2010)

	GY	LFDI	LDINV	LOPEN	LF	DV
Mean	2.469	3.023	3.158	4.464	0.840	0.195
Median	2.740	3.411	3.168	4.566	0.956	0.000
Maximum	4.315	4.475	3.604	4.973	1.916	1.000
Minimum	-0.075	-2.198	1.588	2.995	-6.016	0.000
Std. Dev	1.009	1.056	0.350	0.379	1.161	0.401
Skewness	-0.805	-2.983	-2.706	-2.417	-5.158	1.539
Kurtosis	3.465	15.643	12.372	9.432	31.179	3.367
Probability	0.091	0.000	0.000	0.000	0.000	0.000

Appendix Table A4.3 Descriptive Statistics, (1970-1979)

	GY	LFDI	LDINV	LOPEN	LF
Mean	2.440	1.986	2.989	4.313	0.729
Median	2.843	2.042	3.191	4.564	0.683
Maximum	4.315	2.525	3.548	4.928	1.099
Minimum	0.097	1.509	1.588	2.9959	0.663
Std. Dev	1.495	0.307	0.623	0.657	0.137
Skewness	-0.550	-0.143	-1.459	-1.372	2.239
Kurtosis	1.849	2.483	3.706	3.177	6.536
Probability	0.589	0.929	3.495	0.207	0.001

Appendix Table A4.4 Descriptive Statistics, (1980-1989)

	GY	LFDI	LDINV	LOPEN	LF
Mean	2.718	3.286	3.266	4.675	1.009
Median	2.698	3.309	3.299	4.633	1.257
Maximum	4.080	3.484	3.444	4.973	1.375
Minimum	1.655	3.091	3.016	4.521	-0.101
Std. Dev	0.799	0.125	0.142	0.142	0.482
Skewness	0.243	-0.065	-0.5450	0.995	-1.320
Kurtosis	1.949	1.977	2.088	2.925	3.713
Probability	0.756	0.801	0.656	0.437	0.211

Appendix Table A4.5 Descriptive Statistics, (1990-1999)

	GY	LFDI	LDINV	LOPEN	LF	DV
Mean	2.345	3.497	3.089	4.553	3.7785	0.100
Median	2.487	3.490	3.065	4.571	3.751	0.000
Maximum	3.570	4.182	3.346	4.637	6.797	1.000
Minimum	0.768	2.977	2.882	4.321	2.080	0.000
Std. Dev	0.801	0.348	0.144	0.096	1.327	0.316
Skewness	-0.575	0.351	0.605	-1.481	1.027	2.667
Kurtosis	2.805	2.892	2.455	4.426	3.784	8.111
Probability	0.753	0.900	0.693	0.105	0.365	0.000

Appendix Table A4.6 Descriptive Statistics, (2000-2010)

	GY	LFDI	LDINV	LOPEN	LF	DV
Mean	2.382	3.059	3.274	4.327	0.388	0.636
Median	2.741	3.029	3.168	4.341	0.956	1.000
Maximum	3.242	4.472	3.604	4.648	1.753	1.000
Minimum	-0.075	-0.441	3.005	3.885	-6.016	0.000
Std. Dev	0.907	1.315	0.212	0.254	2.147	0.505
Skewness	-1.948	-1.727	0.319	-0.379	-2.729	-0.567
Kurtosis	6.078	5.781	1.541	1.972	8.728	1.321
Probability	0.003	0.011	0.559	0.688	0.000	0.390

Chapter Five

DETERMINANTS OF FOREIGN DIRECT INVESTMENT: SOME EMPIRICAL EVIDENCE

5.1 Introduction

This chapter examines the empirical evidence of the determinants of foreign direct investment (FDI) in the Solomon Islands. Its main focus is to examine the growth driven-FDI hypothesis, where growth and a variety of economic factors of the host country influence FDI inflows (Moundatsou and Kyrkilis, 2009). The analysis further extends to estimate the Granger causality for the FDI-trade nexus where FDI and trade stimulate economic growth. There are several studies on FDI-trade nexus (Jayachandra and Seilan, 2010; Kok and Erosy, 2009) and FDI-income growth nexus where FDI has driven income growth (Laurenceson and Tang, 2006) as FDI has driven trade. Thus, investigation of the causal link between the FDI inflows, trade and income growth has important implications for development in the Solomon Islands.

In many developing countries, FDI plays a crucial role in their economic growth and development. Previous investigations provide evidence that FDI has contributed to bridging the gap between domestic savings and investment, not only through capital and technology transfers but also through the transfer of skilled management to host country (DeMello, 1999). FDI also increases productivity and exports using the latest technology, and provides new employment opportunities for host country (DeMello and Sinclair, 1995). As such, FDI plays a vital role in advancing economic development and potentially offers a number of benefits to host countries and contributes to poverty reduction in developing countries. Many developing countries have introduced reform and changes in their economic policies to attract FDI inflows to their countries.

Since the introduction of reforms in the 1990s, the Solomon Islands economy, like any other small island economy has been taking several measures to attract FDI. These measures include liberalising policies towards FDI, offering incentive packages, and opening up different sectors to foreign investment (CBSI, 1999). Largely, FDI inflows to the country have not increased significantly in several sectors particularly in manufacturing sector. An examination of the determinants of FDI inflows in the Solomon Islands is important for several reasons. First, since FDI has a positive effect on the economic growth of the country (see Chapter 4), understanding the key factors influencing FDI is important including what the government can do to attract increased FDI inflows. Second, over past

two decades, the Solomon Islands has implemented policy reforms to attract FDI, which has implications for the domestic, and the international economy, particularly international capital flows and the trade sector. Third, from a policy perspective, empirical analysis and the resulting evidence can assist decision makers to determine the priority sectors or relevant development areas and which development incentives should be targeted to attract FDI inflows. This study employs time series econometric techniques to examine the variables that affect FDI and foreign investors' decisions to invest in the Solomon Islands.

An examination of the growth driven-FDI hypothesis have found that economic growth, domestic investment, openness, exports, telecommunication (i.e. infrastructure) and economic reforms are the major influences of FDI inflows in the long-run. In the case of Solomon Islands, telecommunication and trade openness have remained as the key factors in attracting FDI in the long-run. Telecommunication also appears to have the strongest effect on FDI inflows in the short-run. In contrast, inflation rate and political instability are found to be negatively related to FDI inflows, implying that high costs, and risks posed by political uncertainty are detrimental to FDI inflows. A bi-directional relationship is found between FDI inflows and per capita income and in turn, they promote the growth of exports in the trade sector thus supporting the export-led growth hypothesis. A bi-directional relationship between FDI inflow and export trade is also established and this support the FDI-trade nexus and the FDI-income growth nexus where FDI inflows and trade promotes economic growth thus ultimately leading to high levels of income.

The remaining sections are organised as follows. A brief survey of the growth driven-FDI led hypothesis (the determinants of FDI) is presented in Section 5.2. Section 5.3 presents the models specifications to evaluate the growth driven-FDI hypothesis. The models utilised in this study use economic growth, market size, domestic investment, trade openness, inflation rate, infrastructure and communication facilities, political instability and economic reforms measured by dummy variables as independent variables to evaluate which variables has a significant impact on attracting FDI inflows. The models further examine the direction of FDI inflows, trade and per capita income. Section 5.4 discusses the data and methodology used in the analysis. The empirical analysis for time series data are utilised using the autoregressive distributed lag (ARDL) approach to cointegration and the error correctional model (ECM) for the period 1970-2010. Several tests are applied for the stationary of the variables and estimate the long-run and short-run effects of the two main hypotheses. The Granger causality technique is also applied to examine the direction

of FDI-trade nexus and FDI-income growth nexus. Section 5.5 presents the results and finally the conclusion is presented in Section 5.6.

5.2 Determinants of FDI: Brief Literature Review

The recent studies in examining the issue of FDI interacting with economic growth focus on the importance of factors that explain the existence of multinational firms (Kok and Erosy, 2009; Sethi, Guisinger, Phelan, and Berg, 2003).[40] In other words, these studies examine the determinants of FDI or the factors that influence multinational firms to the host economy. The main theory adopted in this chapter is drawn from Dunning's (1981) Ownership-Location-Internalisation "(OLI)" paradigm, which explains the determinants of Multinational Corporations (foreign investments abroad). The Dunning's location advantage theory provides a framework, which identifies important variables that influence FDI based on three main categories. This includes economic factors; social or cultural factors; and the political environment of host nations. He notes that multinational enterprises are attracted to countries with large and growing markets, high economic growth, low production costs, and a good record of political stability (Dunning, 1981).

Following Dunning's (1981) 'OLI' paradigm theory, a number of empirical studies reveal that market size is one of the important determinants of FDI, especially for large developing countries such as China, India, Indonesia, Pakistan and South African countries (Aw and Tang, 2010; Fedderke and Romm, 2006). They affirm that foreign firms are more attracted to countries with large and attractive markets in terms of size of the population, low labour cost, and where there is potential to exploit economies of scale. Mottaleb (2007) findings also support the hypothesis that market size, market potentials and good infrastructural facilities have a positive effect on FDI inflows. Fedderke and Romm (2006) also observe that FDI tends to flow to countries with large market size, high economic growth and high purchasing power thus providing foreign firms with high investment returns and profits, economies of scale and ample investment opportunities.

Trade openness and the degree of export orientation is also an important determinant of FDI inflows. Oladipo (2010) study on Nigeria notes that the degree of export orientation, human capital and an enabling environment attracts FDI flows to the country with labour and human capital having a positive and statistically significant impact on FDI and growth. Similarly, Vita and Lawler (2004) note that open economies tend to attract foreign investors, as they not only signify export potential but also give foreign investors'

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[40] Multinational firms and foreign investors are used interchangeably.

confidence through their high performance and favourable economic conditions. However, Read (2007) points out that while openness to trade is important, small island economies may only attract resource-seeking FDI and are less likely to attract FDI seeking large markets or low-cost labour supply due to their inherent structural disadvantages, particularly their 'small size'.

The availability of raw materials, and labour costs are also important determinants of FDI inflows (Kahai, 2004; Ramasamy and Yeung, 2004). The study by Ramasamy and Yeung (2004) note that the availability of labour is crucial in foreign firms' location preferences as it provide them with more ownership advantages and access to market expansion both in the host country and the region. Similarly, Kahai suggests that cheap labour cost in addition to the immobility of labour and natural resources will encourage FDI whilst high cost country wages discourage FDI inflows. Urata and Kawai (2000) find insignificant impact of skilled labour on FDI whilst a negative effect on FDI was obtained by Ismail and Yossof (2003). These mixed results may reflect the different motives of foreign investors investing in various countries.

The governance infrastructure and legal environment of a country, which include political, institutional and legal environment, are also important determinants of both FDI inflows and outflows (Globerman and Shapiro, 2002). They note that "investments in governance infrastructure not only attract capital, but also create the conditions under which domestic multinational companies (MNC's) emerge and invest abroad" (Globerman and Shapiro, 2002, p. 1899). Political instability or political risks are also a major determinant of FDI inflows (Busse and Hefeker, 2007; Gounder, 2001, 2002). Political instability and risk may discourage foreign investors due to risk and uncertainty on the expected return of their investments. Asiedu (2006) observe that political instability and corruption have a significant adverse impact on FDI inflows. However, Wheeler and Mody (1992) and Sing and Jun (1995) find that political risk is insignificant in determining the flow of FDI. The mixed results may be due to the difficulties in obtaining reliable estimates for the qualitative phenomena of political instability (International Monetary Fund, 2001). Nevertheless, a high inflation rate discourages foreign investors, as it not only implies macroeconomic instability but also indicate a high cost economy (Zheng, 2009).

Although, a large body of the literature have explored the FDI-growth nexus (see Grossman and Helpman, 1997; Frankel and Romer, 1999) and the Trade-growth nexus (Rodriguez and Rodrik, 2001), the FDI-Trade nexus has been overlooked (Jayachandra and Seilan, 2010). Examining the existence and nature of the causal relationship of the growth

driven-FDI nexus, the FDI-Trade nexus and the FDI-income growth nexus is therefore important. While, previous studies have indicated a positive impact of FDI and trade on economic growth; only a few offer direct test of causality between the three variables of FDI, exports, and gross domestic per capita income. Similarly, the empirical evidence on the causal relationship between FDI, exports, and per capita income is equally contradictory, with results ranging from uni-directional causality, bi-directional or even no causality between these variables.

The empirical studies that have analysed the impact of trade and FDI on economic growth or the effects of growth on FDI and trade include Jayachandra and Seilan (2010), Makki and Somwaru (2004), and Xu and Wang (2007). A positive effect of FDI and trade on economic growth means that FDI is attracted to countries that are likely to grow faster and adopt open-trade policies. Makki and Somwaru (2004) find a statistically significant FDI-trade interaction and note that FDI and trade are complementary in increasing the growth rate of income in developing countries. This suggests that FDI through flows of advanced technology can increase the host country's rate of growth by interacting with the nation's trade. Hsiao and Hsiao (2006) using New Granger non-causality test, developed by Toda and Yamamoto (1995) and Yamada (1998), also note a causal relationship between FDI and GDP per capita income in the long-run for Norway and Sweden.

In a study on India, Srivastava (2006) finds a causal relationship between FDI inflows and service exports, and notes that liberalisation of FDI and trade policies in the post liberalisation period since 1991 as the main attraction for FDI flows to India. A recent study on India by Jayachandran and Seilan (2010) show a causal relationship from exports to growth, but no causal relationship running from FDI inflows to exports and no causal relationship from growth to exports. This indicates that there is no reciprocal causality (bi-directional) relationship between economic growth and exports and vice-versa for India.

5.3 Empirical Models

This section presents the empirical models used to identify the major determinants of FDI in the Solomon Islands. Two models are employed to estimate empirically the growth driven-FDI hypothesis and the third causality model, identifies the causal relationship between FDI, export and per capita income. Examining these variables separately is important to understand its influence on FDI, and is crucial for policy makers. The specification of each model is described in detail in the subsequent sections. The variables indicate which factors attract or discourage FDI to the Solomon Islands.

5.3.1 FDI Models and hypothesis

The first model specification examines the relationship between FDI and a variety of selected variables in the Solomon Islands for the period from 1970-2010. The first part presents the determinants of FDI (equations 5.1a, 5.1b) and the second part presents the causality relationship between FDI, exports and GDP per capita income (equation 5.2). The models specified are based on the ARDL approach, the ECM and the Granger causality tests.

The main objective of this chapter is to identify the major determinants of foreign direct investment in the Solomon Islands. The FDI inflows is used as a dependent variable whilst market size, economic growth, domestic investment, trade openness, exports, inflation, quality of labour, communication facilities, wage rates, lending rates, exchange rate, political instability and civil unrest, and economic reforms are used as independent variables. Table 5.1 shows the list of these variables used to measure the effects and the data source. In examining the determinants of FDI, the estimated model, following the work of Zheng (2009), Aw and Tang (2010), and Adams (2010), can be transformed into logarithmic form using the log-linear model as follows:

$$LFDI = \alpha_0 + \beta_1 LGDPPCI_t + \beta_2 GGDPt + \beta_3 WAGE_t + \beta_4 LDINV + \beta_5 LOPEN_t + \beta_6 LINF_t$$
$$+ \beta_{7L} LLAB_t + \beta_8 LTEL_t + \beta_9 LINR_t + \beta_{10} LER + \beta_{11} DVER_t + \varepsilon_t \qquad (5.1a)$$

$$LFDI = \alpha_0 + \beta_1 LGDPPCI_t + \beta_2 GGDPt + \beta_3 WAGE_t + \beta_4 LDINV + \beta_5 LEX_t + \beta_6 LINF_t$$
$$+ \beta_7 LLAB_t + \beta_8 LTEL_t + \beta_9 LINR_t + \beta_{10} LER + \beta_{11} DV_t + \varepsilon_t \qquad (5.1b)$$

Where LFDI is the log of foreign direct investment inflows
  LGDPPCI is the log of gross domestic per capita income
  GGDP is the annual growth of gross domestic product
  WAGE is wage rate
  LDINV is the log of domestic investment (% of GDP)
  LOPEN is the log of trade openness (export plus imports as % of GDP)
  LINF is the log of annual rate of inflation based on consumer price index
  LLAB is the log of labour quality (industrial value added, % of GDP)
  LTEL is the log of telephone mainline per 100 people
  LINR is the log of borrowing cost (lending interest rate)
  LER is the log of exchange rate
  DVER is the dummy variable for implementation of economic reform in 1998
  LEX is the log of export (% of GDP)
  DV is the dummy variable for political instability and civil strife in the period 1999
       to 2006.

Equation (5.1a) shows the Solomon Islands FDI function and its determinants of market size and purchasing power (measured by gross domestic product per capita income (LGDPPCI)), economic growth or market potential (measured by GDP growth rate

(GGDP)), wage rate (WAGE), trade openness (LOPEN), and access to international market (measured as export + imports to GDP ratio). The quality of labour is measured by industrial value added as a percent of GDP (LLAB), infrastructure and communication facilities (LTEL) (measured by telephone mainline per 100 people), exchange rate (LER) (is average exchange rate per United States (US) dollar) and economic reforms (dummy variable (DVER)), effects of inflation rate (LINF) and borrowing costs (measured by lending interest rates (LINR)).

In equation (5.1b), variable LOPEN is replaced by variable LEX (exports to GDP ratio) particularly to examine the impact of export on FDI inflows. The DVER variable has been replaced by DV to ascertain the effect of politically instability and civil unrest on FDI inflows. In equations (5.1a) and (5.1b), the dependent and the independent variables are transformed into logarithmic form where the coefficients are treated as elasticity. Hence, the estimated coefficient of the log explanatory variables shows the percentage change in the dependent variable resulting from a 1 percent change in the corresponding regressor. For the variables in non-logarithmic form, the estimated coefficient is multiplied by 100, which gives the percent change in the dependent variable (Wooldridge, 2009). A priori expectations or hypothesis on the selected determinants of FDI is discussed next.

Market size and market growth

Market size, market growth and *per capita* income of the host country are considered to be positively related to the FDI inflows that it receives. Previous studies note that MNCs are more attracted to countries with large market size, high growth potential and high income growth than where the opposite conditions prevails (see Chakrabarti, 2001; Kahai, 2004; Zheng, 2009). The present study uses two measures (i) market size which is measured by per capita income or income growth reflecting the size of the whole economy; and (ii) market growth, measured by annual GDP growth rate (GGDP), which is an indicator for economic growth and market potential for foreign investors' products in equation 5.2.[41] The expected sign of these two variables are positive.

The hypothesis reflects: *H1: The higher the host country's market size or the level of income, the greater is the flow of FDI. H2: the higher the host country's market growth or economic growth, the greater is the flow of FDI.*

Trade openness

Various empirical studies note that trade openness attracts FDI and is complementary rather than substitutable for FDI, therefore it has a positive effect on FDI (Brock 2009; Das,

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[41]Previous studies have used either absolute GDP or GDP per capita income as proxies for market size, as there is no precise measure of this variable (Chakrabarti, 2001; Jajri, 2009).

Nath and Yildiz 2009; Zheng, 2009). This supports the view that most investment projects are directed towards the tradable sector, which justifies trade openness of the economy to international trade as an important determinant for FDI. It is also noted that greater bilateral trade will induce more FDI inflows to the host country. The variable LOPEN is used to measure trade openness in equation (5.1a) while LEX is used in equation (5.1b) to measure Solomon Islands' level of exports as an attractive destination for foreign investors, and is expected to have a positive sign.

The hypothesis notes: *H3: Higher trade openness of the host country will attract more FDI inflows. H4: Higher exports of the host country will attract more FDI inflows.*

Inflation rate and exchange rate

A country with low inflation rate may indicate stable macroeconomic policies or a conducive climate for investment, therefore is more likely to attract increased FDI whilst high inflation reflects unstable policies and high cost of business operations, thus deterring FDI (Zheng, 2009). Using inflation to estimate the stability of macroeconomic policy, previous empirical studies (Chakrabarti, 2001; Makki and Somwaru, 2004; Zheng, 2009) find negative relationship between inflation and FDI. As Solomon Islands has experienced high inflation rate over the past years the annual inflation rate (LINF) is used to measure the economic climate. Resultantly, the variable is expected to be negative. Similarly, economies with weak currencies are more likely to attract FDI inflows while economies with strong currencies will deter FDI inflows as investing in these countries will be costly (Zheng, 2009) .

The hypothesis is as follows: *H5: Higher inflation rate in the host country will deter FDI inflows. H6: Higher exchange rate in the host country will deter FDI inflows.*

Quality and cost of labour

The quality of labour measures the level of skilled labour in the nation. According to Ramasamy and Yeung (2004), the availability of labour is crucial in foreign firms' location preferences as it gives them more ownership advantage to adapt to the local economy. The equation includes wage rate to measure the cost of labour. The evidence shows a positive relationship between quality of labour and FDI (Rehman et al., 2011). The quality of labour variable is estimated by industrial valued added as a percentage of GDP and wage is the wage rate.

The hypothesis includes: *H7: Higher skilled labour in the host economy attracts more FDI inflow. H8: Higher wage rate in the host economy deter FDI inflow.*

Domestic Investment, infrastructure and communication facilities

It is viewed that countries with high domestic investment and sufficiently developed infrastructures such as transportation and communication are more attractive for foreign investors operations than where opposite conditions prevail (Kahai, 2004). However, empirical evidence by Adams (2010) and Rehman et al., (2011); using mainline telephone per 1000 people (for communication facilities/infrastructure) indicate that communication facilities has a positive effect on FDI. Both domestic investment and telecommunication variables are expected to be positive.

The hypothesis as follows: *H9: Countries with better communication facilities attracts more FDI inflow than others.* *H10: Countries with high domestic investment attracts more FDI inflow than others.*

Political Instability and civil unrest

As noted in the literature, lack of political stability can restrain inflows of FDI (Gounder, 2002). The dummy variable (DV) is included in equation (5.1b) to ascertain whether political instability and civil unrest deter FDI. A value of 0 is thus assigned to years before and after the political instability and civil unrest, and the value of 1 during the political instability and civil unrest for the period 1999 to 2006. The expected sign of this variable is negative.

The hypothesis is: *H11: Political instability and civil unrest in the host economy deters FDI inflow.*

Reform

To measure the impact of implementation of various economic reforms in the Solomon Islands, a dummy variable for economic reforms (DVER) is used to identify if that has attracted FDI to the island nation. A value of 0 is thus assigned in the pre-reform period in 1998 and the value of 1 in the post-reform period from 2005. In Solomon Islands case, implementation of reforms was halted during the civil unrest period 1999-2004. This measure for reform has been used in many reform related-studies such as Zheng (2009), and Jayachandran and Seilan (2010). If the reforms have had a positive effect on FDI, it is expected that DVER will have a positive sign.

The hypothesis tested notes: *H12: Implementation of reform in the host economy attracts FDI inflow.*

5.3.2 Causality between FDI, Export and Income growth

The Granger Causality test as used in various studies such as Makki and Somwaru (2004), Xu and Wang (2007), and Jayachandran and Seilan (2010) will be employed to examine the direction of causality for the FDI-income growth and FDI driven trade. The three

variables foreign direct Inflows (LFDI), exports (LEX) and income growth (LGDPPCI) test the causal relationship here. The existing literature shows that, whilst a positive link between foreign direct investment and trade and income growth is widely supported, the direction of causation remains highly questionable. To examine the possible causation between FDI inflows, exports and income growth, the Granger test is employed by running the following regression model.

$$\Delta LFDI_t = \alpha_0 + \sum_{i=1}^{k} \beta_i \, \Delta LFDI_{t-i} + \sum_{i=1}^{k} \gamma_i \, \Delta LEX_{t-i} + \sum_{i=1}^{k} \lambda_i \, \Delta LGDPPCI_{t-i} + \varepsilon_t \quad (5.2)$$

where LFDI, LEX and LGDPPCI are, respectively the natural logarithm of net FDI inflows; exports as percent of GDP and of gross domestic product per capita income. The idea of using GDP per capita instead of the popular GDP arise from the view that a high welfare economy will attract more FDI and trade which in turn will stimulate economic growth. The optimal lag order is K and ε_t is the error term assumed to be white noise. The results could be uni-directional; high GDP per capita income may cause high FDI inflows or vice-versa. Similarly, high inflows of FDI may promote exports or vice-versa. In addition, there could be a bi-directional relationship between the variables where FDI inflows increases growth in exports and exports induces FDI inflows.

5.4 Data and Methodology

This section presents the data and methodology used in the determinants of FDI and the causality between FDI inflows, exports and income growth. The annual data for the Solomon Islands for the period 1970-2010 is used to estimate the models specified above. The methodology used includes tests for time series data, the autoregressive distributed lag approach to cointegration and Granger causality.

5.4.1 Data

The data for FDI model to analyse the determinants of FDI include various economic and political variables. The list of variables, proxy for variables and data sources is summarised in Table 5.1. The data are in constant prices and relevant variables have been converted to ratios. The major data sources used in this study include World Bank (2011) World Development Indicators, and various IMF International Financial Statistics and Central Bank of Solomon Islands annual reports.

Data on FDI, GDP growth rate, GDP per capita income, inflation, exchange rate, lending rate, wage rate, export and import are sourced from various annual reports of the Central Bank of Solomon Islands. The inflation rate data is based on the 3-months moving average

of the Honiara Retail Price Index. The Consumer Price Index at 2004 prices is used to account for price fluctuations over time reflecting the stability of macroeconomic policies.

Table 5.1 List of Time Series Variables and Proxies used in the Equation and Sources.

Variable	Definition of the variable	Proxy	Data Source
LFDI	Foreign Direct Investment Inflows		Central Bank of Solomon Islands (various).
LGDPPCI	Gross Domestic Product Per Capita Income	Market size and per capita income level	
GGDP	Annual Growth of Gross Domestic Product	Market growth/economic growth	
LOPEN	Openness	Exports plus imports (% of GDP)	
LEX	Exports	Exports (% of GDP)	
LINF	Rate of inflation	Annual rate of inflation used as a proxy for macroeconomic stability	
LER	Exchange Rate		
WAGE	Wage Rate	Cost of labour	
LINR	Lending Interest Rate	Cost of Borrowing	
LDINV	Domestic Investment	Domestic investment (% of GDP)	International Monetary Fund (various).
LLAB	Labour	Industrial value added (% of GDP) is used as a proxy for quality of labour	World Bank (2011)
LTEL	Telephone	Telephone mainline per 100 people is used as a proxy for infrastructure and communication facilities.	
DVER	Economic Reform	Dummy variable for Economic reform	
DV	Political instability and Civil Unrest	Dummy variable for political instability and civil unrest.	

The gross fixed capital formation classified as a proxy for domestic investment is sourced from the IMF (various). These include improvement in fixed assets such as land, plant, machinery, equipment, infrastructure, construction and others (IMF, 2010). Another proxy variable, the Industrial value added as percent of GDP for the quality of labour is sourced from the World Bank (2011). It includes industrial value added data in manufacturing, mining, construction, electricity, water and gas (World Bank, 2011). The telephone mainline per 100 person used as a proxy for infrastructure and communication facilities is from the World Bank (2011). Dummy variables for the civil unrest and political instability (DV) from 1999 to 2006 and the economic reforms (DVER) in 1998 are included.[42]

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[42] According to Wooldridge (2009), a dummy variable representing a certain event occurred in certain period that can have an impact on the dependent variable can also be captured in the model by defining a binary variable that is zero, or one for each variable.

5.4.2 Econometric Methodology

The econometric methodology involves estimating equations using time series data to identify the major factors that influence FDI inflows and to ascertain the nature and the causal relationship between FDI inflows, exports and GDP per capita income for the period 1970 to 2010. The autoregressive distributed lag (ARDL) method of cointegration developed by Pesaran and Shin (1998) is employed. The rationale for selecting the ARDL method is that this approach can determine the long-run and short-run relationships amongst the concerned variables, irrespective of whether these variables are I(0) or I(1). It also applied lagged forms of both dependent and independent variables as explanatory variables to improve the impact (Gujarati and Porter, 2009).

However, before applying the ARDL method, it is important to check for the nature of the data distribution and the stationarity of each variable used in models. In the model estimation and the Granger causality, the variables are only consistent and unbiased if they are normally distributed and are stationary or do not have the problem of unit root (Gujarati and Porter, 2009). Appropriate time series measures are used to avoid spurious results. The tests applied include the Augumented Dickey Fuller (ADF) test, Phillips and Perron (PP) and Kwiatkowske Phillips, Schmidt, and Shin (KPSS).

Unit Root Test

To confirm the stationary time series data, conducting a unit root test is important before using it in the regressions (Granger and Newbold, 1974). The traditional ADF test is used as the primary test for unit roots, both in levels and in first differences. The details of ADF and KPSS test for stationary have been discussed in Chapter 4 in the methodology section. The Philip and Perron (PP) test (an extension of the Dicky-Fuller test) is a nonparametric correction for autocorrelation offers an alternative to the ADF test.[43]

Estimating the long-run and short-run relationship among variables

The ARDL steps are followed to determine the existence of long-run relation among the variables using the Bounds F-test (Pesaran and Shin, 1998). These bands cover all possible combinations of variables into I(1) and (0). If the F-statistics lies above the upper level of the band, the null hypothesis of no long-run hypothesis is rejected. If the F-statistics falls

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[43] The PP test is estimated by the following regression: $\Delta Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \varepsilon_t$, where Y is a time series, t is a linear trend, Δ is first difference operator, α_0 is a constant, and ε is random error term. The hypotheses test if the series contains a unit root without a time trend and with a drift and a time trend. These hypotheses are accepted if the null hypothesis in the ADF states that a time series contain a unit root or evidence against it (Phillips and Perron, 1988).

below the lower bound, the null hypothesis of no long-run relationship cannot be rejected supporting the conclusion of no cointegration.[44]

If a long-run relationship is found, the next step of the ARDL analysis is to estimate the coefficients of the long-run relations and drawing conclusions about their values (Pesaran and Shin, 1998). This involves taking 'a sufficient number of lags in order to reduce the intensity of the serial correlation of residuals in a general-to-specific modelling framework' (Yin and Hamori, 2011, p. 4). The second step includes the short-run and error correction term (ECT). The use of ECT is to capture the short-run effects of the determinants on FDI (see Engle and Granger, 1987). The models take the form as follows;

$$
\begin{aligned}
\Delta LFDI_t = \; & \alpha_0 + \sum_{i=1}^{k} \alpha_{1i}\, \Delta LFDI_{t-i} + \sum_{i=1}^{k} \alpha_{2i}\, \Delta GGDP_{t-i} + \sum_{i=1}^{k} \alpha_{3i}\, \Delta LGGDPCI_{t-i} + \sum_{i=1}^{k} \alpha_{4i} \\
& \Delta WAGE_{t-i} + \sum_{i=1}^{k} \alpha_{5i}\, \Delta LDINV_{t-i} + \sum_{i=1}^{k} \alpha_{6i}\, \Delta LOPEN_{t-i} + \sum_{i=1}^{k} \alpha_{7i}\, \Delta LINF_{t-i} \\
& + \sum_{i=1}^{k} \alpha_{8i}\, \Delta LLAB_{t-i} + \sum_{i=1}^{k} \alpha_{9i}\, \Delta LTEL_{t-i} + \sum_{i=1}^{k} \alpha_{10i}\, \Delta LINR_{t-i} + \sum_{i=1}^{k} \alpha_{11i} \\
& \Delta LER_{t-i} + \sum_{i=1}^{k} \alpha_{12i}\, \Delta DVER_{t-i} + \alpha_{13i}\, ECT_{t-1} + \mu_t \qquad\qquad (5.3a)
\end{aligned}
$$

$$
\begin{aligned}
\Delta LFDI_t = \; & \alpha_0 + \sum_{i=1}^{k} \alpha_{1i}\, \Delta LFDI_{t-i} + \sum_{i=1}^{k} \alpha_{2i}\, \Delta GGDP_{t-i} + \sum_{i=1}^{k} \alpha_{3i}\, \Delta LGGDPCI_{t-i} \\
& + \sum_{i=1}^{k} \alpha_{4i}\, \Delta WAGE_{t-i} + \sum_{i=1}^{k} \alpha_{5i}\, \Delta LDINV_{t-i} + \sum_{i=1}^{k} \alpha_{6i}\, \Delta LEX_{t-i} + \sum_{i=1}^{k} \alpha_{7i} \\
& \Delta LINF_{t-i} + \sum_{i=1}^{k} \alpha_{8i}\, \Delta LLAB_{t-i} + \sum_{i=1}^{k} \alpha_{9i}\, \Delta LTEL_{t-i} + \sum_{i=1}^{k} \alpha_{10i}\, \Delta LINR_{t-i} \\
& + \sum_{i=1}^{k} \alpha_{11i}\, \Delta LER_{t-i} + \sum_{i=1}^{k} \alpha_{12i}\, \Delta DV_{t-i} + \alpha_{13i}\, ECT_{t-1} + \mu_t \qquad\qquad (5.3b)
\end{aligned}
$$

where ECT_{t-1} is the error-correction term, $í = 0, 1..., k$ are the lag orders of α's, Δ is the difference operator, μ_t is the white noise error term and t denotes the years.

Causality testing in Vector Error Correction Models
The final step is to examine the direction of causality between the three variables, LFDI, LEX and GDPPCI, once the long-run and short-run effects of the determinants of FDI is established. Since, the cointegration method tests only indicate the presence or absence of long-run links between the variables, whilst not showing the direction of causality when the variables are cointegrated, the Granger causality test is therefore justified. The Vector Autoregressive (VAR) approach will be used if the estimated Granger-causality shows the absence of cointegration among the variables (Engle and Granger, 1987). However, if co integration is established, the Vector Error Correction Model (VECM) will be used where the lagged ECT is included to incorporate the long-run dynamics. Some of the recent studies that used similar approaches includes Aw and Tang (2010), Bartleet and Gounder (2010), Fedderke and Romm (2006), and Moundatsou and Kyrkilis (2009) amongst others.

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[44] If the test is inconclusive if the *F*-statistics falls inside the critical bounds, unless the order of integration of the regressors is known (Pesaran and Shin, 1998; Pesaran et al., 2001).

The advantage of VECM is that the cointegrating combinations retain the long-run information with proper consideration given to the stationarity properties of the chosen variables (Engle and Granger, 1987).

The estimated tri-variate error correction model (ECM) of the following VAR system takes the following form;

$$\Delta LFDI_t = \alpha_1 + \alpha_{fdi} \hat{e}_{t-1} + \sum_{i=1}^{k} \alpha_{11} \Delta LFDI_{t-i} + \sum_{i=1}^{k} \alpha_{12} \Delta LEX_{t-i} + \sum_{i=1}^{k} \alpha_{13} \Delta LGDPPCI_{t-i} + \varepsilon_{fdit} \tag{5.4a}$$

$$\Delta LEX_t = \alpha_1 + \alpha_{lex} \hat{e}_{t-1} + \sum_{i=1}^{k} \alpha_{21} \Delta LEX_{t-i} + \sum_{i=1}^{k} \alpha_{22} \Delta LFDI_{t-i} + \sum_{i=1}^{k} \alpha_{23} \Delta LGDPPCI_{t-i} + \varepsilon_{lext} \tag{5.4b}$$

$$\Delta LGDPPCI_t = \alpha_1 + \alpha_{gdppci} \hat{e}_{t-1} + \sum_{i=1}^{k} \alpha_{31} \Delta LFDI_{t-i} + \sum_{i=1}^{k} \alpha_{32} \Delta LGDPPCI_{t-i} + \sum_{i=1}^{k} \alpha_{33} \Delta LEX_{t-i} + \varepsilon_{lgdppcit} \tag{5.4c}$$

where Δ is the difference operator, $LFDI_t$, LEX_t, and $LGDPCI_t$, are stationary time series; $\hat{e}_{t-1}$ is the error-correction term derived from the long-run co-integrating relationship; α_i, α_{ij} β_i are the parameters to be estimated; ε_{fdit}, ε_{lext}, and $\varepsilon_{lgdppcit}$ are white-noise disturbance terms that may be correlated with each other, t denotes years and k is the lag order.

The VECM results indicate the difference between short-run and long-run Granger causality. The coefficient of the lagged error correction term indicates that there is a long-run causal relationship between LFDI, LEX and LGDPPCI. Furthermore, it shows the adjustment of LFDI, LEX and LGDPPCI to their long-run equilibrium relationships including the speed of the adjustment. If α is statistically significant in equation (5.4a) but not significant in equation (5.4b), it means that LEX and LGDPPCI Granger cause LFDI. If the opposite happens, it means that FDI and LGDPPCI Granger cause LEX. If α is significant in both equations, it indicates that there is a bi-directional relationship between LFDI and LEX. The same process also applies to equation (5.4c).

5.5 Empirical results

This section presents the results of the statistical analyses obtained from the estimated equations. In order to obtain valid statistical inferences and meaningful policy analysis, the nature of the data distribution is examined using the standard descriptive statistics which are found to be normally distributed (see Appendix Table A5.1 to Table A5.8). Likewise, the time series unit root for properties of all the variables used are addressed by employing ADF, PP, and KPSS tests. To investigate the existence of a long-run growth driven-led FDI relationship, the bounds tests are applied. The ARDL models are selected by the SIC.

The results for the growth driven-led FDI model and the causality between FDI inflows, trade openness and market growth are presented in the subsequent sections.

5.5.1 Unit Root Test

The ADF, PP and KPSS tests of unit roots tests are reported for the FDI determinant enhancing factors in Table 5.2. The results of the ADF, PP and KPSS tests, for constant and no time trend and constant and time trend, are reported for both the levels and differences of the variables. For the ADF and PP tests, the null hypothesis states that the series contains a unit root, with the inverse hypothesis being that the series is stationary. For the KPSS test, the null hypothesis states the series is stationary, whilst the inverse hypothesis contains a unit root. Results for ADF, PP and KPSS tests suggest that all variables are stationary in the first difference form and are integrated of order one I(1).

Table 5.2 Unit Root Test Results

Variables	Constant and No Trend			Constant and Trend		
Level Series	ADF	PP	KPSS	ADF	PP	KPSS
LFDI	-2.66*	-2.66*	0.44	-3.27*	-3.27*	0.07
GGDP	-5.59***	-5.56***	0.12	-5.52***	-5.48***	0.12
LDINV	-4.15***	-4.21***	0.07	-4.02**	-4.08**	0.07
LOPEN	-3.14**	-2.59	0.22	-4.12**	-2.85	0.11
LINF	-3.96***	-3.95***	0.23	-2.83	-3.76**	0.22***
LTEL	-0.89	-1.00	0.63	-0.94	-1.34	0.11
LLAB	-1.89	-1.73	0.19	-1.82	-1.71	0.11
LINR	0.10	0.12	0.28	0.28	0.32	0.17
WAGE	0.34	0.72	0.69	-1.66	-1.66	0.20***
LEX	-0.27	-0.28	0.75**	-3.63**	-3.78**	0.11
LER	1.4	1.22	0.72	-2.03	-2.03	0.77
LGDPPCI	-0.93	-0.19	0.78	-1.87	0.61	0.15
First Difference						
LFDI	-7.85***	-8.99***	0.11	-7.73***	-8.83***	0.09
GGDP	-7.01***	-23.18***	0.21	-6.83.99***	-25.78***	0.16
LDINV	-7.93***	-7.98***	0.14	-8.02***	-8.04***	0.07
LOPEN	-7.86***	-7.86***	0.12	-8.15***	-8.15***	0.07
LINF	-7.89***	-8.46***	0.23	-8.05***	-9.31***	0.11
LTEL	-4.63***	-4.62***	0.15	-4.59***	-4.59***	0.13
LLAB	-7.96***	-7.98***	0.13	-7.93***	-7.93***	0.12
LINR	-6.83***	-9.45***	0.33	-6.00***	-12.69***	0.37***
WAGE	-6.316***	-6.32***	0.26	-6.57***	-8.011*	0.11
LEX	-6.05***	-6.05***	0.09	-5.99***	-5.99***	0.07
LER	-4.75***	-4.76***	0.58	-5.09***	-4.96***	0.09
LGDPPCI	-5.59***	-5.58***	0.08	-5.51***	-5.50**	0.09

Note: ***, ** and * denotes significance at the 1, 5 and 10 percent, respectively. The critical values for the ADF test for constant and no trend is -3.61 and -4.21 for constant and trend at the 1 percent significance levels. The maximum lag length of these models is set to 2. The critical values for the PP test for constant and no trend is -3.61 and -4.21 for constant and trend at the 1 percent significance levels. For the KPSS test the critical values for constant and no trend is 0.73 and 0.216 at the 1 percent significance level. Legend: LFDI is log foreign direct investment, GGDP is growth in gross domestic product, LDINV is log domestic investment, LINF is log inflation rate, LTEL is log telecommunication, LINF is log inflation rate, LTEL is log telecommunication, LLAB is log quality of labour, LINR is log lending interest rate, WAGE is wage rate, LEX is log export as percent of GDP, LER is log exchange rate and LGDPPCI is log gross domestic per capita income.

5.5.2 The ARDL Results

The ARDL technique first establishes the existence of a long-run relationship for the variables in equation (5.1a) and (5.1b) using Bounds F test.[45] The estimated F test result presented in Table 5.3 shows that there is a long-run relationship amongst the variables concerned. Since the calculated F-statistic of 7.36 exceeds the upper bound value of 3.60, the null hypothesis of no long-run relationships is rejected. This provides strong evidence that FDI inflows in the Solomon Islands and its determinants are cointegrated at 99 percent significant level. In model (5.1b), the estimated value F-statistic value of 5.93 also exceeds the upper bound critical value of 3.60. This indicates the significant long-run relationships amongst the variables. Having established a long-run relationship amongst the variables in equations (5.1a) and (5.1b), the long-run marginal effects are reported for the impact of the determinants of FDI inflows followed by the short-run marginal effects of the ECM model.[46]

Table 5.3 Bounds F-Test Results for Growth-led FDI nexus in Solomon Islands

Model	K-degrees of freedom	99% Critical value bounds		Estimated F test value	Pass/Fail
		I(0)	I(1)		
Equation (5.1a)	11	2.26	3.60	7.36	Pass
Equation (5.1b)	11	2.26	3.60	5.93	Pass

Note: The critical value is from Pesaran, Shin and Smith (2001). K is the number of regressors.

The results for the estimated ARDL, long-run and ECM coefficients are given in Table 5.4. To alleviate possible multicollinearity, the three colinearity variables LINR, WAGE and LER were dropped from the regressions due to their insignificance. The equations (5.1a) and (5.1b) have relatively satisfactory explanatory power in terms of adjusted R^2 and the F-statistics are statistically significant at the one percent level. The estimated adjusted R^2 values explain 70 percent and 64 percent, respectively, of the variance for the determinants of the FDI inflows for the Solomon Islands. The models diagnostic tests, shows no concern of functional form mis-specification, non-normally distributed errors or heteroscedasticity. Equations (5.3a) and (5.3b) present the short-run and ECM coefficients of estimated equation (5.1a) and equation (5.1b).

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[45] The lags are set to one and two years as used in other empirical studies (see Aw and Tang, 2010; Gounder, 2002; Tang, 2002) based on annual time series data.
[46] Yin and Hamori (2011) also estimate the long-run relationships of FDI determinants using ARDL single equation method.

Table 5.4 Results for the Determinants of FDI in Solomon Islands

Dependent variable: FDI inflow

Variable	ARDL Estimates coefficient		Long-Run Estimates coefficient		Variable	ECM Short-Run Estimates Coefficient	
	(5.1a)	(5.1b)	(5.1a)	(5.1b)		(5.3a)	(5.3b)
$LFDI_{t-1}$	0.11	0.25			$\Delta LFDI_{t-1}$	0.12	0.08
	(0.67)	(1.51)				(0.82)	(0.54)
$LFDI_{t-2}$	0.14	0.17					
	(0.91)	(1.03)					
GGDP	0.39	0.04			ΔGGDP	0.83	-0.02
	(0.13)	(0.16)				(0.92)	(-0.69)
$GGDP_{t-1}$	0.08	0.08	0.74	0.31			
	(2.40)**	(2.15)**	(22.7)**	(8.77)**			
LGDPPCI	-45.78	-7.27			ΔGDPPCI	-1.93	4.25
	(-1.61)	(-0.24)				(-0.18)	(0.66)
$LGDPPCI_{t-1}$	45.5	1.61					
	(1.59)	(0.05)					
LDINV	3.18	0.89			ΔLDINV	-2.32	-1.45
	(0.73)	(0.25)				(-0.88)	(-0.54)
$LDINV_{t-1}$	5.99	10.01	56.61	41.09			
	(2.09)**	(3.02)***	(18.2)**	(13.6)**			
LOPEN	2.94				ΔLOPEN	4.26	
	(1.03)					(1.37)	
$LOPEN_{t-1}$	7.20		68.04				
	(2.78)**		(26.7)**				
LEX		1.38			ΔLEX		-1.17
		(0.48)					(-0.49)
LEX_{t-1}		4.85		19.81			
		(1.86)*		(7.61)*			
LINF	-3.32	-2.88	-3.33	-11.7	ΔLINF	-2.50	-1.19
	(-4.05)***	(-3.28)***	(-38.3)***	(-3.57)*		(-3.29)***	(-3.01)***
LTEL	7.12	5.19	2.07		ΔLTEL	10.92	5.22
	(2.07)**	(1.36)	(1.96)*			(19.6)**	(0.97)
LLAB	0.57	0.89			ΔLLAB	-2.1	-0.99
	(0.25)	(0.36)				(-1.22)	(-0.54)
DVER	1.09				ΔDVER	0.64	
	(0.86)					(0.49)	
DV		-2.14			ΔDV		-0.004
		(-1.56)					(-.004)
Constant	-64.08	-13.76			ΔConstant	0.03	-0.17
	(-3.29)	(-0.59)				(0.06)	(-0.23)
					ECM_{t-1}	-1.13	-0.87
						(-5.39)***	(-4.75)***
R-squared	0.81	0.78					
Adjusted R^2	0.70	0.64				0.53	0.45
F-stats	7.36***	5.93**					
SCx^2 (1)	0.81	0.58					
FF x^2 (1)	0.02	0.12					
Nx^2 (2)	0.66	0.46					
Hx^2 (1)	0.48	0.55					

Note: ***, ** and * are the levels of significance at the one, five and ten percent levels of the t-ratios written in brackets. Legend; LFDI is log of foreign direct investment, GGDP is growth in gross domestic product, LGDPPCI is log of gross domestic product per capita income, LDINV is log of domestic investment, LOPEN is log of trade openness, LEX is log of exports, LINF is log of inflation, LTEL is log of telecommunication, LLAB is log of labour quality, DVER is dummy variable for economic reform and DV is dummy variable for civil unrest and political instability. SC is for serial correlation. FF is Functional Form. N is Normality of residuals and H is Heteroskedasticity.

The empirical result obtained from the base equation (5.1a) support the FDI determinant hypothesis and all the explanatory variables have the expected signs. The long-run coefficient economic growth (GGDP) is statistically significance at the 5 percent level; it indicates that higher growth rates attract foreign investors to the Solomon Islands. A 1 percent increase in GGDP leads to a 74 percent increase in FDI inflows. This result is similar to the findings by Adams (2010) and Zheng (2009) amongst others where higher economic growth leads to higher foreign investment. The result also supports the view that higher economic growth witnessed in the post-civil unrest period has been accompanied by a much higher inflow of FDI. Thus, FDI inflows depend largely on the nation's economic performance. It is seen that short-run economic growth (equation 5.3a) coefficient though positive is not significant.

Although the LGDPPCI measure for market size has a positive sign it is insignificant. Given the relatively small population, the market size is insufficient to influence foreign investors' decision in the case of Solomon Islands. This contradicts earlier findings where market size has a significant impact on FDI inflows (Aw and Tang, 2010; Azam and Lukman, 2010; Fedderke and Romm, 2006; Rehman et al., 2011; Wheeler and Mody, 1992). The insignificant outcome also supports the view that small island economies may attract low levels of FDI inflows due to their small size and structural disadvantages (Read, 2007). The result re-affirms the argument that smaller developing nations attracts less FDI inflows than developing countries with larger population and larger market size which reflects higher level of development and can allow economies of scale (Zheng, 2009).

The estimated long-run coefficients for domestic investment (LDINV) are significant at the 10 and 5 percent levels and have a positive influence on FDI inflows. This means that a 1 percent increase in LDINV would increase FDI inflows by 56.6 percent and 41.1 percent, respectively, showing that domestic investment is a major driving force to attract FDI inflows in the Solomon Islands. This result renders support to the theoretical view that higher domestic investment induces FDI inflows. It also re-affirms the empirical findings by Elboiashi, Noorbakhsh, Paloni and Azemar (2009) that domestic investment promotes FDI inflows. Although, LDINV is strongly correlated with FDI it does not immediately induce foreign investors' choice as it takes at least two years to translate domestic investment to attract FDI. This outcome supports the time lag for any investment decisions and long term effects as seen in the estimated short term DINV that is not significant.

As expected the estimated LOPEN coefficient, a measure for trade openness, shows the strongest positive influence on FDI inflows. This positive outcome suggests that a 1

percent increase in OPEN will increase FDI inflows by 68.0 percent in the long-run. Thus, the higher the degree of trade openness the more the inflow of FDI to the Solomon Islands, and this support the hypothesis on trade promoting FDI or complementing FDI. This is also consistent with the findings by Brock (2009) Makki and Somwaru (2004) and Zheng (2009) where trade openness attracts FDI and is complementary to domestic investment. This significant positive out turn reflects the trade liberalisation and openness to foreign investment through simplifying and streamline of investment procedures.

The LTEL coefficient (measure for telecommunication facilities) also has a positive influence on FDI inflows in both the long-run and the short-run. The positive coefficient indicates that a 1 percent increase in infrastructure raises FDI inflows by 2.1 percent in the long-run and 10.9 percent in the short-term period. The result is also consistent with the findings by Kok and Ersoy (2009) that communication is the most important determinant of FDI inflow. Favourable outcome reflects the recent high spending by the government and the Solomon Telekom Limited on infrastructure and telecommunication facilities in the Solomon Islands. The improvements include the liberalisation of telecommunication industry in 2009, improved coverage of telecommunication services and the establishment of a second telecommunication provider in 2010 that has not only improved and increased the level of telecommunications but also reduced the telecommunication costs (CBSI, 2010). This re-affirms the hypothesis that development of telecommunication and infrastructure has positive impact in determining FDI inflows.

The estimated long-run and short-run coefficients for LLAB, a measure for quality of labour, is insignificant in attracting FDI. Though the long-run coefficient of labour quality is positive it does not have an influence on FDI inflows while in the short-run it is negative and insignificant. The insignificant impact of LLAB on FDI inflows may reflect a low pool of skilled labour force, and the low level of efficiency in the industrial value-added proxy variable. The labour quality does not explain as most of the FDI are in the resource-market (i.e., logging and fishing resource based industries).

The estimated long-run and short-run coefficients for LINF, an indicator for macroeconomic stability, has the expected negative impact on FDI. This suggests that a 1 percent increase in LINF reduces FDI inflows by 3.33 percent and 2.50 percent in the long-run and short-run, respectively. This is expected given the high inflation rate experienced by Solomon Islands over the years and supports the hypothesis that high inflation affects foreign investment. The result is also consistent with the findings by Chakrabarti (2001);

Makki and Somwaru (2004); and Zheng (2009) where high inflation negatively impact on FDI inflows.

In both the long-run and the short-run the coefficient for DVER though is positive is insignificant. The economic reforms and structural adjustment programs were implemented since 1998 however due to political instability and civil unrest it may take longer for such an impact. Also the difficulties in reform programs translating easily or immediately in the Solomon Islands are due to factors such as institutional rigidity and lack of political will to implement them that explain the lack of significant DVER coefficient. Furthermore, many of the reforms were part of the aid conditionality, where donors such as World Bank offers temporary aid during reform but once they leave the reforms are also abandoned in the developing countries (Asiedu, 2002) thus Solomon Islands may also have been affected by lack of resources and initiatives.

Turning to equations (5.1b) and (5.3b) the impact of the variables in equation (5.1a) are similar. The impact of political instability and civil strife on FDI as measured by the dummy variable DV shows a negative impact in both long and short-run. Although it is not significant, however it does have a negative effect on the economy. The intervention of the Regional Assistance Mission to the Solomon Islands (RAMSI) in July 2003, which returned the country to normalcy, may explain the lack of significant DV coefficient. The political instability and civil unrest affects investments and businesses and it also destroyed and halted many of the infrastructure and communication development programs, which are crucial to attract FDI inflows.

The variable LOPEN has been dropped and replaced by exports for trade impact LEX while all other variables are same as in equation (5.1a). The LEX coefficient has a positive influence on FDI inflows in the long-run but the influence is negative in the short-run. The long-run coefficient suggest that a 1 percent increase in exports raise FDI inflows by 19.8 percent, thus higher export levels lead to higher inflow of FDI to the Solomon Islands. The positive outcome supports the hypothesis on export and trade promotion complements FDI and is consistent with the empirical findings by Asiedu (2002); Aw and Tang (2010); Balasubramanya et al., (1996). Evidence is seen that Solomon Islands export level is a key factor for investors that capture the external markets and thus a high level of FDI involvement in the export sector are seen in the main export commodities.[47]

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[47] The main export commodities, which are the main FDI output, include log, fish and palm oil.

The coefficient of LINF remains negative and significant in both the long-run and the short-run. This supports the view that high inflation is a high cost to the economy and adds to the risk and economic instability. The error correction term (ECM_{t-1}) coefficient for both equations (5.3a) and (5.3b) are negative and statistically significant at the one percent level. It shows how fast short term disturbances return to long-run equilibrium. This suggests that the model can achieve long-run relationship as the adjustment to equilibrium during short-term shock is fast.

5.5.3 Granger Causality through ECM models

Using the Vector Error Correction (VEC) pair wise Granger causality and the Chi-sq Wald test, both short and long run Granger causality linkages between LFDI, LEX and LGDPPIC are examined. The short-run causal effects are obtained by the Wald F-statistics of the lagged explanatory variables, while the t-ratio of the coefficient of the lagged error-correction term indicates the significance of the long-run causal effect.

The results for the causality are reported in Table 5.5. In equation (5.4a) with the growth driven-led FDI as the dependent variable (LFDI), the short-run effects for both export (LEX) and per capita income (LGDPPCI) is not significant. This implies that both LEX and LGDPPCI do not Granger cause LFDI in the short-run. This outcome confirms the results from the ECM test, equations (5.3a) and (5.3b) where LEX and LGDPPCI are insignificant, suggesting that the degree of export orientation and the level of income growth are necessary but not a sufficient condition in the Solomon Islands to induce FDI inflows in the short period of time. A possible reason for the insignificant impact of LEX on FDI inflows could be due to the narrow range of exports, long distance and difficulties in the export markets and low demand and price volatility for exports, which are unattractive for foreign investors in the short term. The insignificant impact of the per capita income for market size (LGDPPCI) on FDI inflows may due to the small and fragment market economy that does not allow economies of scale and jointly these became unattractive for foreign investors, in the short term.

In equation (5.4b) with the FDI-trade driven export (LEX) as the dependent variable, both LFDI and LGDPPCI are statically significant at the 10 percent and 1 percent levels, respectively. This indicates that there is a bi-directional causality between LFDI and LGDPPCI and in turn, they Granger cause LEX. Therefore, LFDI Granger cause LGDPPCI, vice versa LGDPPCI Granger cause LFDI, and jointly they affect LEX. The established bi-directional causality provides evidence that both FDI inflows and per capita income plays a relevant role in explaining export expansion and supports the FDI-trade

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hypothesis where FDI inflows complement exports. This provides support to the view that higher the level of FDI inflows and the level of income, export growth is high; this result is consistent with the findings of Oladipo (2010). It can be said that there is a positive role that FDI flows and levels of income have both increase exports.

Table 5.5 Granger Causality Results

	Dependent Variable		
	ΔLFDI[5.4a]	ΔLEX[5.4b]	ΔLGDPPCI[5.4c]
ΔLFDI$_t$		4.99 (0.08)*	7.78 (0.02)**
ΔLEX$_t$	2.19 (0.33)	-	6.22 (0.04)**
ΔLGDPPCI$_t$	1.38 (0.50)	17.4 (0.0002)***	-
ECT$_{t-1}$ [t-statistics]	0.71 (0.35)	-0.04 (0.02)**	-0.01 (0.002)***
Causality		FDI$\longleftrightarrow$GDPPCI	FDI$\longleftrightarrow$EX

Note: ***, **, * indicates significance at 1 percent, 5 percent and 10 percent level. Wald tests $x^2(2)$.

The FDI-income growth nexus with LGDPPCI (dependent variable) in equation (5.4c) shows both LFDI and LEX are positive and statistically significant at the 5 percent level. This shows that there is a bi-directional causality between LFDI and LEX and in turn they Granger cause LGDPPCI. The established bi-directional causality suggests that FDI inflows affect export and export itself exerts a major influence on the level of FDI inflows. This outcome also provides evidence of Solomon Islands openness to international trade and supports the FDI-trade led hypothesis where FDI inflows and trade complements each other and are complementary to economic growth and welfare. It also provides evidence of recent increase in FDI inflows and whereby exports may contribute to high GDP growth and per capita income. This is reflected in the World Bank's ranking in 2010 where the Solomon Islands economy has improved and is now classified as a lower-middle income country that was previously classified as a low-income country.[48]

In the long-run, the coefficient of the lagged error correction term in the equation (5.4b) with LEX as the dependent variable is significant at the 5 percent level, implying that the variations in LEX are a function of disequilibrium in the co-integrating relationship. It re-affirms the results from the bounds test for co-integration and the short-run results. This suggests that in the long-run both LFDI and LGDPPCI cause LEX, implying that the

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[48] According to the World Bank classifications low-income groups are income less than $975 and lower middle-income groups are income from $976-$3855 (World Bank, 2010b).

linkage runs interactively through the error correction term from FDI inflows and per capita income to exports. The coefficient of the lagged error correction term for LGDPPCI equation (5.4c) (as the dependent variable) is also significant with the correct sign at the 1 percent level. This confirms the result from the bound test for cointegration. It suggests that in the long-run both LFDI and LEX Granger cause LGDPPCI, showing that the linkage runs interactively through the error correction term from FDI inflows and exports to per capita income.

5.6 Conclusion

This study provides an empirical estimation of the main determinants of FDI inflows and tests the growth driven-led FDI nexus with a variety of other economic and political factors. The empirical findings show that economic growth, domestic investment, openness, exports and providing an enabling environment through the provision of infrastructural facilities are all important determinants of FDI inflows. The Solomon Islands is able to provide a myriad of factors that provide a positive impact in the determinants of FDI inflows to the nation. The high inflation rates suggest macroeconomic instability in the economy. Also the other factors that discourage FDI inflows is civil unrest and political strife though its impact is insignificant. The infrastructure and the telecommunication were damaged during the civil unrest which constraints the scarce resources and expenditure in other sectors. The investment in telecommunication has had a positive impact on FDI inflows in both the long and short-run.

The Granger causality results show bi-direction causality in the FDI-trade nexus and the FDI-income growth nexus. In the FDI-trade nexus, there is a bi-direction causality between FDI inflows and per capita income and jointly promote export expansion in the short period. These established bi-directional causal linkages suggest that FDI inflows and the level of income has a large influence on growth of export and is vital to increase foreign investor flows. For the FDI-income growth nexus, a bi-directional relationship between FDI inflows and exports also contributes to economic growth. The results for causality suggests that FDI inflows affects exports and exports itself is a major influence on the level of FDI inflows. This in turn will have an additional positive impact on economic growth. Enhancing economic growth and development depends on the factors and the findings provide policy makers to improve the environment for attracting investment and an economic climate conducive for high growth.

Chapter Five Appendix

Appendix Table A5.1 Descriptive Statistics, Equation 5.1a (1970-2010)

	LFDI	GGDP	LGDPPCI	LDINV	LOPEN	LINF	LTEL	LLAB	DVER
Mean	8.331	14.496	7.109	3.203	4.509	2.196	0.148	2.138	0.171
Median	8.839	15.079	7.312	3.168	4.566	2.241	0.327	2.017	0.000
Maximum	14.460	59.164	9.157	3.604	4.973	2.939	0.699	2.759	1.000
Minimum	1.000	26.952	4.818	2.794	3.846	0.000	0.493	1.608	0.000
Std. Dev	3.783	14.583	1.323	0.199	0.242	0.522	0.394	0.352	0.381
Skewness	0.737	0.432	-0.247	0.015	-0.992	-1.952	-0.103	0.497	1.750
Kurtosis	2.748	5.185	1.715	2.411	4.165	9.060	1.354	1.789	4.063
Jarque-Bera	3.817	9.435	3.233	0.595	9.046	88.781	4.699	4.192	22.86
Probability	0.148	0.009	0.199	0.743	0.011	0.000	0.095	0.123	0.000

Appendix Table A5.2 Descriptive Statistics, Equation 5.1b (1970-2010)

	LFDI	GGDP	LGDPPCI	LDINV	LEX	LINF	LTEL	LLAB	DV
Mean	8.331	14.495	7.109	3.203	4.316	2.196	0.148	2.138	0.195
Median	8.839	15.079	7.312	3.168	4.353	2.241	0.322	2.017	0.000
Maximum	14.460	59.164	9.157	3.604	6.082	2.939	0.699	2.759	1.000
Minimum	1.000	-26.951	4.818	2.794	2.117	0.000	-0.493	1.608	0.000
Std. Dev	3.783	14.582	1.323	0.199	1.112	0.522	0.394	0.352	0.401
Skewness	-0.736	0.432	-0.246	0.015	-0.321	-1.952	-0.103	0.497	1.539
Kurtosis	2.748	5.185	1.715	2.411	2.079	9.060	1.354	1.789	3.367
JarqueBera	3.817	9.435	3.233	0.595	2.154	8.781	4.699	4.192	16.408
Probability	0.148	0.009	0.196	0.743	0.3416	0.000	0.095	0.123	0.000

Appendix Table A5.3 Descriptive Statistics (1970-1979)

	LFDI	GGDP	LGDPPCI	LDINV	LINF	LLAB	LTEL	LOPEN
Mean	0.756	2.296	5.302	3.175	1.964	2.006	9.071	5.235
Median	1.533	2.843	5.262	3.191	2.033	2.029	8.963	5.240
Maximum	3.314	3.862	5.904	3.548	2.939	2.184	9.706	5.666
Minimum	-2.816	0.010	4.818	2.794	1.131	1.713	8.343	4.818
Std. Dev	2.047	1.451	0.334	0.246	0.521	0.144	0.391	0.274
Skewness	-0.508	-0.744	0.332	-0.305	0.144	0.618	-0.166	0.068
Kurtosis	1.902	1.865	2.281	2.238	2.576	2.808	2.832	2.113
Probability	0.628	0.482	0.819	0.820	0.947	0.722	0.975	0.860

Appendix Table A5.4 Descriptive Statistics (1980-1989)

	LFDI	GGDP	LGDPPCI	LDINV	LINF	LLAB	LTEL	LOPEN
Mean	0.086	2.718	6.566	1.868	2.511	3.266	-0.167	4.675
Median	0.017	2.698	6.649	1.866	2.569	3.299	-0.193	4.633
Maximum	1.971	4.080	7.312	1.988	2.821	3.444	0.207	4.973
Minimum	-2.290	1.655	5.941	1.717	1.917	3.016	-0.493	4.521
Std. Dev	1.410	0.799	0.477	0.083	0.274	0.142	0.210	0.142
Skewness	-0.159	0.243	0.155	-0.200	-0.987	-0.545	0.238	0.995
Kurtosis	1.891	1.949	1.753	2.422	3.206	2.088	2.394	2.925
Probability	0.758	0.756	0.709	0.902	0.440	0.902	0.884	0.437

Appendix Table A5.5 Descriptive Statistics, Equation 5.1a (1990-1999)

	LFDI	GGDP	LGDPPIC	LDINV	LINF	LLAB	LTEL	LOPEN	DVER
Mean	1.206	2.345	7.865	3.089	2.345	2.555	0.559	4.553	0.200
Median	1.464	2.487	7.968	3.065	2.319	2.667	0.562	4.571	0.000
Maximum	2.205	3.570	8.260	3.346	2.724	2.759	0.699	4.637	1.000
Minimum	-0.478	0.768	7.305	2.882	2.073	1.608	0.399	4.321	0.000
Std. Dev.	1.009	0.801	0.361	0.144	0.223	0.341	0.125	0.096	0.422
Skewness	-0.669	-0.574	-0.496	0.605	0.288	-2.436	-0.059	-1.481	1.500
Kurtosis	2.000	2.805	1.693	2.455	1.824	7.380	1.354	4.426	3.250
Probability	0.5598	0.753	0.571	0.693	0.699	0.0001	0.567	0.105	0.151

Appendix Table A5.6 Descriptive Statistics, Equation 5.1b (1990-1999)

	LFDI	GGDP	LGDPPIC	LDINV	LINF	LLAB	LTEL	LEX	DV
Mean	1.206	2.345	7.869	3.089	2.345	2.555	0.559	1.231	0.100
Median	1.464	2.487	7.968	3.065	2.319	2.667	0.562	1.208	0.000
Maximum	2.205	3.570	8.260	3.346	2.724	2.759	0.699	1.576	1.000
Minimum	-0.478	0.768	7.305	2.882	2.073	1.608	0.399	0.928	0.000
Std. Dev.	1.009	0.801	0.361	0.144	0.223	0.341	0.125	0.216	0.316
Skewness	-0.669	-0.574	-0.496	0.605	0.288	-2.436	-0.060	0.426	2.666
Kurtosis	2.000	2.805	1.693	2.455	1.824	7.380	1.354	2.244	8.111
Probability	0.559	0.753	0.571	0.693	0.699	0.0001	0.567	0.763	0.000

Appendix Table A5.7 Descriptive Statistics, Equation 5.1a (2000-2010)

	LFDI	GGDP	LGDPPIC	LDINV	LINF	LLAB	LTEL	LOPEN	DVER
Mean	1.571	2.382	8.554	3.274	1.983	2.125	0.455	4.327	0.455
Median	1.640	2.741	8.482	3.168	2.041	2.092	0.448	4.341	0.000
Maximum	3.591	3.242	9.157	3.604	2.851	2.543	0.615	4.648	1.000
Minimum	-1.618	-0.075	8.108	3.005	0.000	1.768	0.327	3.885	0.000
Std. Dev.	1.537	0.907	0.383	0.212	0.711	0.319	0.074	0.254	0.522
Skewness	-0.701	-1.948	0.303	0.319	-2.042	0.162	0.696	-0.379	0.183
Kurtosis	2.787	6.078	1.648	1.541	6.905	1.329	3.678	1.972	1.033
Probability	0.630	0.004	0.605	0.559	0.001	0.515	0.577	0.688	0.399

Appendix Table A5.8 Descriptive Statistics, Equation 5.1b (2000-2010)

	LFDI	GGDP	LGDPPIC	LDINV	LINF	LAB	LTEL	LEX	DV
Mean	1.571	2.382	8.554	3.274	1.983	2.125	0.455	1.958	0.636
Median	1.640	2.741	8.482	3.168	2.041	2.092	0.448	2.019	1.000
Maximum	3.591	3.242	9.157	3.604	2.851	2.543	0.615	2.087	1.000
Minimum	-1.618	-0.075	8.108	3.005	0.000	1.768	0.327	1.627	0.000
Std. Dev.	1.537	0.907	0.383	0.212	0.711	0.319	0.074	0.162	0.505
Skewness	-0.701	-1.948	0.303	0.319	-2.042	0.162	0.696	-1.372	-0.567
Kurtosis	2.787	6.078	1.648	1.541	6.905	1.329	3.680	3.253	1.32
Probability	0.630	0.004	0.605	0.559	0.001	0.515	0.577	0.175	0.391

Chapter Six

FDI AND PRODUCTIVITY GROWTH: SOME EMPIRICAL RESULTS

6.1 Introduction

This chapter examines the empirical evidence of the productivity effects of foreign direct investment (FDI) within the main sectors of the Solomon Islands economy. In particular, its main focus is to examine the productivity effects of FDI on the primary, manufacturing and service sectors. The analysis further extends to estimate the Granger causality between the respective sectors for productivity and FDI inflows. The analysis here is to capture whether the selected sectors are benefitting from the impact of FDI inflows including the direction of these relationships. The various sectors of the Solomon Islands economy that have substantial foreign investment are seen in the primary that includes agriculture, forestry, fishing and mining, and the manufacturing and services sectors. As FDI is regarded to enhance productivity growth the analytical framework in this chapter addresses the role of FDI in promoting productivity growth in the Solomon Islands.

A number of studies evaluating the FDI and economic growth relationship suggest positive spillover effects of FDI on various sectors of the host economy (Alfaro, 2003; Findlay, 1978; Tondl and Fornero, 2008; Wang and Blomström, 1992). They note that FDI plays a major role in promoting growth in various sectors (particularly, the primary, manufacturing and services) and this is achieved through technology transfer, introduction of new production and advanced management practices. However, although the linkages created by FDI show some significant advantages, such gains vary across sectors.[49] Whilst Alfaro (2003), Finlay (1978), and Wang and Bloomstrom (1992) note a strong linkage between FDI and the manufacturing sector, strong linkages from the primary and service sectors were observed in a study by Tondl and Fornero (2008). Tondl and Fornero note that the strongest direct effect of FDI inflows were obtained from the primary and financial services sectors, whereas the link to the manufacturing sector tend to be much weaker. However, in terms of productivity and the spillover effect of FDI, Tondl and Fornero (2008) found that manufacturing appears to have the largest effect on other sectors of the economy. FDI inflows within the transport and telecommunication sectors also have spillover impacts on almost all other sectors.

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[49] The United Nation Conference on Trade and Development (UNCTAD) *World Investment Report* (2001, p. 138), notes that "in the primary sector, the scope for linkages between foreign affiliates and local suppliers is often limited...The manufacturing sector has a broad variation of linkage intensive activities. In the tertiary sector the scope for dividing production into discrete stages and subcontracting out large parts to independent domestic firms is also limited."

In the case of the Solomon Islands, the results find strong support for a positive FDI effect on the primary and services sectors, thus re-inforcing the findings of Tondl and Fonero (2008). Furthermore, FDI spillovers in the service sector indicate a positive effect on productivity in the primary sector while institutional quality and the level of education have the strongest positive effect on productivity in the service sector. However, the results find no support of FDI effect on the manufacturing sector thus reflecting the low intensity of FDI inflows and weak absorptive capacity within this sector. [50] Similarly, the insignificant results were observed from each sector's export on the respective sectors productivity. This is due mainly to low absorptive capacities such as inadequate infrastructure; weak export linkages; and a low value-added type of foreign investment (mostly natural resource based), which negate the potential benefits of exports.

The remainder of this chapter is structured as follows. The next section provides a brief survey of FDI and productivity growth literature, with a focus on the primary, manufacturing and service sectors. Section 6.3 discusses briefly the sectoral flows of FDI and section 6.4 presents the specifications for the FDI-productivity nexus and causality models. Section 6.5 discusses the data and methodology used to estimate the productivity effect of FDI inflows on the selected sectors. Empirical analysis for time series data for the period from 1985 to 2010 are analysed using the stepwise procedure and the Granger causality method. Section 6.6 presents the results and the conclusions are provided in section 6.7.

6.2 FDI and Productivity Growth: A Brief Literature Review

A number of studies that investigate the relationship between FDI and economic growth also examined the productivity and spillover effect of FDI on the host economy through its impact on various sectors of the economy (Alfaro, 2003; Findlay, 1978; Wang and Blomström, 1992). These studies amongst others note that FDI inflows play a major role in promoting growth within the main sectors, most notably the primary, manufacturing and service sectors. However, the resultant transfer of technology and management expertise, newly introduced processes, and employee training associated with FDI inflows benefit the manufacturing sector more than the primary sector.

A study by Alfaro (2003) finds that FDI inflows of the manufacturing sector have a positive impact on economic growth. However, FDI inflows of the primary sector show a

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[50] Nguyen, Duysters, Patterson and Sander (2009, p. 4), note that FDI "benefits need to go through a convertibility process before becoming host country's spillover. This process requires sufficient absorptive capacity at the host country level".

negative effect on growth, whilst the effects of FDI inflows of the services sector were uncertain. Tondl and Fornero (2008) in a study for Latin American countries also find a positive FDI productivity effect in the manufacturing sector but this effect is lower than the primary and services sectors. They note that agriculture, mining and petroleum production and financial services receive the highest direct effects in the primary and services sectors, respectively. Head and Ries (2001) in a study on 932 Japanese manufacturing firms find complementary effects of FDI on exports but the results vary across the firms.

Hirschman (1958) postulated that linkages created by FDI might vary across sectors with weaker linkages from the primary sector, particularly those in agriculture and mining industries. He notes that foreign investments might have less impact on increasing growth in the absence of those linkages. Similarly, Kokko (1994) also notes that linkages vary across industries; therefore less spillover effects were expected in the industries where foreign companies work in 'enclaves' thus offering less opportunities for the host economy to benefit from.[51] However, Aitken and Harrison (1999), in a study on Venezuelan manufacturing, find a negative relationship between the growth of domestic plants and the presence of foreign affiliates, thus suggesting that local firms are subject to negative spillovers from multinational companies in sectors that have high foreign ownership.

Javorcik (2004), in a study on Lithuana, finds a positive productivity spillover through FDI contacts between foreign affiliates and their local suppliers in the upstream sectors or through backward linkages.[52] She notes that through backward linkages the local industries benefit from direct contact with foreign firms, via knowledge transfer from foreign customers to local suppliers; imitating foreign firms' efficient delivery services; and raising foreign firms' demand for intermediate goods. In turn, these factors increase local suppliers' productivity. Jarvorcik also finds a productivity effect from investments with joint foreign and domestic ownership: but no evidence was shown from fully owned foreign affiliates. Furthermore, she finds no productivity spillover, either horizontally or through the forward linkage channel, due to local firms not being exposed to the inputs produced by foreign firms.

In contrast, Feenstra (1998) notes that the likely benefits and costs of FDI are not only experienced by the manufacturing sector but also within the services sector. He notes that with increasing internationalisation of services and greater exposure to global competition,

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[51] According to Kokko (1994, p. 291), "enclaves refers to isolated segments of the market where technologies, products, and plant sizes are very different from those used by local firms".
[52] Upstream sectors include "suppliers of intermediate inputs" (Javorcik, 2004, p. 606) while backward linkages involve "contacts between multinational firms and their local suppliers" (Javorcik, 2004, p. 608).

the difference between both manufacturing and services sectors becomes unclear, whilst several services industries appear to have similar characteristics as those of manufacturing industries. Similarly, in a study on India using the multivariate Vector Autoregressive (VAR) approach, Srivastava (2006) finds evidence of a strong and positive unidirectional Granger causality from FDI to services exports in the short-run, in the post-economic reforms period of 1991. He notes that this positive outcome has been due to the rapid advancement of information and communication technology (ICT) in India that allowed more export-orientated services. A study by Gholami, Lee, and Hashemite (2003), on 23 developing countries using the Granger causality test, also found that FDI Granger causes growth in ICT in these countries. Thus, the high level of FDI inflow has further increased the level of ICT investment and capacity.

Görg and Greenaway (2004) and Jarvorcik (2004) suggest that mixed results arise from the different estimation methodologies applied and the use of different measures of productivity (Alfaro, 2003; Javorcik, 2004), in addition to differences in countries and time period. Differences in the data collection, where some use firm-level data (Head and Ries, 2001) and others use domestic industrial, i.e. sectoral level data (Aitken and Harrison, 1999; Tondl and Fornero, 2008). These differences may also have led to variations in the results. These variations may have some implications on the role of FDI, however country specific analysis are vital to show country effects of FDI contributions.

6.3 FDI Flows by sectors to the Solomon Islands

In noting the results in various studies on the productivity effects of FDI within sectors, it is useful to analyse the intensity of FDI inflows by sectors, in the case of the Solomon Islands. Table 6.1 Part A presents the composition of FDI inflows in the primary, manufacturing and services sectors for the period 1985 to 2010. Sectorally, the share of sector FDI inflows in total FDI shows that primary FDI accounted for 76.4 percent of total FDI on average in 1985 and represented 58.8 percent and 87.4 percent share in 1990 and 1998 respectively. The high share of FDI inflows in the primary sector in 1985 was mainly due to FDI inflows in agriculture, fishing and mining sectors dominated mainly by agriculture and fishing FDIs. The high share of primary FDI in 1990 was dominated by FDI in forestry, and in 1998 by FDI in agriculture and fishing. In 2002, at the height of the civil unrest, primary FDI to total FDI share declined from 1998's share, representing 62.8 percent of the total FDI inflows. However, in the post-crisis period in 2005, primary FDI to total FDI rose dramatically and accounted for 94.2 percent but its share drop to 62.3 in 2010. The agriculture and mining sector accounted for 41.6 percent and 32.07 percent of

the total primary FDI inflows, respectively in 2010. In general, the high share of FDI inflows to the primary sector over the period from 1985 to 2010 reflects the opening up and expansion of this sector, particularly in agriculture, logging, mining and fishing which led to an increase in foreign investment (Tagini, 2000).

Table 6.1 FDI inflows and Economic Sectors in the Solomon Islands

A. Share of sector in total FDI inflows							Change (% points)				
Sector	1985	1990	1998	2002	2005	2010	1990	1998	2002	2005	2010
Primary	76.4	58.8	87.4	62.8	94.2	62.3	-17.6	28.6	-25	31.5	-32
Manufacturing	15.5	6.2	0.8	1.5	1.1	1.7	-9.3	-5.4	0.7	-0.5	0.7
Services	8.09	35.0	11.8	35.7	4.7	35.9	26.9	-23	23.9	-31	31.3
Total	100	100	100	100	100	100					
B. FDI inflows per employed person							Growth (in percentage)				
Sector	1985	1990	1998	2002	2005	2010	1990	1998	2002	2005	2010
Primary	2.9	5.0	31.1	5.0	54.7	141	70.6	522	-84	994	157.5
Manufacturing	2.6	1.8	0.5	1.1	5.6	6.1	-33.8	-71	121	394	9.1
Services	0.8	6.5	9.0	19.3	18.2	374	680.2	38.3	112	-5.5	1952

Note: Primary sector includes agriculture, forestry, fisheries and mining.

In the service sector, the share of service FDI in total FDI is high in 1990, 2002 and 2010 and represents more than 35 percent of total FDI in these years. The increase in the share of FDI inflows to the services sector was due to a surge in FDI inflows to transport, electrical/energy services and tourism (CBSI, 2010). In the manufacturing sector shares of manufacturing FDI inflows in total FDI were minimal and lower than the primary and services sectors. Manufacturing FDI share except in 1985 was high at 15.5 percent of total FDI whilst the later years show a lower share of 6.2 percent or less of total FDI on average. The low FDI share in the manufacturing sector may be due to limited diversification i.e. small market size and limited resource base and also the civil unrest may have deterred prospective investors' likely investment decisions in the post-1999 period (ADB, 2005). The distance and scale obstacles to manufacturing may also reflect the low FDI composition in this sector (ADB, 2005).

As the main focus of this Chapter is to explore the productivity effect of FDI within the three sectors, examining the intensity of FDI in the sectors is therefore important. Table 6.1 part B and Figure 6.1 show the intensity of FDI inflows by sectors, as measured by FDI inflows to that sector relative to per worker employed in the sector. In general, all sectors have experienced substantial increase since 1985. The primary sector obtained by far the highest FDI intensity in 1985, 1998 and 2005. A possible explanation for such a high FDI

intensity in the primary sector in 1985 may be due to investment inflows in various small and medium projects in agriculture, forestry and mining (CBSI, 1985). The high FDI intensity in 1998 may reflect the economic reforms relating to the privatisation of state-owned enterprises (SOEs) and liberalisation policies (CBSI, 1999), whilst in 2005, the intervention by the Regional Assistance Mission to the Solomon Islands (RAMSI) and the civil unrest post-rehabilitation which boosted investor confidence may have also contributed to the positive outcome (CBSI, 2005). A report by UNCTAD (2007) notes the high demand for special technologies in exploitation of natural resources explains the reason why expertise of international firms are important source for such productions. This could be the case in the Solomon Islands where FDI intensity is high in the primary resource sector.

Figure 6.1: FDI inflows per employed person in different sectors in Solomon Islands
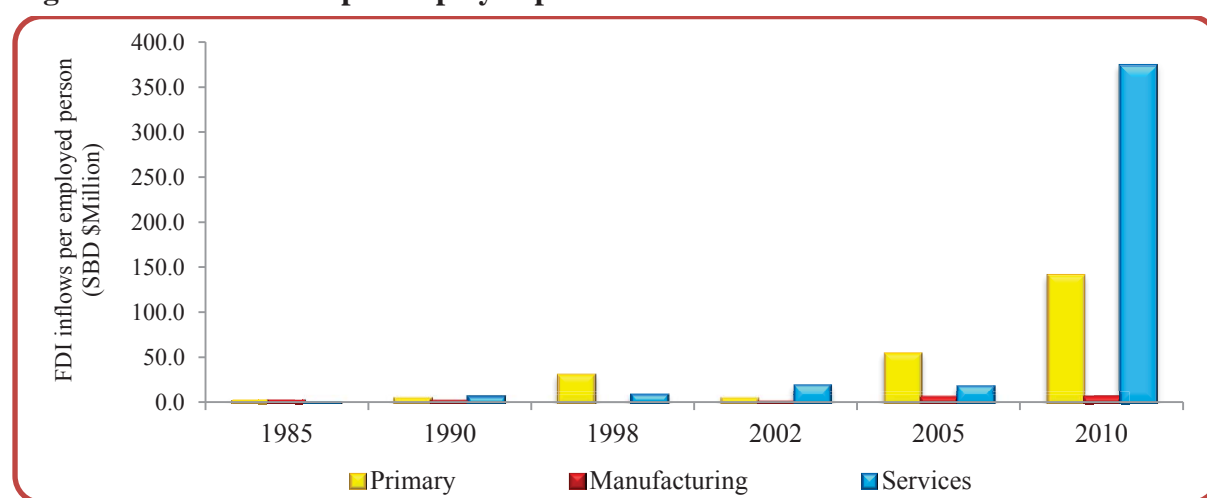
Source: Central Bank of Solomon Islands (various).

The FDI intensity in the services sector has become the second highest after primary sector, with high FDI intensity in 1990, 2002 and 2010. The likely reason for the high FDI intensity in the services sector during 1990 was due to the growth in tourism, privatisation of SOEs and private sector development. In 2010 the high FDI intensity may reflect the government's liberalisation policy within the telecommunication sector and the continued growth in tourism industry. This may also have been caused by an increase in demand for electricity and transport services, resulting from mechanisation and an increase in the productivity of services (CBSI, 2010).

The manufacturing sector has a much lower FDI intensity compared to the primary and the services sectors, during the 1985 to 2010 period. The low FDI intensity in the manufacturing sector is an ongoing concern and displays low foreign investment productions that are not aiming to serve the local markets. The lack of investment

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opportunities to promote backward and forward linkages also contributed to the low FDI intensity. The low FDI intensity in this sector may also be related to high cost and risk of remote and scale obstacles that discourage potential new foreign processors (ADB, 2005).

6.4 Empirical Models

This section presents the empirical models used to examine the FDI-productivity nexus in the Solomon Islands, for the period 1985 to 2010. The study employs four models to estimate this relationship. The first three models are used to estimate the productivity effects of FDI on the primary, manufacturing and services sectors, respectively. The final model (the causality model), is used to identify the direction of causation between gross value added in primary and FDI inflows in this sector; gross value added in manufacturing and FDI inflows in manufacturing; and gross value added in services and FDI inflows in services. The importance of examining these variables separately is to gain an understanding of which sectors benefit from FDI inflows, and whether there are variations within the sectors. The specifications of each model are described in detail in the subsequent sections.

6.4.1 FDI and productivity models

In the regression equations (6.1a) to (6.1c), the augmented Cobb-Douglas production function is applied, in order to estimate the productivity effects of FDI on the primary, manufacturing and services sectors in the Solomon Islands. The production function is augmented with FDI inflows, apart from the regular input variables, and it uses a log-linear production function to verify whether FDI inflows have a positive association with increased productivity. The models can be represented as follows:

$$LYpri_t = \alpha_0 + \beta_1 LYpri_{t-1} + \beta_2 LFDIpri_t + \beta_3 LFDI_t * condition + \beta_4 LINST_t + \beta_5 LEDU_t + \beta_6 LPRIEX_t + \mu_t \qquad (6.1a)$$

$$LYmanu_t = \alpha_0 + \beta_1 LYmanu_{t-1} + \beta_2 LFDImanu_t + \beta_3 LFDI_t * condition + \beta_4 LINST_t + \beta_5 LEDU_t + \beta_6 LMANUEX_t + \mu_t \qquad (6.1b)$$

$$LYser_t = \alpha_0 + \beta_1 LYser_{t-1} + \beta_2 LFDIser_t + \beta_3 LFDI_t * condition + \beta_4 LINST_t + \beta_5 LEDU_t + \beta_6 LSEREX_t + \mu_t \qquad (6.1c)$$

Where $LYpri_t$ is the log of output in the primary sector at the time period;
$LFDIpri_t$ is the log of FDI inflows in the primary sector;
$LFDI * condition$ is an interactive term, the log of FDI inflows measured by FDI inflows and GDP per capita (FDI * GDP per capita);
$LINST$ is the log of institutional quality in the Solomon Islands;
$LEDU$ is the log of education (% of primary and secondary enrolment);
$LPRIEX$ is the log of primary exports to total exports;
$LYmanu$ is the log of productivity in the manufacturing sector;
$LFDImanu$ is the log of FDI inflows in the manufacturing sector;
$LMANUEX$ is the log of manufacturing exports to total exports;

LYser is the log of productivity in the service sector;
LFDIser is the log of FDI inflows in the service sector;
LSEREX is the log of services exports to total exports.

In equation (6.1a), the log of productivity of primary sector (LYpri) is measured by gross value added in primary sector and is explained by its one-period time lag $Ypri_{t-1}$; the intensity of log FDI in primary sector (LFDIpri); primary FDI measured by the log inflow of FDI per employed (LFDI*condition); Solomon Islands' institutional quality variables (LINST); log of educational variables (LEDU); and a set of different export variables of the primary export (LPRIEX) sector. Similarly, in equations (6.1b) and (6.1c), the log of productivity of manufacturing and services sectors are used respectively, and regressed with the one-year time lag and the intensity of FDI in the sectors, including regressing on the same variables, as highlighted in equation (6.1a).

This study uses primary and secondary enrolment ratios to measure the level of education attainment or to measure knowledge and skills as used in previous studies (see Benhabib and Spiegel, 1994; Kruger and Lindahl, 2001; Tondl and Fornero, 2008).[53] This is based on the idea that an educated local labour force has the potential to create and adopt new technologies, thereby promoting growth (Romer, 1991). LINST variable is a measure of institutional quality or quality of bureaucracy, law and order as generally considered in the literature is also included in the model (see Asiedu, 2006; Busse and Hefeker, 2005; Hall and Jones, 1999; Tondl and Fornero, 2008). The inclusion of the LINST variable is to evaluate the strength and impartiality of institutions or the legal system of the Solomon Islands. In line with the literature, it is expected that better institutions, better bureaucracy and less corruption may lead to higher sectoral productivity (Tondl and Fornero, 2008).

The models also incorporate the total exports in primary exports (LPRIEX), manufacturing exports (LMANUEX) and services exports (LSEREX), in order to examine the externalities and possible spillover effects of production within each sector. These include exports from both domestic and foreign firms. Following studies by Idowu (2008), Kemme, Lugovskyy and Mukherjee (2009), Kugler (2006), Srivastava (2006), and Tondl and Fornero (2008), it is expected that growth in primary exports (LPRIEX), manufacturing exports (LMANUEX), and services exports (LSEREX) variables will have a positive influence and spillover effects on the productivity of respective sectors.

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[53] Benhabib and Spiegel (1994, p. 144) note that "human capital has been proxied in the literature by enrolment ratios or literacy rates...At best, however, enrolment ratios represent investment levels in human capital...Literacy is a stock variable, but there are important empirical problems associated with the use of literacy as a proxy for human capital."

A dummy variable (DV) for political instability and civil unrest will be also used to measure the impact of political instability and civil unrest on FDI productivity. Following the studies by Asiedu (2006) and Busse and Hefeker (2007), the inclusion of DV is intended to capture the effects of civil unrest and political instability in the period from 1999 to 2003 and 2006. Busse and Hefeker (2007) in examining the linkages among political risk, institutions and foreign direct investment flows notes that government stability, absence of internal conflict and ethnic tensions, basic democratic rights and ensuring law and order are a major influence on foreign investment flows. Controlling these variables is important, in order to avoid the problems of endogenity (Kemme et al., 2009; Tondl and Fornero, 2008). The theoretical predictions of the variables in equations (6.1a), (6.1b) and (6.1c) are that α's and β's >0, except for DV.

6.4.2 Causality model

The estimated model for the productivity effect of FDI on the primary, manufacturing and services sectors, based on a simple bivariate autoregressive framework, can be specified in the linear form for the primary sector, for instance, as follows:

$$LYpri_t = \sum_{i=1}^{n} \alpha LYpri_{t-i} + \sum_{j=1}^{n} \beta_j LFDIpri_{t-j} + \mu_t \qquad (6.2)$$

where $LYpri_t$ refers to the log of productivity in the primary sector; $LFDIpri_t$ is inflows to the primary sector; α, β are the parameters to estimate; and μ_t is the error term. The same model is applied to estimate the direction of causality between the productivity of the manufacturing sector and FDI inflows in this sector and between the productivity of the services sector and FDI inflows in this sector. In equation (6.2), testing for Granger causality between $LYpri_t$ and $LFDIpri_{t-j}$ involves testing whether the lagged information on the variable LFDIpri provides any statistically significant information on the variable LYpri in the presence of lagged LYpri. If not, then LFDIpri does not Granger cause LYpri. A priori, it is expected that $\beta j > 0$ or <0, depending on the positive or negative effects that exist between the FDI inflows and productivity output of the sectors.

6.5 Data and Methodology

This section presents the data and methodology used to show the productivity effects of FDI on the primary, manufacturing and services sectors, and the causality between each respective sector's productivity and FDI inflows. The study employs annual data for the period from 1985 to 2010. The methodology used includes the stepwise approach and the pair-wise Granger causality. The stationary test for time series data is also employed. Detailed discussion of the data and method is provided in the subsequent subsections.

6.5.1 Data

The productivity model analyses the productivity effects of FDI inflows on the primary, manufacturing and services sectors and it incorporates other factors for the augmented productivity output framework. The constructing of accurate and comparable measures of FDI inflows by sector for the Solomon Islands, has resulted in data being collected from various sources, which include annual data series on gross value added in primary (LYpri), manufacturing (LYmanu) and services (LYser); and the ratio of school enrolments in primary and secondary are extracted from the World Bank, World Development Indicators (2011). [54] Data on foreign direct investment inflows and exports in the primary, manufacturing and services sectors; and gross domestic product per capita are sourced from the Central Bank of Solomon Islands. To capture institutional quality and stability, data for economic freedom index are from the Heritage Foundation offering the freedom of investment and levels of bureaucratic quality of the economy are used (see Appendix Table A6.1).

To capture the sectoral effects of both domestic and foreign exports on total output and productivity, data for log, fish, copra, cocoa and palm oil exports are from CBSI (various) were constructed for primary exports. Data for transportation and tourism receipts were computed for export services, and data on canned fish and beverages and tobacco exports are the manufacturing exports. Total export of each sector is calculated as a ratio to total exports. All variables are transformed into logarithmic value.[55]

The growth rate of output or productivity measured by gross value added in the primary, manufacturing and services sectors are in constant prices (Solomon Islands dollar). The assumption is predicated on the belief that higher FDI inflows may result in a positive effect and spillover into sectoral productivity. In order to capture the sectoral productivity base, which is the dependent variable, this study computes the productivity efficiency unit, by dividing the gross value added in each sector (i.e. primary, manufacturing and services) by the sectoral labour, following the study by Tondl and Fornero (2008).[56]

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[54] The gross value added in agriculture is used as a proxy for gross value added in the primary sector.

[55] See Appendix Table A6.1 for data sources and Appendix Tables A6.2- A6.4 for descriptive statistics.

[56] The sectoral productivity base following Tondl and Fornero (2008) is calculated as; $LY_{it} = \Sigma Y_{it} /\Sigma Labour$, where $LY_{it\ is}$ log in total output/ productivity for the respective sectors (that includes both the domestic firms and foreign firms) at time t. Labour is the number of each worker in each sector. Several previous studies have used either the share of employment, or output, as a proxy to measure the productivity effects of FDI (see Alfaro, 2003; Prüfer and Tondl, 2008; Tondl and Fornero, 2008).

6.5.2 Econometric Methodology

To estimate the productivity effects of FDI by key sectors (primary, manufacturing and services) and the possible spillover effects of FDI inflows the stepwise procedure has been utilised. The direction of the relationship between sector productivity and FDI inflows is examined using the Granger causality method. A test for unit root is also included. Detailed discussion of the method and process is provided next.

Stepwise Procedure

This study follows the stepwise approach noted by Faraway (2002) for models (6.1a) to (6.1c) to estimate the equations on the productivity effects of FDI inflows. One of the advantages of the stepwise procedure is that it is "the simplest of all variable selection procedures and can be easily implemented" (Faraway, 2002, p.126). The process involves either backward elimination or forward selection, or a combination of both. Backward elimination involves starting with all explanatory variables and testing them one by one for statistical significance and deleting the insignificant ones. Forward selection, in contrast, begins with no variables in the model and tests the variables one by one and only includes them if they are statistically significant (Faraway, 2002). Various studies which have used this approach include Akinlo and World Institute for Development Economics Research (2005), and Tondl and Fornero (2008), where they add the explanatory variables to the model one by one and retained only those variables that were statistically significant.

The approach used in this study undertakes a combination of both backward elimination and forward selection. The advantage of using both backward elimination and forward selection is that the variables can be added or removed early in the process and it easily allows for changes later (Faraway, 2002). In other words, there is the flexibility of dropping or adding a variable, but has some major drawbacks. Faraway (2002) notes that adding or dropping variables one at a time may have the possibility of missing the optimal, including ambiguous results on the validity of p-values, due to multiple testing.

The possibility of biased and inconsistent results arising from endogenity and multicollinearity problems may also occur (Tondl and Fornero, 2008). To avoid these problems, this study follows the approach undertaken by Tondl and Fornero (2008) and Busse and Hefeker (2005), where the models include the lagged dependent variables in levels on the right side hand of each equation, as instruments to dramatically increase the

efficiency of the estimation.[57] Furthermore, the sector specific effects were controlled for and an interaction term and a dummy variable were included in order to avoid bias and inconsistent results.

Although the approach is similar to Busse and Hefeker (2005) and Tondl and Fornero (2008) it differs in terms of country specific study here. Whilst Tondl and Fornero use panel data to examine the productivity effects of FDI on various sectors for the Latin American countries, Busse and Hefeker examine that for cross sectional study for 83 developing countries and this study uses time series data for the Solomon Islands.

Granger Causality

The next step is to estimate the direction of the relationship between each sector's productivity and FDI inflows, using the pairwise Granger causality method. This similar approach used in Chapters 4 and 5 will be applied to model (6.2), but this approach differs in two aspects. Firstly, whilst the Granger causality test in Chapters 4 and 5 examines a three variable model (trivariate), this chapter will examine two variable (bivariate) approach. The bivariate causality equation takes the following form:

$$\Delta \text{LYpri}_t = \sum_{i=1}^{n} \alpha \, \Delta \text{LYpri}_{t-i} + \sum_{j=1}^{n} \beta j \, \Delta \text{LFDIpri}_{t-j} + \mu_{1t} \tag{6.3a}$$

$$\Delta \text{LFDIpri}_t = \sum_{i=1}^{n} \lambda_l \Delta \text{LFDIpri}_{t-i} + \sum_{j=1}^{n} \delta_j \Delta \text{LYpri}_{t-j} + \mu_{2t} \tag{6.3b}$$

The disturbances or the error terms U_{1t} and U_{2t} are assumed to be uncorrelated. Equation (6.3a) shows that current productivity in the primary sector (LYpri) is related to both its own past values and that of foreign direct investment in that sector (LFDIpri) and equation (6.3b) also shows similar behaviour of FDI and current productivity of that sector. The hypotheses formulated from equation (6.3a) state that *LFDIpri does not Granger cause LYpri if H0: $\beta_{1i} = 0$ against H1: $\beta_{1i} \neq 0$*. If the hypothesis is rejected, it can be said that FDI Granger-causes GDP. The reverse hypothesis of Granger causality from GDP to FDI, is given as: *LYpri does not Granger cause LFDIpri if H0: $\delta_{j1} = 0$ against H1: $\delta_{j1} \neq 0$*.

Theoretically, the priori expectation is that the line of causality, equation (6.3a) for instance, could be justified, based on the fact that higher FDI inflows in the primary sector will have a positive effect on the sector's productivity. Inversely, in equation (6.3b), a priori expectation is that higher primary productivity will induce FDI inflows. A similar

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[57] To reduce the problem of autocorrelation, Busse and Hefeker used the lagged dependent variable on the right hand side of the regression equations. They note that this procedure is "theoretically plausible as foreign investment in the previous period is highly relevant for FDI in the current period" (Busse and Hefeker 2005, p.19). Such method provides valid results as shown by Busse and Hefeker (2005) and Tondl and Fernero (2008) where the lagged FDI variable is always highly significant in their regressions.

approach will test for the causality between productivity in manufacturing (LYmanu) and FDI inflows in manufacturing sector (LFDImanu) and between productivity in services (LYser) and FDI inflows in services sector (LFDIser).

Prior to applying the stepwise and Granger causality methods, it is important to check for the stationary of each variable used in the models. In the regression analysis and the Granger causality, the variables are only consistent and unbiased if they are stationary, or they do not have the problem of unit root (Gujarati and Porter, 2009). The use of non-stationary variables in the time series analysis may lead to misleading conclusions. The Augmented Dickey Fuller (ADF) test is employed to test for stationary.

6.6 Empirical Results

This section presents the results of the econometric estimation of the FDI-productivity nexus equation, as outlined in equations 6.1a to 6.1c and 6.2. To investigate the productivity effects of FDI on the primary, manufacturing and services sectors, four of these specifications, including the constant values of the independent variables and the lagged values (t-1) of the dependent variable, were estimated. The results for the FDI-productivity nexus model and the causality between each of the sectors are presented in the subsequent sections.

6.6.1 Unit root test

The ADF test of unit root for the productivity effects of FDI is presented in Table 6.2. The results of the ADF tests, for constant and no time trend and constant and time trend are reported for both the levels and differences of the variables. The results of the ADF tests indicate that LYmanu, LFDImanu and LINST are stationary in their level forms, for both constant and no trend and constant and time trend. The ADF test detects unit roots in the variables LFDIpri, LFDIser, LFDI*Condition and LEDU in their level forms, for constant and no trend: but they are found to be stationary for constant and time trend. The variable LSEREX is stationary in levels for constant and no trend: but not stationary for constant and time trend. All variables are found to be stationary in their differenced form for both constant and no trend and constant and trend.

Table 6.2 ADF Test Results

Variables	Levels		Difference	
	Constant and no trend	Constant and trend	Constant and no trend	Constant and trend
	ADF	ADF	ADF	ADF
LYpri	-1.78	-2.14	-4.27***	-4.46***
LYmanu	-3.24**	-3.78**	-4.59***	-5.06***
LYser	-2.26	-2.34	-4.89***	-5.04**
LFDIpri	-0.49	-6.39***	-4.30***	-4.14**
LFDImanu	-3.07**	-4.77***	-3.88**	-4.12**
LFDIser	1.73	-6.28***	-5.12***	-5.16***
LPRIEX	-1.36	-2.48	-3.69**	-3.61**
LMANUEX	-1.79	-2.09	-4.23***	-4.15**
LSEREX	-3.42**	-2.36	-3.19**	-3.44*
LFDI*Condition	-0.03	-5.24***	-4.44***	-4.25**
LDEBT	-2.66*	0.13	-2.92**	-3.31*
LEDU	-0.88	-4.45**	-4.59***	-5.06***
LINST	-3.71**	-4.17**	-3.52**	-4.07**

Note: ***,** and * denote significance at the 1, 5 and 10 percent, respectively. The critical values for the ADF test for constant and no trend are -3.81, -3.71 and -2.64 at the 1, 5 and 10 percent significance levels, respectively. The critical values for constant and time trend are -4.42, -4.18 and -3.24 at the 1, 5 and 10 percent significance levels, respectively. *Legends*: LYpri is log of primary productivity; LYmanu is log of manufacturing productivity; LYser is log of services productivity; LFDIpri is log of foreign direct Investment in primary; LFDImanu is log of foreign direct investment in manufacturing; LFDIser is log of foreign direct investment in services; LPRIEX is log of primary exports; LMANUEX is log of manufacturing export; LSEREX is log of services exports; LFDI*Condition is an interactive term; LEDU is log of school enrolments; and LINST is log institutional qualities.

6.6.2 FDI-Productivity nexus

This subsection presents the results for the productivity effect of FDI on the primary, manufacturing and services sectors. Detailed discussion of the analysis is provided next.

Primary sector

The results in Table 6.3 indicate that primary production (in all regression) depends very much on the performance of the primary sector in the previous year. This means that it takes a one year lag for growth in economic activities within the agriculture, forestry, fishing and mining sectors to boost productivity in the primary sector. This shows that high levels primary productivity in the past increases productivity growth in this sector. In column (1), it is observed that FDI inflows to the primary sector (FDIpri) has a significant effect on the primary productivity, reflecting the high intensity of FDI inflows in the primary sector. This result is consistent with the findings of Tondl and Fornero (2008) where FDI in the primary sector, particularly in agriculture and mining industries had a strong effect on this sector's productivity growth. Similarly, Solomon Islands experienced high inflows of FDI in agriculture, forestry, and fishing and more recently in the mining industry resulting in a positive effect on the primary productivity.

In column (2), the coefficient for FDI inflows in the primary sector (FDIpri) remains positive and significant while the institutional quality (LINST) variable is insignificant when added to the regression. The insignificant effect of LINST on primary productivity

contradicts the findings by Busse and Hefeker (2007), Hall and Jones (1999), Tondl and Fornero (2008) where the institutional quality variable is significant, thus generating higher income or increased sectoral productivity. The insignificant outcome could be a result of weak institutions, excessive bureaucracy and poor governance which tend to act as a barrier to influence FDI inflows and productivity in the primary sector.[58] Likewise, adding education (LEDU) variable and dropping institutional quality variable in column (3) also shows similar impact. The insignificant education coefficient contradicts the findings by Kruger and Lindahl (2001) and Tondl and Fornero (2008) however, it is consistent with the findings of Benhabid and Spiegel (1994) where schooling, proxy for human capital is negative and insignificant. This insignificant education coefficient suggests a low level of education, where the workforce requires higher level of skills and knowledge (technical and entrepreneurial) to transform inputs into value added commodities.

Table 6.3 Estimation Results from Primary Sector

Dependent variable: LYpri							
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
LYpri$_{t-1}$	0.888*** [0.0000]	0.840*** [0.0000]	0.869*** [0.0000]	0.829*** [0.0000]	0.867*** [0.0000]	0.658*** [0.0001]	0.861*** [0.0000]
LFDIpri	0.04** [0.02]	0.03** [0.03]	0.04** [0.02]	0.039** [0.04]	0.03* [0.09]	0.032** [0.04]	
LINST		-0.63 [0.309]		-1.067 [0.12]		-0.49 [0.42]	
LEDU			-0.94 [0.15]	-1.27 [0.102]			
LFDI* Condition				-0.006 [0.800]			
LPRIEX				0.036 [0.79]		-0.11 [0.11]	-0.05 [0.663]
LFDIman					0.02 [0.49]		0.02 [0.47]
LFDIser					0.003 [0.89]		0.03** [0.05)
DV						-0.02 [0.82]	
R-squared	0.88	0.89	0.95	0.91	0.88	0.90	0.89
Adj. R-squared	0.87	0.87	0.94	0.87	0.86	0.88	0.87
F-stats	81.5***	54.8***	57.9***	29.9***	38.2***	34.8***	41.3***
Observations	25	25	25	25	25	25	25
Durbin-Watson	2.35	2.41	2.13	2.18	2.33	2.31	2.11

Note: Robust p-values in brackets *** p<0.01, **p<0.05, *p<0.10.

Inclusion of all the variables in the base model (6.1a), column (4) shows some interesting results. Adding the interaction variable (LFDI*condition) and primary sector export

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[58] The economic freedom index for the Solomon Islands has a score of 45.9 which is in the lower band average between 0-100. The low score reflects mainly the poor regulatory framework, limited protection of property rights and large bureaucratic bottlenecks (Heritage Foundation, 2011).

(LPRIEX) variable still does not change the effect of FDI inflows on primary production. The primary FDI coefficient remains positive and significant contributing to productivity in the primary sector. However, the estimated coefficients for the interaction term and primary exports have insignificant impacts on primary productivity. This is consistent with the viewpoint that primary based commodity exports are of low value added, which may not generate high productivity growth in the primary sector.

In column (5), dropping the variables for institutional quality (LINST), education (LEDU), interactive term (LFDI*condition), primary export (LPRIEX) and adding FDI inflow variables of the manufacturing (LFDImanu) and service (LFDIser) sectors do not change the result for FDI inflows in the primary sector, which remains positive and significant. However, though the coefficient for FDI inflows in the manufacturing (LFDImanu) and services (LFDIser) sectors are positive their effect on primary productivity is insignificant, thus indicating weak linkages between these sectors. In column (6), regression with the dummy variable for civil strife and political instability (DV) has the predicted negative sign but is insignificant. This means that internal civil unrest and political instability could potentially reduce productivity, however, the intervention by the Regional Assistance Mission to the Solomon Islands (RAMSI) which restored law and order and the quick economic recovery have outweighed the adverse impact.

Regression results in column (7) indicate that a productivity spillover effects from FDI inflows in the services sector have benefited production in the primary sector. This means that the presence of foreign direct investment in transportation enhances productivity of such services that potentially benefit the primary sector. This result is consistent with the findings by Tondl and Fornero (2008) where spillover effects of FDI in the services sectors had a positive effect on primary productivity, particularly in the agricultural sector. This shows that the productivity growth of the primary sector depends very much on the growth of the service sector, particularly the availability of infrastructure and facilities in the Solomon Islands.

Manufacturing sector

The estimated results presented in Table 6.4 show that productivity in the manufacturing sector depends on its past one-year performance. In column (1), FDI coefficient in the manufacturing sector although has a positive sign but it is insignificant. This outcome contradicts the findings by Alfaro (2003), Findlay (1978), Tondl and Fornero (2008), and Wang and Blomstrom (1992) where FDI inflows had a strong effect on the manufacturing sector in various developing countries. The lack of evidence on the linkage between FDI

inflows in manufacturing and productivity in the case of the Solomon Islands reflects the minimal FDI inflows to this sector, given also a small size of the manufacturing sector and thus it does not influence the manufacturing productivity.

Adding the institutional quality (LINST) and educational (LEDU) variables shown in columns (2) and (3), respectively, do not alter the results and both these variables are insignificant. This is expected, given the current level of institutional and labour quality, since the intensity of assimilating knowledge to improve productivity relies on the education of human capital and institutional development (Nguyen et al., 2009). In column (4), inclusion of all the variables to the base model (6.1b) shows no evidence of a significant relationship between the variables and manufacturing productivity. Although FDI inflows to the manufacturing sector, institution quality, education and controlled FDI inflow interaction variables have positive signs their effect in promoting productivity growth in this sector is insignificant.[59]

Table 6.4 Estimation Results from Manufacturing Sector

Dependent variable: LYmanu							
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$LYmanu_{t-1}$	0.562*** [0.009]	0.570*** [0.008]	0.583*** [0.007]	0.584** [0.01]	0.593*** [0.006]	0.021*** [0.002]	0.601*** [0.007]
LFDImanu	0.039 [0.75]			0.09 [0.36]			
LINST		-0.290 [0.889]		0.042 [0.96]			
LEDU			-0.403 [0.861]	1.02 [0.739]			
LFDI*Condition				0.032 [0.64]			
LMANUEX				-0.11 [0.44]			-0.08 [0.494]
LFDIpri					0.048 [0.476]		0.049 [0.562]
LFDIser					-0.01 [0.766]		-0.023 [0.727]
DV						-0.007 [0.97]	
R-squared	0.29	0.28	0.29	0.34	0.31	0.43	0.32
Adj. R-squared	0.22	0.22	0.22	0.11	0.21	0.38	0.18
F-stats	4.49**	4.44**	4.45**	1.50	3.08**	8.53***	2.37*
Observations	25	25	25	25	25	25	25
Durbin-Watson	2.03	2.21	2.07	2.05	2.08	2.2	2.15

Note: Robust p-values in bracket ***p<0.01, **p<0.05, *p<0.1.

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[59] According to Barclay and Cartwright (2007), they note that "the small populations and economies of Pacific island countries, implies that there has been a limited pool of trained and experienced managers, for the public and private sectors". The lack of pool quality labour affects productivity of these sectors.

In column (5), adding FDI inflows of the primary (LFDIpri) and services (LFDIser) sectors and dropping FDI inflows in manufacturing (LFDImanu), institutional quality (LINST), education (LEDU), interaction term (LFDI* Condition) and manufacturing exports (LMANUEX) variables are also insignificant. The results suggest no evidence of productivity spillover effect from FDI inflows of primary and services sectors on manufacturing productivity. This outcome is consistent with (Sasidharan, 2006) findings where domestic firms do not benefit from the presence of foreign firms in the Indian manufacturing industries. She notes that this outcome may be due to lack of local sourcing by the foreign firms as well as not finding local suppliers who meet their quality requirements.

In column (6), the dummy variable (DV) for civil unrest and political instability is negative but insignificant, thus it does not affect productivity in the manufacturing sector.[60] In column 7, regressing export in the manufacturing sector (LMANUEX), FDI inflows of the primary (LFDIpri) and services (LFDIser) together with other variables are also insignificant. One possible explanation for the lack of robustness for manufacturing productivity and these variables is that there is limited investment in the manufacturing industry as such the spillover effects may diminish over time. The absence of absorptive capacity could have also contributed to the insignificant outcome. Kugler (2006) notes that employing of new techniques will not have any impact on production opportunities for manufacturers if there is a lack of resources to convert technology enhancements into value added output.

Services sector

The estimated results for the services sector presented in Table 6.5 indicate strong evidences of productivity in this sector which depends on its previous year's performance. This supports the view that productivity in the current period flows from the previous period to increase its output productivity. Similar to the results of the primary sector FDI inflows (Table 6.2) the services FDI results are significant in all regressions. This means that FDI inflows in the services sector have influenced productivity growth in this sector, thus reflecting the high FDI inflows intensity, particularly in the transportation and tourism industry. This outcome also supports the findings of Tondl and Fornero (2008), where

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[60] According to Barclay's interview with tuna-industry interviewees, they said that "law and order problems have not been a major problem in Solomon...The National Fisheries Development (NFD) managers informed that the tensions did not disrupt the operations" (Barclay and Cartwright, 2007, p. 221). This was mainly due to the major fish cannery being located outside of Guadalcanal and Honiara where the tension did not directly affected the companies and thus had no impact on productivity.

strong linkages were obtained between FDI inflows and services productivity, particularly in the financial services in the Latin American countries. In column (2), adding the institutional variable (LINST) also indicates a significant effect on services productivity. This means that the influence of FDI inflows in the service sector is enhanced through a better developed system of law and order, good governance, quality institutions amongst others that increase productivity in the service sector.

In column (3), the education (LEDU) variable in the regression is positive and significant at a one percent level. The positive and significant coefficient provides strong evidence that technical services such as technology and information, transportation, communications and tourism services, which require skilled labour force to improve productivity is seen in the Solomon Islands. This renders support to the view that the higher the level of education and/or the higher the quality of a labour force, the greater the productivity. This is also consistent with Blomström and Kokko's (2003) findings, where a labour force proxied by human capital and education are important for absorbing and adapting foreign technology, and also in enhancing sustained long-run growth.

Table 6.5 Estimation Results from Service Sector

Dependent variable: LYser							
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$LYser_{t-1}$	0.803*** [0.009]	0.595** [0.04]	0.494*** [0.002]	0.682** [0.02]	0.543* [0.08]	0.605** [0.03]	0.559** [0.04]
LFDIser	0.051** [0.04]	0.053** [0.02]		0.06** [0.01]	0.06* [0.08]	0.05** [0.02]	0.04** [0.03]
LINST		1.75** [0.03]	1.47** [0.01]	1.40* [0.08]	1.82** [0.03]	1.61** [0.05]	1.64** [0.03]
LEDU			0.509** [0.04]	-0.15 [0.859]			
LFDI* Condition				-0.019 [0.13]			
LSEREX				0.11 [0.12]			0.109 [0.129]
LFDImanu					-0.005 [0.863]		
LFDIpri					-0.02 [0.528]		
DV						-0.06 [0.383]	
R-squared	0.37	0.51	0.75	0.62	0.52	0.53	0.56
Adj. R-squared	0.31	0.43	0.71	0.49	0.38	0.43	0.47
F-stats	6.25***	6.81***	20.6***	4.62***	3.87**	5.25***	6.12***
Observations	25	25	25	25	25	25	25
Durbin-Watson	1.62	1.76	1.81	1.81	1.76	1.75	1.83

Note: Robust p-values in brackets *** $p<0.01$, ** $p<0.05$, *$p<0.1$.

Regressing all variables of the base model (6.1c) shown in column (4) do not change the results for FDI inflows to the service sector (LFDIser) and institutional quality (LINST),

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which remained positive and significant. This suggests that enhancing productivity in the service sector of the Solomon Islands depends on foreign investment particularly in the tourism industry, better law and order, well developed government and institution systems including adequate infrastructure facilities such as transportation and communication services. The coefficient for education (LEDU), interaction term (LFDI*condition) and services exports (LSEREX) coefficients are insignificant. The insignificant impact of services export on the services sector productivity may be due to inadequate infrastructure and services facilities, in addition to public services delivery, which acts as a barrier to the enhancement of productivity for export services.

In column (5), regressing FDI inflows in the manufacturing (LFDImanu) and primary (LFDIpri) sectors show that both are insignificant in influencing productivity in the services industry. This means that FDI inflows in the manufacturing and primary sectors do not have spillover effects on productivity in the services sector. In column (6), adding DV together with FDI inflows in the service sector (LFDIser) and institutional quality (LINST) does not change the results for these two variables. The coefficients for FDI to the service sector and LINST still remain positive and significant but the dummy variable for civil unrest and political instability (DV) is negative and insignificant, reflecting its likely adverse impact on productivity of the services sector. This insignificant negative impact could reflect the presence of RAMSI which mitigates some repercussions. In column (7), LFDIser and LINST remain significant and they retain the same sign in all regressions — even when running them together with export services (LSEREX). This provides strong evidence that higher level of FDI inflows, better institutions, and adequate infrastructure particularly transportation and communication are crucial for sector productivity, whilst export services, particularly leakages in the tourism sector, reduce services productivity.

6.6.3 Causality results

The results of the Granger-causality tests for all the sectors are shown in Table 6.6. In the primary sector, the causality test fails to reject the null hypothesis that FDI inflows to the primary sector (FDIpri) do not Granger cause primary productivity (LYpri). This means there is not enough evidence of FDI flows in the primary sector Granger causes primary productivity. The null hypothesis that primary productivity (LYpri) does not Granger cause FDI inflows to the primary sector (LFDIpri) is rejected where the estimated F-statistic value of 4.212, is significant at the five percent level. This positive unidirectional Granger causality from primary productivity to FDI inflows in the primary sector provides evidence that primary productivity positively influences FDI inflows in the Solomon Islands. This

re-affirms the high intensity of FDI inflows within the primary sector (see Table 6.1) and confirms the results where FDI inflows to the primary sector are positive and statistically significant. This positive linkage reflects Solomon Islands focus on promoting liberalisation policies as FDI policies have been targeted to the opening of the primary sector, particularly forestry, mining and fishing, which have increased investment opportunities and induced foreign investors to take advantage of Solomon Islands' comparative advantages in natural resources.

Table 6.6 Pair-wise Granger Causality Test Results, 1985-2010

Null Hypothesis Lag order: 2	F-Statistic	Probability	Causality Inference
ΔLFDIpri does not Granger Cause ΔLYpri	1.702	0.209	
ΔLYpri does not Granger Cause ΔLFDIpri	4.212	0.03**	LYpri→LFDIpri
ΔLFDIser does not Granger Cause ΔLYser	2.435	0.114	
ΔLYser does not Granger Cause ΔLFDIser	12.81	0.0003***	LYser→LFDIser
ΔLFDImanu does not Granger Cause ΔLYmanu	0.342	0.715	
ΔLYmanu does not Granger Cause ΔLFDmanu	0.299	0.744	
Observations= 24			

Note: *** and ** indicates rejection of the null hypothesis of Granger non-causality at 1% and 5 % level of significance; Legend: LFDIpri is log foreign direct investment in primary sector; LYpri is log productivity in primary sector; LFDImanu is log foreign direct investment in manufacturing sector; LYmanu is log productivity in manufacturing sector; LFDIser is foreign direct investment in services sector; and LYser is log productivity in services.

The causality test result fails to reject the hypothesis that FDI inflow to the service sector (LFDIser) does not Granger cause services productivity (LYser). However, the null hypothesis, that services productivity (LYser) does not Granger cause FDI inflows in the services sector (LFDIser) is rejected at the one percent level (estimated *F*-statistic value of 12.81). The strong evidence indicates that increase in services productivity induces FDI flows to the services sector. This positive direction from services productivity to FDI inflow in the services sector reflects the growth in the tourism industry and more recently the liberalisation of the communication services has attracted foreign investment to this sector. The on-going infrastructure development programs supported by other major stake holders such as Asian Development Banks' on-going Post-conflict Emergency

Rehabilitation Project for rebuilding of roads and bridges damaged during the conflict period also provide positive effects of FDI inflows on services sector productivity.[61]

In the manufacturing sector, the Granger causality test failed to reject the hypothesis that FDI inflows to the manufacturing sector (LFDImanu) does not Granger cause manufacturing productivity (LYmanu) and vice-versa, LYmanu does not Granger cause FDI inflow to the manufacturing sector (LFDImanu). This means that there is no evidence of a significant relationship between the variables, which re-affirms the earlier regression results, where no firm linkage between FDI inflows in the manufacturing sector and productivity has been established. This outcome also confirms the low FDI intensity in the manufacturing productivity reflecting the limited investment opportunities to enhance productivity (see Table 6.1).

6.7 Conclusion

This study estimates the productivity effects of FDI in the primary, manufacturing and services sectors of the Solomon Islands for the period from 1985 to 2010. Furthermore, the direction of the linkages between productivity in these sectors and FDI inflows has been examined. The relationships between each sectoral productivity and the dependent variable were evaluated using the stepwise procedure while the direction of the relationships were examined using the Granger causality methods. The results provide strong evidence of a significant effect of FDI inflows on primary productivity, thus confirming that primary productivity has benefited from the high intensity of FDI inflows to this sector. The results also indicate that primary productivity has benefited from spillover effects on foreign direct investment inflows in the service industry. Thus, high capital investment in services particularly in transportation enhances productivity in this sector.

Similar findings were also obtained from services productivity, in that FDI inflows have significant impact on this sector's productivity. This means that high FDI inflows enhance productivity in the services sector. The results also indicate that institutional quality such as maintaining law and order, good governance and adequate infrastructures in addition to high education level significantly influence services productivity. This is important since the services sector is labour intensive, particularly in the tourism industry and also technical services, such as communication and information and technology, which require skilled labour in addition to better institutional qualities that will guarantee foreign

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[61] ADB (2007) notes that Australia and New Zealand supported the post-conflict rehabilitation in early 2006 and provided technical assistance for institutional strengthening of the Ministry of Infrastructure and Development.

investors a high return on investment. On the other hand, export services with weak linkages may have been caused by the lack of adequate infrastructure and appropriate development to support the growth and delivery of export services. The insignificant manufacturing productivity is supported by its low FDI intensity and lack of investment opportunities to enhance productivity in this sector.

The Granger causality test provides mixed evidence of the direction between respective sectors' productivity the primary, manufacturing, services and FDI inflows. The results of this study support no reciprocal causality relationship between the variables in the Solomon Islands. In the primary sector, the direction of causality of relationship is from primary productivity to FDI inflows in the primary sector than in the opposite direction. This result provides evidence that growth in primary productivity induces growth in FDI inflows, indicating the Solomon Islands' comparative advantage in mostly natural resource-based production which induces foreign investors. Similarly in the services sector, the direction of causality of relationship is from services productivity to FDI inflows in the service sector and there is no causality from FDI inflows from services sector to services productivity, thus indicating the importance of this sector to attract FDI inflows. There is no causal relationship between FDI inflows to the manufacturing sector and the productivity of the manufacturing itself, owing to low FDI intensity.

Overall, the findings show strong evidence of positive productivity effect from FDI inflows on primary and services sectors with no evidence seen for the manufacturing sector. The results also indicate that institutional quality and education are pre-requisites for enhancing productivity growth particularly in the services sector. While other explanatory variables show little evidence on respective sectors productivity, it suggests that government should continue with its efforts to attract foreign investment. The findings should provide the government with a framework to evaluate different implications that foreign investors may have on various sectors of the economy, and hence utilise these findings as a basis to target policy support to the areas with high productivity growth.

Chapter Six Appendix

Appendix Table A6.1 Variable Definition and Data Sources

Dependent Variables	
	Definition
LYpri	Logarithm of gross value added (GVA) in primary sector in constant Solomon Islands dollar (SBD$) (2000 prices) per employed person.
LYmanu	Logarithm of gross value added (GVA) in manufacturing sector in constant SBD$ per employed person
LYser	Logarithm of gross value added (GVA) in services sector in constant SBD$ per employed person
	Calculation and data source:
	GVA primary sector at SBD$: calculated from total GVA constant SBD$ divided by total sectoral employment $GVApri/\Sigma_{pri}GVA_{pri}$. GVA manufacturing sector at SBD$: calculated from total GVA constant SBD$ divided by total sectoral employment $GVAmanu/\Sigma_{manu}GVA_{manu}$. GVA services sector at SBD$: calculated from total GVA constant SBD$ divided by total sectoral employment $GVAser/\Sigma_{ser}GVA_{ser}$. GVA data are obtained from World Bank (2011), World Development Indicators while employed persons in each sector are sourced from the Central Bank of Solomon Islands.
Foreign Direct Investment	
LFDIpri	Logarithm of FDI inflows in SBD$ per employed in primary sector.
LFDImanu	Logarithm of FDI inflows in SBD$ per employed in manufacturing sector.
LFDIser	Logarithm of FDI inflows in SBD$ per employed in services sector.
	Calculation and data sources
	FDI inflow data from the Central Bank of Solomon Islands.
LFDI interaction terms	
FDI *condition	Interaction FDI inflows per employed in primary/manufacturing/services sectors and GDP per capita of Solomon Islands.
Institution variable	
LINST	*Definition:*
	Index of institutional quality, in logarithms, takes values 0-100. Higher index value indicates better law and order system, good governance and well developed physical infrastructure and financial systems.
	Calculated and Data source:
	Calculated from Solomon Islands information on Economic Freedom, from the Heritage Foundation (2011) .
Educational variable	
LEDU	*Definition*
	Logarithm of primary and secondary enrolment rate
	Calculated and Data source
	Calculated from World Banks(2011), World Development Indicators
Export variables	
	Definition
LPRIEX	Logarithm of primary exports as share of total merchandise exports.
LMANUEX	Logarithm of manufacturing exports as share of total merchandise exports.
LSEREX	Logarithm of services exports as share of total exports.
	Calculated and Data source
	Primary exports are calculated as sum of log, fish, copra, cocoa and palm oil exports. Manufacturing exports are calculated as sum of canned tuna and tobacco export receipts and services exports are calculated as sum of transportation and tourism receipts. All data were obtained from the Central of Solomon Islands.
Dummy Variable	
DV	Dummy variable for civil unrest and political instability, takes values 1-0.

Appendix Table A6.2 Descriptive Statistics, Equation 6.1a (1985-2010)

	LYpri	LFDIpri	LFDI*condition	LINST	LEDU	LPRIEX
Mean	13.637	11.968	20.363	0.975	4.751	12.805
Median	13.603	11.703	20.506	0.956	4.754	12.959
Maximum	14.1716	14.875	24.506	1.099	4.957	14.135
Minimum	13.271	9.616	17.011	0.916	4.547	11.483
Std. Dev.	0.271	1.641	2.111	0.053	0.134	0.783
Skewness	0.536	0.303	0.189	1.303	-0.041	-0.153
Kurtosis	2.066	1.750	1.851	4.129	1.883	1.878
Probability	0.335	0.352	0.453	0.013	0.507	0.480

Appendix Table A6.3 Descriptive Statistics, Equation 6.1b (1985-2010)

	LYmanu	LFDImanu	LFDI*condition	LINST	LEDU	LMANUEX
Mean	11.677	8.488	20.363	0.975	4.751	9.512
Median	11.946	8.330	20.506	0.955	4.754	9.592
Maximum	12.250	11.303	24.506	1.098	4.957	11.086
Minimum	9.741	7.090	17.011	0.916	4.548	7.117
Std. Dev.	0.585	0.957	2.111	0.053	0.134	1.218
Skewness	-1.565	1.170	0.189	1.3037	-0.041	-0.319
Kurtosis	5.515	4.237	1.851	4.129	1.883	1.989
Probability	0.0002	0.022	0.453	0.013	0.507	0.461

Appendix Table A6.4 Descriptive Statistics, Equation 6.1c (1985-2010)

	LYser	LFDIser	LFDI*condition	LINST	LEDU	LSEREX
Mean	13.703	10.746	20.363	0.975	4.751	10.195
Median	13.775	10.611	20.506	0.956	4.754	10.433
Maximum	14.931	14.327	24.506	1.099	4.957	11.067
Minimum	12.633	7.824	17.011	0.916	4.548	8.345
Std. Dev.	0.709	1.634	2.111	0.053	0.134	0.701
Skewness	0.160	0.435	0.189	1.303	-0.041	-1.218
Kurtosis	1.732	2.759	1.851	4.129	1.883	3.934
Probability	0.396	0.643	0.453	0.013	0.507	0.025

Chapter Seven

CONCLUSION

7.1 Introduction

This study evaluates the foreign direct investment (FDI)-led growth nexus focusing on the effects of FDI inflows and other growth-enhancing factors on economic growth in the Solomon Islands. This is followed by an evaluation of the direction of causality between economic growth, FDI inflows and domestic investment. The analysis further examines the growth driven-FDI nexus, in particular the determinants of FDI inflows and their likely impacts on the economy. The direction of causality on the FDI-trade nexus and FDI-income growth nexus is also assessed. Furthermore, the study evaluates the FDI-productivity nexus focusing on the productivity effects of FDI on the primary, manufacturing and services sectors. The causality relationships between these respective sectors' productivity and FDI inflows have been also examined. As many developing countries have limited capital resources FDI inflows play an important role in diffusing technology and stimulating economic growth. With these considerable potential benefits many of these countries have attempted to attract FDI through adopting economic reforms, trade liberation and promotion of investment policies. These issues provide vital policy consideration and lesson for other nations.

A number of studies in examining the link between FDI and economic growth extend the growth model to include other growth enhancing factors (Balasubramanyam et al., 1996; Borensztein et al., 1998; Hansen and Rand, 2007; Olofsdotter, 1998). While some studies obtained mixed results, a majority of the studies show positive impact of FDI on economic growth. However, the effects of FDI depend on the country's level of development or absorptive capacity. Another set of studies examined the FDI and economic growth relationship focused on the determinants of FDI inflows (Azam and Lukman, 2010; Gounder, 2002; Jajri, 2009; Mottaleb, 2007; Moundatsou and Kyrkilis, 2009; Rehman et al., 2011). While mixed results were also observed, most of these studies note that the major factors influencing foreign investors' decisions include market size; availability of raw materials, infrastructure, labour, macroeconomic stability, trade openness, better institutions and political stability. A number of studies also explored the productivity effects of FDI on the main sectors of the economy with varying results being observed amongst the developing countries.

The recent empirical studies have gone further to examine the direction of causal linkages between FDI inflows and economic growth variables (Bosworth et al., 1999; Ghazali, 2010; Jayachandra and Seilan, 2010; Srivastava, 2006; Zhang, 2001). Most of these studies have not only considered the traditional assumption of a one-way causal link but also considered the possibility of a two-way (bidirectional) or non-existent causality among variables of interests. A majority of these studies note that FDI inflows complement domestic investment and in turn, both boost economic growth. A bi-directional causality between FDI inflows and GDP growth and a bi-directional causality between FDI inflows and domestic investment is observed. A causal relationship between FDI and GDP per capita income and FDI inflows and services exports was also obtained.

The mixed results arising from different estimation methodologies and measures applied, difference in economic structures in developing and developed countries, time period analysis, and data collection led to differential findings. Furthermore, most of these studies focused more on developed and large developing countries whilst studies on small island economies such as the Solomon Islands are limited. As FDI inflows to Solomon Islands have increased overtime this study provides an impetus to further explore and understand the role of FDI and its impact on economic growth in the Solomon Islands. Various empirical studies on developing countries provide an empirical framework that has been extended to the case of Solomon Islands to examine the role of FDI in this small island state.

In this study, several propositions have been analysed regarding the linkage between FDI inflows and economic growth. The specific hypotheses tested have been embodied in six fundamental questions and these include: (1) Does FDI inflows contribute to economic growth of the Solomon Islands? (2) What is the direction of causal linkages between economic growth, FDI inflows and domestic investment? (3) What are the major determinants of FDI in the Solomon Islands? (4) What are the direction of causal linkages between FDI inflows, exports and per capita income? (5) What are the productivity effects of FDI inflows on the primary, manufacturing and services sectors of the Solomon Islands? (6) What are the causal linkage between FDI inflows and each sector's productivity?

Based on the results policy implications have been derived which suggest the need to attract FDI through improving the country's absorptive capacity that includes improving the rate of domestic investment, infrastructure, skilled labour, trade openness, political stability and maintaining low inflation. The remaining sections are structured as follows. Section 7.2 discusses the key findings and contributions of each of the previous chapters.

Section 7.3 presents the policy implication related to economic growth and FDI inflows, the main determinants of FDI and the productivity effects of FDI on the respective sectors. Section 7.4 discusses the contribution of the study. Section 7.5 provides suggestions for further investigation related to economic growth and FDI issues in the Solomon Islands.

7.2 Summary of discussion and findings

The focus of this study is to examine whether FDI inflows contribute to economic growth of the Solomon Islands, identify the main factors that attract FDI inflows, and whether FDI inflows have productivity effects on the primary, manufacturing and services sectors. Chapter One introduces the key issues underlying the FDI-led growth nexus, growth driven-FDI nexus, and FDI-productivity nexus, which provides the basis, motivation and objectives for this research, its relevance to the Solomon Islands' development context and a brief outline of the chapters.

Chapter Two presents the literature review on the theoretical and empirical FDI-led growth nexus, growth driven-FDI nexus, and FDI-productivity nexus including the direction of causal relationship between the selected variables in these nexus. The literature notes that while there is no firm conclusion on the relationships of the afore mentioned, the majority of recent studies appear to suggest a positive relationship depending on the level of 'absorptive capacity' of the host nation. This includes having the right level of human capital, infrastructure development, domestic investments, trade openness, high economic growth, sound macroeconomic climate, and political stability to maximise the benefits of FDI inflows. These pre-requisites in turn are also key factors to attract FDI inflows. While, the impacts of FDI inflows and the growth enhancing factors have been largely successful in developed and large developing countries, little is known for small island economies such as the Solomon Islands. Other than the issues of domestic economic climate noted above, the lack of detail FDI data and other vital information on FDI is not reported however it is noted that due to confidentiality of firm based data it's not possible to get that.

Chapter Three presents an overview of the Solomon Islands economy, the flow of FDI and its contributions towards employment, revenue and development prospects in the pre-and post-independence period including the macroeconomic and foreign investment policies. The analysis suggests that FDI inflows play a major role in these growth factors although the level of inflows has been low until 2000. The slowness in attracting FDI inflows may have been hindered by weak inherent organisational and structural disadvantages, and inadequate absorptive capacities such as lack of adequate infrastructure and skilled manpower, poor public service delivery, weak financial institutions and limited access to

land. These drawbacks in turn promoted leakages, corruption, and other illegal practices that affected Solomon Islands of not fully maximising the benefits of foreign investment. Furthermore, the lack of appropriate policies also led to the country relying more on exploitation of natural resources than investment and production to increase export earnings, growth and development.

The recent civil unrest and political instability experienced by the Solomon Islands have further impeded FDI's inflows and its contributions to the economy. More recently, in the post-civil unrest, the Regional Assistant Mission to Solomon Islands (RAMSI) has been implemented and with the assistance of RAMSI it brought some normalcy to Solomon Islands economy. This restored investor confidence, financial and development support by other key stake holders and the FDI inflows rose rapidly representing nearly 36 percent of GDP in 2010. The government also implemented foreign investment and macroeconomic policies. Thus the importance of FDI inflows to improve economic growth depends largely on the environmental conditions of the host country. In particular, Gounder (2002) notes that a stable political environment is vital for Solomon Islands long-term growth prospects.

Chapter Four estimates the FDI-led growth nexus and the direction of causal linkages between economic growth, FDI inflows and domestic investment. The ARDL methodology has been utilized in preference of its advantages for allowing testing for short and long-run impacts of the variables when the sample size is small. The ARDL Bounds F-test suggests an existence of a long-run relationship amongst the variables in the FDI-led growth models. The results for the FDI-led growth models show that FDI inflows, domestic investment, labour force, and trade openness increase economic growth. On the other hand, civil unrest and political instability adversely affect economic growth. The Granger causality tests show that economic growth has a large influence on FDI and in turn they both stimulate domestic investment. Thus, this confirms that economic growth is the main mechanism in attracting FDI and in influencing domestic investment. A bi-directional causality between FDI inflows and domestic investment suggests that FDI inflows affect domestic investment and domestic investment itself exerts a major influence on the level of FDI inflows. A bi-directional causality between domestic investment and economic growth further suggests that higher levels of domestic investment promotes higher economic growth and vice versa. Thus, the results provide support for the FDI-led growth nexus and that FDI is complementary to domestic investment and economic growth in the Solomon Islands.

Chapter Five presents the results of the growth driven-FDI nexus or the determinants of FDI inflows and the direction of the causal linkages between FDI inflows, exports and per capita income. The estimated Bounds *F*-test statistics suggest the existence of a long-run cointegration amongst the variables. The results indicate that economic growth, domestic investment, degree of openness and export orientation, and providing an enabling environment through the provision of infrastructural facilities are important determinants of FDI inflows. On the other hand, high inflation rate, civil unrest and political instability factors have an adverse effect on FDI inflows. Thus, civil unrest and on-going frequent changes of government, lack of resources and initiatives have further impeded the impact of major reforms initiated since 1998. The Granger causality results indicate a bi-direction causality between FDI inflows and per capita income providing support for the FDI-income growth nexus. This re-affirms the claim that FDI inflows and income growth are complementary to export expansion. A bi-directional causality has also been found between FDI inflows and exports which further support the FDI-trade nexus in that FDI and exports are complementary to income growth. Thus, increase in FDI inflows encourages exports and this confirms the view that FDI provides greater opportunities and access for the host economy into the global market.

The results for the FDI-productivity nexus are presented in Chapter Six. The stepwise procedure has been selected to evaluate these relationships given its simplicity. Using both backward elimination and forward selection, the results find strong support for a positive FDI effect on the primary and services sector while no support for the effect of FDI on the manufacturing sector. The positive spillover effects of services FDI inflows on primary productivity suggest that the availability of infrastructure, particularly transportation and communication are important for this sector's productivity. Furthermore, the positive effect of institutional quality and education on the productivity of the services sector re-affirms the importance of these factors in enhancing growth in this sector. The insignificant effect of each sector exports on productivity reflects the low absorptive capacities such as inadequate infrastructure, weak export linkages and a low value-added type of foreign investment, which negate the potential benefits of exports. The direction of causality is also from primary productivity to primary FDI inflows than in the opposite direction, providing evidence that primary productivity induces FDI inflows. The Uni-directional causality also runs from services productivity to services FDI inflows, showing evidence that services productivity encourages FDI inflows to this sector.

Overall, FDI inflows, domestic investment, labour and trade openness are crucial to improve economic growth. The presence of these factors in addition to export orientation, telecommunication and infrastructure facilities, higher economic growth are key factors in influencing foreign investors and FDI inflows. On the other hand, high inflation, low skilled labour force and the presence of civil unrest and political instability all have an adverse effect on the flow of FDI and economic growth. FDI inflows are growth-enhancing in the primary and service sectors productivity with productivity in both sectors driving the inflows of FDI. Services FDI spillover is important for primary productivity whilst the level of institutional quality and human capital all play an important role in the growth of the service sector. Therefore, in the Solomon Islands, FDI plays a significant role in promoting trade and stimulating domestic activities to achieve higher level of economic growth and these provide important policy implications for the policy makers.

7.3 Policy Recommendations

This section discusses the relevance of the results and policy implications for the role of FDI in the Solomon Islands economy. With limited capital and resource base, FDI inflows provide a vital role as a vehicle for stimulating the country's economic growth and development. However, the results indicate that FDI inflows alone cannot promote and benefit the development of this island nation as it depends much on the domestic economic and investment environment of the country. In other words, this study emphasise on the opinion that Solomon Islands needs to develop its initial capacity before attracting more FDI inflows. This requires a number of government policies such as foreign investment, trade, and macroeconomic stability that will provide a supportive environment for positive effects of FDI on economic growth. Improvements in these policies will not only attract FDI inflows but will also provide an avenue for Solomon Islands to maximise economic and social benefits. Failure to deliver appropriate policies on the other hand will mean that growth will continue to depend on limited activities based on exploitation of natural resources.

The results for the FDI-led growth nexus indicate that although FDI inflows and growth-enhancing factors have a positive influence, the inherent and on-going impediments outweigh their potential benefits to boost higher economic growth. Policy formulation by the government should therefore be targeted towards improving domestic investment, increase FDI inflows and trade diversification, skilled manpower, as well as maintaining political stability to ensure growth is sustained in the long-run. A broader development policy on improving these growth-enhancing factors which are the main channels for FDI

transfer is therefore important. Such improvement requires substantial amount of capital and takes longer to recoup the investments, thus the need for financial support with appropriate policies by the government is vital to generate sustainable growth.

A favourable and compatible tax framework should also be placed when log export revenues declines, promotion of downstream processing and export orientated producers. This requires better consultations and co-ordination between the Ministries of Finance, Customs Division and the department of External Trade. Trade policies and market reforms such as duty exemptions and tariff structures should be reviewed with improved trade negotiations both regionally and internationally. A nationally owned framework should be established to co-ordinate trade and FDI related activities to stimulate new export possibilities and enhance investment efficiency. The granting of exemptions or removing of tariffs completely as an incentive to attract FDI would not work for small island economies such as Solomon Islands with a small population. Taxation reforms therefore should be geared towards using tax revenues to improve infrastructure and service delivery that will boost both the inflow of FDI and economic growth.

Strengthening of existing policies on natural resources such as forestry, fisheries and mining and other industries is also vital to ensure these industries comply with international standards. Existing policies on issuing of offshore foreign fishing licenses should also be reviewed and move towards more onshore down processing fishing industries. Such policies will not only reduce the exploitation of resources but also provide higher investment returns and competitiveness, employment creation and other investment opportunities important for rapid economic growth. Taxation on natural resources, resource management and strict guidance on sustainable harvest and use of such natural resources should be maintained for long-term growth and development. Re-plantation of forest and sustainable use of this resource with establishment of regulations could see to managing forests and environmental laws improve management and reducing long-term adverse effects.

The intervention of RAMSI along with other major development stakeholders has been instrumental in returning the country to normalcy; however, with rapid economic recovery and development activities highlight the need for better coordination and harmonisation of donor interventions. While these are mainly short-term assistance, what is needed is development initiatives that would strategically improve FDI and growth-enhancing

factors in the longer run.[62] A growth path that would generate more employment and investment opportunities, skilled manpower and other economic activities both in the urban and in the rural areas should be a priority development focus in the long-term and this requires the support of all stakeholders. A national development strategy by the government therefore is important to ensure that FDI and donor supports are directed to towards improving investment, trade and human development.

The growth driven-led FDI results reveal the role of FDI and its contributions and linkages to a variety of factors like domestic investment, trade, infrastructure and communication facilities suggest development of the nation. The important policy implication is to improve these factors in attracting FDI inflows to improve the country's economic conditions and investment opportunities. Foreign investment policies need to be supported with adequate national infrastructure and institutional development important for trade facilitation which is critical to attract FDI. This includes improvement, upgrading and maintenance of existing and new facilities such as ports, wharfs, airports, roads and communications associated with stimulating domestic capacity, higher volumes of trade and export competitiveness. A sound policy to improve education level and human capital is also vital for Solomon Islands to absorb FDI spillovers such as new knowledge and modern techniques.[63] Thus, government policies should ensure that on-going development programs such as Post-Conflict Emergency Rehabilitation Project by Asian Development Bank to be targeted at improving transportation infrastructures, providing technical support to strengthen institutions, legislative and regulatory reform important for infrastructure, human developments and export productivity enhancement continues until completion ADB (2007).

A policy statement outlined by the previous government (i.e. the National Coalition for Reform and Advancement) in 2010 suggests a need to embark on various reform programs including economic and constitutional reforms to steer the economy to one that is more balanced and sustainable (Office of the Prime Minister and Cabinet, 2010). These include bringing in those foreign investors with adequate capital rather than those relying on the country's financial resources. While these proposed reforms are important, a more stable government with political will, committed to transparent and accountable practices, fiscal discipline and enforcement of contracts is required to attract quality foreign investors and

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[62] ADB (2005, p. 98) notes that in the long term "RAMSI's presence will not be sufficient to turn Solomon Islands into a robust, rapidly growing economy".

[63] Görg and Greenaway (2004) point out that better education and training would increase the pool of qualified labour in host developing economies and provide them with avenues to benefit from technology transfers and spillovers.

to sustain FDI inflows. Frequent changes of the government affected the implementation of these reforms resulting in little evidence on their potential positive impact in attracting FDI inflows and subsequently contributing to growth in the economy.

While, major stakeholders have mobilised substantial amount of resources towards recovery efforts and to rebuild the economy, Solomon Islands also needs to address high inflation through the harmonisation of both monetary and fiscal policies. More recently, the introduction of a stable monetary policy accompanied with the adoption of fiscal discipline led to a decline in inflation and consequently a rapid inflow of FDI being observed. However, to maintain this trend in the long-run, policy action towards a more open and dynamic economy with substantial macroeconomic framework (to enhance low inflation, adequate reserves, credit availability and lending), credible reform programs, good governance and sustainable economic growth would further provide for sustainable FDI inflows to the Solomon Islands.

As the FDI-productivity nexus results indicate that primary and services sectors benefit from FDI with productivity inducing FDI inflows in these sectors, there is no FDI benefit seen on manufacturing productivity. The priority for the Solomon Islands development programs and policies should be supported by mobilising resources into these productive sectors. Policy action to be targeted towards improved legal and regulatory framework and governance arrangements would address corruption, and reduce transaction, information and communication costs which would encourage increased inflow of FDI and boost productivity in these sectors. Developing absorptive capacities through strong export linkages, new markets, downstream processing and diversifying of exports into more value-added commodities are vital to increase exports and output. Other investment opportunities to improve productivity in the manufacturing sector should be a priority for export diversification and a competitive export sector rather than depending on few primary products.

Promotion of trade and investment policies that establish backward and forward linkages particularly, linking domestic enterprises to the large foreign enterprises is also crucial in achieving high growth and productivity. This includes policies aimed at strengthening linkages overtime among the key sectors and attracting FDI that can generate spillover effects on the whole economy. For instance, policies to improve agricultural products such as root crops and vegetables in the primary sector should also benefit the service industry by providing food or tourism service industries such as hotels, restaurants with cheaper locally produced agricultural products than higher cost imported agricultural products. The

agricultural policies should also benefit the manufacturing sector as the main supply of agricultural inputs for local food processing.

Government policy formulations therefore should continue to support and establish such linkage structures that are not only important for domestic and foreign investments but also crucial for sector productivity growth. The growing service industry, in particular tourism which has the potential for translating to long-run economic growth for this island nation should also be supported.[64] This includes more dialogue and collaborations with the Foreign Investment Division, Solomon Islands Visitors Bureau and the Solomon Islands Ministry of Culture and Tourism to address constraints and immediate needs.

Other issues that need to be addressed relate to land, capital and profit transfers where policies such as the land policy and taxation are important for both domestic and foreign investment. Land reforms should be dealt with caution to ensure that benefits are accrued to both the land owners and the foreign investors and this requires proper dialogue and research on the best alternatives to avoid land disputes and other constraints on investment.[65] Policies towards strengthening and monitoring of capital transfers and promote the efficient use of available resources should be ensured. Sustainable management of natural resources particularly log forests should also be ensured with more rehabilitation and replanting programs and economic rents gained from this resource should be put into more productive use rather than current practises.

7.4 Contributions of the study

This study on the FDI and economic growth relationship and the determinants of FDI is the first of its kind in the Solomon Islands, a small developing economy in the South Pacific. While there is a large volume of literature which examine the relationship between FDI and economic growth, most of the studies are predominately focused on the more developed and large developing countries while studies on the Solomon Islands are limited. This research therefore contributes to the body of knowledge on FDI and growth nexus that narrows the existing gap for small states. The study will not be only useful for the Solomon

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[64] The World Bank and International Finance Corporation (2009, p. 31) note that "the difficulty of obtaining basic skills required to operate and manage hotel, resort, tourism and hospitality operations is seen by investors and operators as a major impediment to further investment...Other constraints include infrastructure and basic utilities lack quality, reliability and are expensive...Communication are high and low in quality and lack of effective destination marketing".

[65] The Ministry of Development and Planning (2007, p. 118) notes that, "land is the only asset held by the majority of people of the Solomon Islands. Without land, their labour is of little value as there are few opportunities for non-farm work and few have capital. Any action that alienates, degrade, redistribute, or otherwise impact on land affects livelihoods, identity, and culture".

Islands but would be also important for other small island economies where FDI is a critical part of their growth and development.

Another important contribution to the literature is that the models developed have expanded the growth, FDI and productivity nexus in the context of small island economies. Although in many cases, modelling for small island economies may be difficult due to the nature of the islands being small with limited resources and data this study has managed to make a number of important innovative findings with varying policy implications for the island economies. This study therefore is important for future FDI studies in small island economies. The findings suggests that significant contribution of Solomon Islands through their natural resources make global contributions and thus should be given assistance to build their capacity and improve their global development outlook.

The study further contributes to the emerging literature on FDI-led growth, growth driven-FDI and FDI-productivity hypotheses and its causality linkages in the Solomon Islands. It provides vital and timely information and recommendations given the difficulties that the country is facing in terms of attracting FDI as well as maximising its benefits. The findings will assist policy makers in formulating favourable government and FDI policies important for the country's growth and development prospects. The study also contributes in providing evidence-based information on the importance of FDI in various sectors of the economy useful for its major development partners such as New Zealand, Australia, China, Taiwan (Republic of China), other Pacific Islands and other international organisations including Asian Development Bank, World Bank and International Monetary Fund for the purposes of funding priority sectors relevant to Solomon Islands' economic growth. The study furthermore contributes to the literature for policy research development for long term sustainable growth in the Solomon Islands.

7.5 Further Research

This study has identified potential areas for further research. The current research uses aggregate data and since FDI inflows show a positive influence on economic growth, future FDI studies should use disaggregated data to ascertain the exact channels FDI inflows can promote growth. Including the disaggregated data on the types of FDI inflows, such as joint venture, licensing or Greenfield foreign investment would help identify genuine foreign investors. The impact of FDI on other crucial factors (i.e. employment, research and development, community development services and royalties received by resource owners) should be considered. Future FDI studies should also consider examining

whether or not granting of exemptions and other tax incentives have actually attracted FDI and benefited the economy.

The growth driven-FDI model shows that the main factors necessary for FDI inflows are availability of infrastructure, openness and exports. Future FDI studies should target the type of infrastructure development programs to ascertain how these could fast-track the inflow of FDI inflows to the economy. Also, as FDI inflows are complementary to exports, the need for diversification and provision of export opportunities is important. Since Solomon Islands has a small market size, future FDI studies should focus on how regional and multilateral trade agreements (i.e. Pacific Agreement on Closer Economic Relations, Pacific Island Countries Trade Agreement, Regional Trade Facilitation Program, Melanesian Spearhead Group Trade Agreement, European Union, World Trade Organisation amongst others) to promote the inflow of FDI.

The FDI-productivity effect model shows that FDI inflows have positive impacts on the productivity of the primary and services sectors with productivity in these sectors attracting FDI inflows. The lack of data on actual FDI inflows resulted in this study using FDI investment proposals as proxy of FDI inflows on various sectors of the economy. Constructing of data set on the actual flows of FDI to various sectors of the economy would provide a more clear idea on the impact of FDI on the productive sectors. Future FDI studies could potentially investigate firm level or industry level data to capture the spillover effects of FDI inflows on other firms and across industries as this also matters for economic growth. The government's rural development programme should be supported by extending this study to evaluate the impacts of FDI inflows by provinces. In that, appropriate FDI inflows are not only directed to appropriate sectors but more equitable distributions of resources will be also achieved.

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