

**Domestic Financial Development and External Financial
Openness in Sri Lanka: Assessing the Case for Greater
External Liberalization**

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Abstract

This thesis explored two key aspects of growth, namely the role of financial development and external financial liberalization. In the case of financial development, it evaluated in chapter 4, how far the financial reforms implemented since 1977 was successful in increasing the level of savings and investment as postulated in the McKinnon -Shaw hypothesis. It employed an Autoregressive Distributed Lag approach (ARDL) to evaluate the impact of the interest rates on savings as well as on investment. In the case of savings, the modelling involved an unrestricted error correction model (ECM), a long-run level model and a short-run restricted ECM. To assess the impact of interest rates and savings on investment, a long-run differenced ARDL model was performed. Our empirical research confirmed that there was a positive effect from financial liberalization, both on savings and investment. In the case of external financial liberalization, it investigated in chapter 5, the contribution of outward looking policies on per capita economic growth. We employed a multiple linear regression model using OLS approach and regressed the per capita economic growth, as a dependent variable on some key explanatory variables including FDI inflows, bank credit to private sector and trade openness. We found evidence in support of our hypothesis that outward-oriented policies stood favourably in contributing for economic growth. We finally examined in chapter 6, further scope for greater external openness to contribute towards faster economic growth and development of Sri Lanka's economy. Our conclusion in this respect is that unless Sri Lanka adapts several policy measures to streamline its macroeconomic environment and gradually build up adequate external reserves, it would not be desirable for the country to consider rapid opening up of its capital account in the current setting. The overall finding of this study is that there was a positive impact of financial liberalization on savings and investment, as well as of external openness on economic growth.

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Acronyms

ADF	Augmented Dickey-Fuller test
AIC	Akaike Information Criterion
ARDL	Autoregressive Distributed Lag model
AREAER	Annual Report on Exchange Arrangements and Exchange Restrictions
ASEAN	Association for South East Asian Nations
ASPI	All Share Price Index
BIS	Bank for International Settlements
BOI	Board of Investment of Sri Lanka
BOP	Balance of Payment
BSA	Balance Sheet Approach
CASP	Colombo All Share Price Index
CDOs	Collateralized Debt Obligations
CDS	Central Depository System
CRAs	Convertible Rupee Accounts
CSE	Colombo Stock Exchange
ECM	Error Correction Model
ELR	Effective Liquidity Ratio
EPF	Employment Provident Fund
EPZ	Export Processing Zone
EU	European Union
FDI	Foreign Direct Investment
FIAC	Foreign Investment Advisory Committee
FPE	Final Predictor Error
GCEC	Greater Colombo Economic Commission
GDP	Gross Domestic Product
HC	Harmonized Code
HQC	Hannan-Quinn Information Criterion
IMF	International Monetary Fund
LCB	Licensed Commercial Bank
LM	Lagrange Multiplier
LSB	Licensed Specialized Bank
MFA	Multi Fibre Arrangement
MPI	Milanka Price Index
NSB	National Savings Bank
NTBs	Non-Tariff Barriers
OECD	Organization of Economic Corporation for Development
OLS	Ordinary Least Squares
RANSI	Rupee Account for Non-Resident Sri Lankan Investment
RECM	Restricted Error Correction Model
RESET	Regression Equation Specification Error Test
RMBSs	Residential Mortgage Backed Securities
RTGS	Real Time Gross Settlement
SEC	Securities and Exchange Commission of Sri Lanka

SIC	Schwarz Information Criteria
SIERA	Share Investment External Rupee Accounts
SLRs.	Sri Lanka Rupees
SRR	Statutory Reserve ratio
SSR	Sum of Squared Residuals
SSSS	Scripless Security Settlement System
UECM	Unrestricted Error Correction Model
US\$	United States Dollar
VAR	Vector Autoregression
WB	World Bank

Chapter 1

Introduction

1.1 Objective of the Study

There is no generally agreed opinion among economists on the question of a fully liberalized capital market regime contributing to economic growth and stability, in particular for developing countries. The proponents of the financial liberalization and capital market openness, however, favour the notion that following a prolonged period of free market economic policies which have been successfully implemented, a country may be in a position to liberalize its capital account regime in order to further accelerate economic growth. This opinion stems from the belief that a liberal capital market would contribute to economic growth and spur development through the access to cheaper capital from abroad. The overall success of the liberalization process is dependent upon the ability of a country to achieve a reasonably a higher level of development leading to a steady state growth path under a liberal economic environment. In order to achieve such status, the liberalization process should be carried out with a well managed plan of action. Envisaged reforms should be properly sequenced (Ghatak, 1997; Mishkin, 2006). The long path towards such a liberal capital account regime should commence only after adopting a liberal trade policy regime followed by financial market reforms. If the liberalization process starts with financial market and capital market first and thereafter to liberalize the current account then that would create severe balance of

payment difficulties due to potential outflows of capital stemming from anticipatory currency depreciation. Governments must also pay attention to make market friendly environment with the emphasis on and encouragement of private ownership of businesses as this is the only way to ensure greater efficiency in production. Therefore, privatization of state-run enterprises is also considered to be an integral part of economic policy reforms. Under such circumstances, the current account regime is required to be set free and thereafter followed by a set of liberal financial market policies. In this context it is important to move away from financial repression in that the government must allow free market forces to determine the rate of interest. Governments should also deviate from politically motivated state intervention in bank lending decisions. As the banking sector in many developing countries is dominated by state-owned banks, this too stands as a barrier in establishing a liberal financial market. Hence bank privatization is also suggested. It is vital by then the country in question to put into practice sound macroeconomic policies with an adequate institutional environment in order to ensure that a constellation of economic, legal, political and social measures are fulfilled. These measures include a good record of creditworthiness, sound and sustainable fiscal and current account positions, an appropriate exchange rate regime, prudential regulation of banking and corporate sectors, and realistic anti-inflationary policies.

The main objective of this study is to contribute to the debate on the capital market liberalization with particular emphasis on Sri Lanka. The study, while

evaluating the existing literature on the impact of trade and financial liberalization on economic growth, examines in the context of Sri Lanka whether the measures thus far implemented in regard to financial market liberalization and opening up of the capital account in a somewhat limited form contributed to economic growth and development. It attempts to critically analyze the correlation between the financial and real sectors. Finally, with a view to broadening the policy considerations, it ventures in to evaluating the optimum conditions upon which a country like Sri Lanka could be in a position to fully liberalize its capital account while maintaining a reasonable level of economic growth and also avoiding intermittent financial crises similar to what was experienced by several South American countries in early 1990s and the East Asian economies in late 1990s.

Let us first look at what is meant by capital account liberalization. Capital account is a part of the balance of payments (BOP) in a country which records the net result of public and private international investments flowing in and out of a country. “Capital account liberalization is a decision by a country’s government to move from a closed capital account regime, where capital may not move freely in and out of the country, to an open capital account system in which capital can enter and leave at will” (Henry, 2007). It covers a variety of financial flows, i.e., foreign direct investment in both directions (long-term flows), portfolio flows (including investment in equities/short-term flows) and freedom for the local enterprises including the commercial banks to borrow from financial institutions abroad. In brief, capital account openness will allow the acquisition of assets in one country by residents in another. Capital account liberalization can not come without first having

followed the process of financial liberalization. The degree of capital account openness can be seen from a number of channels such as; the range of economic activities allowed under foreign investment laws; limitations on equity participation; right for repatriation of dividends and direct investment after liquidation; stock market openness; bond/security market openness; the freedom for the business sector to borrow from abroad and repayment; and personal capital movements.

1.2 Motivation

Sri Lanka is a developing country with relatively favourable socio economic indicators compared to other South Asian countries. With a GDP per capita of US\$2,399 (2010), only second to the Maldives in South Asia, it has the highest literacy rate in the region with 94.2%. The average life expectancy at birth stands at 74 years. The infant mortality rate per 1000 live births is recorded to be 13 which is well below 55, the average of the South Asian countries. In recent years, Sri Lanka experienced resurgence in economic activity with an 8% growth in GDP and continuously falling unemployment rate which stood at 4.9% in 2010, the lowest unemployment rate ever recorded.

Prior to 1977, Sri Lanka pursued pro-socialist policies with state intervention in production and distribution of goods and services ranging from essential foodstuff such as rice, wheat flour and sugar to several other items. The public transport, petroleum and electricity, insurance and banking remained as government monopolies. Intervention was made either through direct ownership

under state monopolies or strict price control mechanisms and controlling the release of foreign exchange for imports under licensing. Price controls and rationing schemes continued to occupy a central position in the government's attempt to soften the impact on the consumer of increase in the prices of essential commodities.¹ There were several state monopolies entrusted with the production and marketing of number of goods and service. While these institutions operated at extremely low rates of capacity utilization, also became over-employed in accommodating a considerable number of unemployed youth from an ever increasing labour pool, under political patronage. The justification for the interventionist model was based on several factors. To raise the national pride by growth in public ownership in production and also to ensure fair distribution of wealth; to invest in activities where private capital investment is slow and inadequate; to save much needed foreign exchange; protect local industries from unfair competition; ensure consumer welfare were some of the supporting arguments. The controlled regime gave a sufficient leeway to a thriving 'black market' economy.

In 1977, having embarked upon a successful trade and economic liberalization process, Sri Lanka has progressed economically despite a civil war that lasted over thirty year period devastating the lives of many people, bringing fear and misery to every individual and draining a vast amount of resources. In spite of such fateful developments, Sri Lanka continued with its trade, investment and financial liberalization programmes. By 1994, restrictions on current account transaction were

¹ The Central Bank of Sri Lanka, The Review of the Economy, 1975

completely removed. Having recognized the key contribution to economic advancement from the adequate infrastructure, the government encouraged private firms into the telecoms sector and called for BOT contracts for power plants, highways and ports by mid 1990s. The government also accelerated the privatization of government owned monopolies including electricity generation, telecommunication and certain parts of ports etc. Early 1990s the government also completed handing over of the tea, rubber and coconut plantations that were taken over by the government's nationalization programme in 1972 to management companies, on lease. Under the administration of management companies, the plantation began to experience greater efficiency and improved productivity. With the trade liberalization, the scarcity of all essential goods and other commodities swiftly disappeared on the market while the financial liberalization made the interest rates positive which had been hitherto remained below market rates. Prior to financial liberalization in 1977, the (negative) real interest rate in a capital scarce Sri Lanka had been held below the equilibrium price for long time (Fry, 1995, Howard, 1995, Ghatak, 1997, and Jayamaha 1989). While the real rate during 1965 to 1970 remained at negative 2.4%, it was further worsened during 1970 to 1976 which stood at negative 8.4%. The liberalization process reversed this situation thus making the average real interest rate positive during 1977 to 1987 (Ghatak, 1997).

Sri Lanka was able to grow reasonably well while attracting FDI and portfolio investments over the past 30 years and to achieve the status of a middle income developing country in 2009. Over the last five years, Sri Lanka was able to sustain average economic growth of 6% and to double its per capita GDP from US\$

1,226 in 2005 to US\$ 2,399 in 2010. The country also achieved a reduction in poverty from 17.5% to 7.6% over the same period. Sri Lanka has an ambitious plan for achieving a per capita level of US\$ 4,000 by 2016 through an annual growth rate of 8% consolidating as an emerging market economy, integrated into the global economy while maintaining increasing competitiveness. Under the 'Mahinda Chintana', the development plan of the present government, it is envisaged by 2016 to eradicate hunger and hard-core poverty; universalize the secondary education to all; reduce the malnutrition rate of children from a third to 12 – 15 percent; increase the life-expectancy from 76 to 80 years; increase the access to clean water in urban areas from 65 to 90 percent and raise the forest coverage from 28 to 43 percent. In the case of investments, the plan envisaged to increase the investment to 33-35 percent of GDP with sustained commitment of public investment of 6-7 percent of GDP to support private investment while to raise the annual export earning by 16 percent. The programme also has a component for rapid urbanization and to make the urban population to grow to two thirds of the country's population from the present level of one quarter living in the urban centres.²

However, amidst the progress achieved in several facets over the past and illustrious plans for the future, there is growing scepticism about the successes to be achieved as envisaged in the government plans due to several shortcomings in the current development strategy and the lack of objectivity in the fiscal and monetary policy area. Since 2004, the government disregarded the norms and the principles

² 'Sri Lanka: The Emerging Wonder of Asia, Mahinda Chintana - Vision for the Future', Department of National Planning, Ministry of Finance and Planning, Colombo, Sri Lanka, 2010

enunciated in the Fiscal Management (Responsibility) Act which was enacted in the previous year by the short-lived United National Front government. The objective of the Act was to ensure that financial strategy of the government is based on principles of responsible fiscal management and to facilitate greater public scrutiny. Under the stated objectives, it was expected to reduce government debt to prudent levels, by ensuring that the budget deficits at the end of the year 2006, shall not exceed five percent of the estimated domestic product and to ensure that such levels be maintained thereafter. It was also envisaged under the aforesaid Act that the government adopt policies relating to spending and taxing as are consistent with a reasonable degree of stability and predictability in the level of tax rates in the future. Moreover, by end of 2012, according to the set targets, the total liabilities of the government including external debt should not exceed 60 percent of the GDP. Despite such norms set out in the Act, since 2002 the budget deficits grew on an average 8 percent over the past nine years. The total public debt remains at a massive level of 82 percent of the GDP by end of 2010. Ever expanding budgetary deficits, increasing public debts, widening deficits in the current account, declining foreign reserves, instability in the currency, inadequate domestic savings, stagnant productivity and rising price level are some of the key issues the country is presently faced with. Recently, Standard & Poor, the rating agency revised Sri Lanka's sovereign rating outlook from positive to stable.³ Moreover, Fitch in a special report

³ Report appeared in Lanka Business Online dated 29th February 2012 under the caption "Sri Lanka sovereign rating outlook lowered by S&P"

recently announced that the sharp drop in reserves has increased the risk on the sustainability of the country's balance of payments.⁴

Under such a scenario, how Sri Lanka could consider to comfortably look at its future with a view to liberalizing its capital account regime appears to pose a question. However, there is an overriding importance if fiscal and monetary disciplines cannot be maintained by internal norms and practices, and then external pressure should work to force and direct the authorities to put the house in order. It has been observed from the experience of several countries including Sri Lanka that the pressure coming from external institutions such as IMF or World Bank would not be sufficient enough for a country to discipline its domestic financial and monetary affairs with proper policies in place. One can, therefore, argue that free market forces can be the best option which could bring about the required degree of disciplines. Thus a liberal capital account regime can fill the vacuum as it can create an open environment far more effective than without it. Thus an open capital market will provide an incentive to a government to adopt good policies and make reforms rationally, implement improved practices and establish better institutions including the market disciplines on domestic macroeconomic policies to carefully safeguard its economy from the threats induced by potential capital flight. In a broad sense, a free mobile capital regime will bring an inducement to reform the domestic economic system in a way that reduces unproductive activities (Gourinchas and Jeanne, 2002).

⁴ Financial Times section of Sri Lanka's Daily Mirror under the caption "Reserves drop poses rating risk: Finch and S&P dated 1st March 2012

In other words, it can create an atmosphere which guarantees the property rights, what Hall and Jones defined as social infrastructure (Hall & Jones, 1999).⁵

There are benefits and risks of capital account liberalization. Capital account liberalization is considered to help countries to grow economically provided that they have already more open economies with the emphasis on private ownership of economic activities. When capital moves from a capital surplus country to capital deficit country, it will activate idling resources, contribute to increasing efficiency, and create more employment and income. Open capital markets will also hasten the development of equity markets positively contributing to long run economic growth and reducing the cost of external finance. A dual benefit that may arise from capital account liberalization in terms of allocative efficiency has been emphasized in the literature. Firstly, against the backdrop of output fluctuations, access to foreign capital markets would help consumption smoothing. Secondly, financial integration contributes to efficient allocation of global saving as capital scarce countries whose marginal productivity of capital is much higher than the capital surplus countries would be in a position to attract capital from the latter group of countries. Such movements in capital in favour of capital scarce countries would help convergence in output per unit of capital across the world. There is also a positive impact of

⁵ In the Quarterly Journal of Economics, (Feb. 1999, vol.114 and No.1 pages 83-116), Robert Hall and Charles Jones hypothesize that difference in capital accumulation, productivity and therefore output per worker are fundamentally related to differences in social infrastructure across countries. Social infrastructure is defined to be the institutions and government policies that determine the economic environment within which individuals accumulate skills and firms accumulate capital and produce output. They maintain that social infrastructure favorable to high level of output per worker provide an environment that supports productive activities and encourages capital accumulation, skill acquisition, invention and technology transfer.

capital account liberalization on the efficiency and development of the financial system through the deepening of financial market.

However, literature also focuses on the negative consequences that arise from the free flow of capital. Inflow of capital after liberalization may contribute to high inflation and result in a stronger currency as well (Kim and Singal, 2000). Rising exchange rates in such manner would harm exports, and make the country less attractive for foreign investors' thereby excess capital contributing to inflation. Some economists have expressed concern over the movement of so called 'hot money' that flows in response to difference in interest rates, high expectation in future economic growth and anticipation in high return on securities. In view of the sensitivities of such flows, even a small shock to the economy could produce a sudden reversal of capital leading to a medium to long-term destabilizing effect. Financial crises that had happened in Mexico in 1994 and in the emerging market economies in East Asia in 1990s provide ample evidence to suggest the risks and dangers associated with the capital account liberalization.

Capital market liberalization cannot be undertaken on ad-hoc basis. Also there is no general prescription for all countries particularly in the developing world to be followed in order to liberalize the capital account as each country has its unique features. In order to ensure smooth functioning of an open capital market regime, it is required to introduce high degree of disciplines into the fiscal and monetary policies accompanied by several steps and reforms to arrest macroeconomic instability arising from upward pressure on general price level, exchange rates and volatile movements in portfolio flows. A few such measures

towards this direction are; improvements in prudential regulations in financial markets, securities clearance and settlement systems, development of regulatory and supervisory frameworks and proper enforcement, privatization of state-owned enterprises, freedom for foreign banks entry with national treatment being accorded, and shift to privately managed defined contribution pensions systems from government-run systems to overcome inefficiencies. Among the other prerequisites are the implementing a fully liberalized current account regime, with a flexible exchange rate system and placing a strict policy framework towards a sound macroeconomic environment.

1.3 Outline of the chapters

This study is organized as follows. The second chapter presents an extensive review of the literature briefly mentioning about the earliest advocacy in the importance of finance in the economy as reflected in the 17th to 19th century literature. This chapter covers the main theoretical explanations and conflicting views expounded in the modern literature. In doing so, it focuses more broadly on finance in an international setting and associated risks of crises. Additionally, we have summarised a number of selected studies by various authors on financial and capital account liberalization on economic growth in annexure I. The third chapter carries an analysis on the macroeconomic performance and institutional development in Sri Lanka drawing lessons from the experiences under two regimes that prevailed during the pre-and post-reform periods. An earnest attempt was made in this chapter to demonstrate how the productive resources were wasted during the

controlled regime that existed nearly for two decades prior to 1977. As a supplement to this chapter, we have added in annexure II, a detailed chronology on the major economic and financial reforms that have taken place from 1977 to 2010. The fourth chapter focuses on the outcome of an econometric analysis modelled on an ARDL approach to examine the impact of financial liberalization in the framework of McKinnon and Shaw hypothesis. According to this hypothesis, financial liberalization reduces the cost to investment, pushes up the saving and brings about an efficient allocation of resources. The chapter five develops a model and tests some hypotheses to demonstrate trade openness, capital inflows and bank credit to investment contribute to economic growth under liberal economic environment. The chapter six analyses the balance sheet conditions of Sri Lanka for selected two years in order to evaluate the country's economic sustainability for greater external liberalization. The balance sheet approach has been evolved over number of years with contributions by several academics and finally under the guidance of IMF. It is widely accepted as a tool for financial crises management and surveillance. This chapter begins with a presentation of South Asian economic crisis and the US sub-prime crisis to draw their relevance to the analysis of balance sheet weaknesses in different sectors such as the government, the business and the financial industry sectors. In the case of Sri Lanka, however, it does not undertake any stress testing, but only a comparison is made on the financial strength for broadly defined sectors to honour debt payment in two different years. The analysis does not constitute hypothesis tests. Finally, the summary and conclusions of the thesis are dealt with in the seventh chapter.

Chapter 2

Literature Review on the Impact of Financial Market and Capital Account Liberalization on Economic Development

2.1 Introduction

The aim of this chapter is to provide an extensive review of conflicting theoretical and empirical literature on financial market and capital account liberalization and its implications on economic growth and development, particularly in developing countries. The chapter also focuses on the literature that deals with issues arising from the evolution of global financial markets and its impact on developing countries. As the process of transformation towards a free capital account regime follows several prior measures in economic reforms such as financial liberalization, the balance of payment and exchange rate policy reforms, and overall macroeconomic management, naturally the focus of our review extends to cover a wide range of issues in the literature. We also find that the terms financial market liberalization, stock market liberalization and capital account liberalization have been synonymously used to refer to capital account liberalization.

This chapter is organized as follows; section one, the introduction defines the meaning of capital account liberalization and briefly deals with the earliest ideas to neoclassical notion in relation to the contribution of free flow of capital towards economic growth and development. Section two presents an overview of the financial system in developing countries with specific focus on the evolution of repressive financial systems from a historical and political

perspective. Section three examines various theoretical expositions and empirical evidence on the relationship between finance and economic growth and development. Section four makes an attempt to analyse the underlying reasons for the financial crises experienced by some countries often after financial liberalization. Drawing from the literature, this section suggests how a country could open up its capital account, regulate and manage it with the objective of preventing a crisis, with an effective and prudential macroeconomic policy environment. Concluding remarks are dealt with in section five.

Over the past two decades a growing body of literature has emerged focusing on the role of capital account liberalization in economic development. A great volume of this literature has placed emphasis on the issues concerned with the adjustment of domestic financial markets to latest challenges that resulted from the exposure to the international financial markets induced by liberal capital regimes.

Emergence of such a large literary contribution has been influenced by three main reasons. Firstly, there has been an explosive growth of international financial transactions both in the form of Foreign Direct Investment (FDI) and portfolio investment. Secondly, coupled with such large capital flows there had been intermittent financial crises experienced in several emerging, and transition economies particularly in the late twentieth century. Thirdly, the new thinking of the IMF and the World Bank that was evidenced at least from the latter part of 1980s, favouring the capital account liberalization as a key contributor to bring about greater efficiency in financial markets. During the 1990s, with the integration of international capital markets, a substantial growth in FDI inflows

has taken place at overwhelming rates above global economic growth or trade growth. While global inflows of FDI surged from a five year average of US\$197bn. in 1990-94 to US\$1.5tn. in 2000, inflows into developing countries more than doubled from a five year average of US\$60billion to US\$150billion during the same period.¹

In the aftermath of the emerging market crises particularly in South-East Asia in the 1990s, the discussions appeared to have centred on the merits of capital account liberalization with much emphasis on the implications of financial markets, exchange rates, monetary dynamics and adjustment policies. It also necessitated revisiting the modalities and the sequencing of the liberalization of capital movements for emerging, developing and transition economies, in order to pay more attention in addressing crises. The reason for this is that the macroeconomic environment, with its powerful influence over the incentive structure that drives capital flows, has much to do with why and how external liberalization and capital account convertibility affects domestic financial sectors (Guitian, 1998). Hence the central theme of the debate is how best a country could fashion its policy framework in an optimum manner to deal with the financial system in the context of a liberalized capital account system.

Capital account liberalization means allowing capital, such as debt, portfolio equity and direct investment, to flow freely in and out of a country without restrictions. Once barriers are removed for trade on such assets across borders, transaction of such capital assets can take place with relative easiness

¹ Balance of Payments Statistics Yearbook, 1994 and 2000, IMF, Washington, D.C.

reflecting the degree of capital account liberalization in any given country. Thus, for international finances to move around, there should be a liberal financial market in the home country. The Tarapore Committee of India (1997) has succinctly and subtly defined the capital account liberalization as follows;

“Capital account convertibility is the freedom to convert local financial assets into foreign financial assets and vice-versa at market determined rates of exchange. It is associated with changes of ownership on foreign/domestic financial assets and liabilities and embodies the creation and liquidation of claims on or by the rest of the world. Capital account convertibility can be, and is, coexistent with restrictions other than on external payments. It also does not preclude the imposition of monetary/fiscal measures relating to foreign exchange transactions, which are of a prudential nature”.²

Accordingly, it requires a range of reforms to be introduced to ensure free flow of capital. These reforms include the provisions for foreign direct investment including liquidation and equity market participation, opportunities for foreigners to enter the national bonds and securities market while locals to engage similarly in such activities overseas, rights for the private sector to borrow from abroad and repayments without government control, freedom of operations by foreign intermediaries in assets management including pension funds etc. In addition to such developments it is also important to create a

² Report of the Committee on Capital Account Convertibility, Mumbai, page 4. This committee also known as the "Tarapore Committee" after the name of its chairman, Dr. S.S. Tarapore, was appointed in 1997 by the Reserve Bank of India to examine and report the prospects for opening up the capital account of India.

competitive environment in the financial sector by allowing the presence of foreign banks to operate locally. In this context, the presence of a well managed and efficient financial system should be of critical importance and can be identified as one of the priorities before capital account liberalization.

However, the economic and policy opinion on the importance of free flow of capital across borders and its impact on the economic development substantially differ. The free flow of capital across sectors and individuals and its relevance to economic advancement has been emphasized in the literature over many decades. The advocacy of liberal financial policy for economic growth can be traced to the seventeenth century. John Locke (1695) was amongst the first writers who emphasised the significance of liberal financial intermediation. Adam Smith (1776) produced an analysis of the place of capital in production. J.S. Mill (1806-1873) saw money as a machine for doing quickly and commodiously what would be done, though less quickly and commodiously, without it; and like many other kinds of machinery, exerting a distinct and independent influence of its own only when it gets out of order. Another writer was Walter Bagehot (1873). He stressed the important role the banks play in harnessing savings of individuals to facilitate the credit requirement of big businesses “capable of understanding the new opportunities and of making good use of the credit”.³ Joseph Schumpeter (1934) emphasized the important role of

³ “... Thus English capital runs as surely and instantly where it is most wanted, and where there is most to be made of it, as water runs to find its level. This efficient and instantly ready organization gives us an enormous advantage in competition with less advanced countries – less advanced, that is, in this particular respect of credit. In a new trade the English capital is instantly at the disposal of persons capable of understanding the new opportunities and of making good use of them. In countries where there is a little money to lend, and where that little is lent tardily and reluctantly, enterprising traders are long kept back, because they cannot at once borrow the capital, without which skills and knowledge are useless...”, Walter Bagehot (1873), *Lombard Street: A Description of the Money Market*, page 11-12

financial development on economic growth by asserting that financial intermediaries, including banks would recognize companies with high growth potential and accordingly provide finances to the most productive industries. This way financial development assumes an essential role in contributing to growth opportunities by efficient resource allocation. Certain companies, industries, or countries do not grow because they are prevented from pursuing their growth opportunities, or if the opportunities exist, they remain unrealized due to the lack of finances. This indicates the importance of determining the relationship between growth opportunities, financial development, and industrial growth. Schumpeter's argument was that financial services are critical for supporting innovative technological changes through which economic development accelerates. Charles P. Kindleberger (2000) asserted that one can easily exaggerate the importance of finance, both when it is skilfully conducted and when it is not, but suggestion that it usually falls into line and accommodates real forces; discoveries, inventions, population change, and the like; stretches belief.

Standard production theory says that when cost of capital is reduced, firms respond by increasing their investment. Neoclassical models pioneered by Solow (1962), present the view that cost of capital declines following capital account or financial liberalization when capital moves from surplus countries to deficit countries. This would enhance the level of investment in capital deficit countries. Thus the higher rate of investment increases the ratio of capital per effective labour inducing the marginal productivity of labour to rise. This process triggers an increase in value of firms bringing about allocative efficiency

of domestic investment and increases in productivity and growth. Moreover, access to world capital markets expands investors' opportunities for portfolio diversification and allows countries to borrow to smooth consumption in the face of average shocks and thereby to adjust themselves against fluctuations in national income. This may induce countries to follow more disciplined macroeconomic policies leading to greater stability and encourage implementation of pro-growth policies in addition to facilitating the transfer of foreign technological and managerial know-how.

However, it is fundamentally important that a country intending to liberalize its capital account transactions must have an efficiently functioning financial sector as it is the main vehicle for the intermediation of both domestic and international financial flows. In contrast to such expectations, the absence of developed financial structure in most parts of the developing world has been viewed as a major impediment to international financial integration of these nations. We will now examine the characteristics of the financial systems in developing countries.

2.2 An Overview of Financial System in Developing Countries and its Evolution

An examination into the financial markets in developing countries reveals that the financial markets in these countries have been generally characterised by several weaknesses. Fry (1995) observes several weaknesses underlying the financial systems in developing countries.

Firstly, he recognizes the dominance of the commercial banks in the financial system as a common characteristic in these countries. While the most important form of household savings is bank deposits, the leading source of finance for firms is also the bank loans. Other financial institutions such as insurance and pension funds, development banks, and equity and bond markets do not play a significant role. According to Fry (1995), “the government bond markets are often used only by captive buyers obliged to hold such bonds to satisfy liquidity ratio requirements or to bid for government contracts”⁴, which points to the degree of financial repression and the power of the governmental authorities in developing countries to manipulate economic activities. Sri Lanka could not escape from this syndrome as shown in chapter 3.

Secondly, the financial system in developing countries is subject to heavy taxation as a mode of government revenue. The government collects the taxes through inflation by printing money to raise government revenues, which ultimately result in reducing the purchasing power of the currencies. As banks are required to maintain usually high reserve ratios, the banks are subject to greater tax burden on reserves as well. In the case of Sri Lanka, the effective liquidity ratio was recorded to be almost closer to 40 per cent during the late 1950s to late 1970s, though it dropped somewhat after liberalization.⁵

⁴ Fry, Maxwell J. (1995), Chapter 1, Keynesian Monetary Growth Models and the Rational for Financial Repression in *Money Interest and Banking in Economic Development*, 2nd Edition, pp.4

⁵ Annual Reports of Central Bank of Sri Lanka from 1959 to 1979. Also see page 118 under the section in chapter 2, *The Performance in the Financial Sector*, page 118

Thirdly, the banks in developing countries are required to maintain high reserve ratios, i.e., ratio of reserves to bank deposit. It has been revealed that during the ten year period from 1978-1987, the reserve ratio to bank deposits in 91 developing countries averaged 21.1% compared with 7.1% in 19 industrial countries, thus resulting a three times greater reserve level in developing countries than in industrialised countries. In some countries, there is the presence of statutory liquidity ratios dictating that a proportion of assets of the commercial banks be held in the form of government debt.

Fourthly, the public sector dominates the credit markets with a proportionately higher amount of borrowing from the commercial banks. During the same period, the proportion of domestic credit expropriated by the public sector in these 91 developing countries recorded at an overwhelming share of 52.6% compared with 18.1% in the 19 industrial countries.

Fifthly, the governments in developing countries set limits for interest rates on deposits and loans by commercial banks thereby preventing the rates to be determined by the market forces. When deposit rates are set by the government, it indirectly imposes a tax on depositors, which is a financial repression tax. Even in the absence of deposit rate ceilings, depositors may be liable to bear such financial repression tax, when commercial banks use their resources to acquire assets such as government bonds that yield returns below market rates. Such interest rate ceilings facilitate to ease the government borrowing at reduced rates. Fry shows that interest rate ceilings could distort the economy in a number of ways; by favouring current consumption against future consumption thereby discouraging savings below the socially optimum level,

and by encouraging lenders towards relatively low yielding investment opportunities instead of depositing in the organized financial sector namely banks. Cheaper lending means the availability of cheaper capital and therefore, borrowers are encouraged to seek funds and invest in low-yielding activities and also in capital intensive projects.

Sixthly, the continued economic stagnation in developing countries has been a result of financial repression as low real interest rates discourage savings thereby reducing the investment well below the potential level, contributing to lower growth in their economies. While low interest rates discourage savings thereby increasing preference towards present consumption as against future consumption, it would also reduce the quantity of funds available to banks for intermediation. The lower the rate of interest the greater is the demand for capital thus making an inducement for borrowers to invest in capital-intensive and low-yielding projects.

Seventhly, the government directed credit by the commercial banks to priority sectors has become a major part of the credit channelling method in developing countries. Quantitative controls of credit and selective allocation according to a criteria determined by the government may restrict the credit to economically more feasible ventures. Channelling credit to government set priority sectors cannot be considered to be the best approach due to the fact that decisions are governed by political or personal relationship considerations. More often the loan decisions of the state owned banks are guided by political motives as will be shown in chapter 3 in the case of Sri Lanka. This would eventually result in a high rate of non-performing loans and defaults.

Finally, Fry shows that there is a positive link between financial and economic development. Most of the stagnant economies with low per capita income are characterized by repressed financial systems. Higher rates of interest drive the economies to achieve a higher rate of growth which result from higher output/capital ratio, which is lacking in these economies.

Above characters vividly demonstrate the financial underdevelopment in developing countries. Ghatak and Sanchez-Fung (2007) cite four major challenges faced by these countries in respect of their monetary policy formation. They observe that due to the prevalence of weaknesses in the financial institutions coupled with lack of prudential supervision, these countries are vulnerable to more protracted financial crises. They also observe that financial underdevelopment has contributed to creating a compelling need to establish rural credit institutions and micro-finance schemes in these countries. Persisting balance of payment problems and widening budget deficits in these countries stem from poor fiscal management, such as printing money to finance fiscal deficits and debt repayments. Therefore, developing countries are more vulnerable to exogenous shocks consequent upon which they are forced to seek structural adjustment facilities from the International Monetary Fund. Sri Lanka was not an exception to such characteristics during the late 1950s to 1977. In the absence of a developed equity and bonds market, the banking sector in Sri Lanka dominated the financial system, with three leading government owned banks playing a major role. In the case of Sri Lanka, a considerable share of bank lending went to the government as the banking sector became a captive source of funding the government debts.

Why did developing countries, in general, choose to follow a set of policies that led them into such an unhealthy economic environment? The causes can be traced back to approximately six centuries during which period, with the advent of transoceanic navigation, brought about a new life of economic opportunity for the western nations. In the presence of large armies of western nations equipped with more potent weapons and gun powder, many of the developing countries were subjected to political annihilation and consequently became colonies of the powerful nations.⁶ Employing various systems of governance in the colonies, a process of exploiting and plundering of natural resources began in these countries and continued unabated for several centuries. In some countries where the geographical climate was conducive for selected agricultural crops, such as coffee, tea, cotton, rubber, sugarcane, rice and tobacco, large plantations were developed. Thus the trade links were established, exchanging for goods procured from colonies. Owners of these plantations were also the foreigners. Though a modern capitalist system with a banking network to channel credit to the raw material trade and plantation crop sectors was evolved over years, the benefits from such developments confined only to raw material producing and plantation crop sectors. When the colonies gained independence in the early 1950s to 1960s, they inherited a dual economic environment as a result of colonial rule. The emergence of the modern commercial sector dominated by a narrow range of raw material including mining and plantation based products which grew independently from the

⁶ For a thorough investigative account on the process of resource exploitation during the colonization in present day developing countries in 15 to 19th centuries, see chapter 2 in Alan Randall's, *Resource Economics, An Economic Approach to Natural Resource and Environmental Policy*, chapter 2.

domestic rural economy was the consequence of such colonization. While the modern sector was geared for completely catering to the global export markets, the role of the domestic rural sector was confined to meet the local needs. While the modern sector was facilitated by a network of banks, communications and transport systems to link with markets, the domestic rural sector that was dominated by a large artisan landless population, suffered from numerous setbacks. No credit facilities or other inputs such as fertilizer, advisory or extension services were available to them. Radhkamal Mukherjee (1939), an eminent Indian economist, pointing to how the Indian economy due to continued exploitation by the newly created zamindars and the British East India Company had degenerated from self-sufficiency to the present state of abnormal decay and breakdown, states that India was the richest country in economic super structure in the seventeenth century and it has been called mother of agriculture and industrial home of the then civilization.⁷ The systematic exploitation and suppression of the domestic agriculture and industry under British rule completely reversed the progressive advances India had been making.

In most of the developing countries, the situation was very similar. Due to unsatisfactory living conditions in rural areas coupled with wider spread poverty and the ever increasing rural-urban gap, people started to migrate to the urban centres, which had already become economic powerhouses owing to “the prosperity of commerce” and their connectivity with the western world through

⁷ Radhkamal Mukherjee, (1889–1968), was a leading thinker and social scientist of modern India and was Professor of Economics and Sociology. He also held the Vice-Chancellor position at the University of Lucknow. As a historian he authored several books and among them his *Economic History of India 1600-1800* is considered more authoritative concerning the historical development during the period focused in it.

trade links. Thus as time passed through, cities became overcrowded with inadequate infrastructure and the governments were unable to meet the growing demand for public utilities such as water, sanitation, sewerage and electricity etc as required by the rising population in urban areas. Such a dualism is a result of severe fragmentation in the underdeveloped economy.

Michael Todaro (1997) views that highly unequal distribution of economic and political power between the rich and poor nations to be the most critical factor that contributes to persistent poverty, rising unemployment and growing income inequality in many developing countries.

As their exports were overwhelmingly raw material and plantation crops which were subject to frequent price fluctuations, they were highly vulnerable to external shocks. On the import side, there was a persistent demand for essential goods such as machinery and equipment, transport goods, textiles and clothing, certain food products and pharmaceuticals, brought from the western nations. The developing countries were locked up in a vicious trap with an ever increasing cost of imports while their export revenues were falling. Continuously deteriorating terms of trade position, as expounded by Raul Prebisch (1950) and Hans Singer (1950), was considered as a serious setback to their economies and stimulated a debate on the need to address the recourse for development. In the case of deteriorating terms of trade scenario, it was concluded that there was a secular downward trend in the terms of trade between primary products and manufactured goods. It was also demonstrated that the rising income as a result of technological progress coupled with the economic growth in developed industrialized countries tends to increase the demand for

manufactured products while the demand for agricultural and other primary products decline. In other words, the primary goods have a low income elasticity of demand. Consequently it was shown that the demand for primary goods from the developing countries could not grow. These findings gradually led the developing countries to adopt a new development vision with a focus on industrialization to achieve a reasonable level of economic growth. This followed the policy of import substitutions strategy for which purpose a shield of high tariff and other import controls were gradually introduced to provide protection for the newly established domestic industry. The government became the sole authority in the allocation of resources inclusive of bank credit. McKinnon (1973) admits that “newly independent governments quite properly felt compelled to act as agents of change to offset economic and political colonialism. In the past twenty or thirty years, poor countries have succeeded in introducing some new industrial activities particularly the manufacture of goods previously imported and in mobilizing some domestic factors of production”.⁸ He further points out that the governments in developing countries resorted to manipulating commodity prices in several ways and intervening directly to help some individuals or sectors at the expense of others.

Political philosophy and intellectual opinion dominated by the ideological principles that favoured the government intervention as the key to remedy the market failure gave confidence to an increased role of the government in the allocation of resources. The governments in many developing

⁸ Ronald I. McKinnon (1973), *Money and Capital in Economic Development*, p. 6

countries were able to harness an overwhelming support from the masses which strengthened the hands of the governments in pursuits such as nationalization of major economic activities and the establishment of state owned business enterprises. The growth of the state-run enterprises was a result of such advocacy. As the number of state-run enterprises gradually expanded their economic domain with the power of the political authorities, they started to run into financial difficulties as their operations were not guided by free market fundamentals. This led the government to rescue the public enterprises by injecting more and more cash from the public treasury. Managed by a group of political henchmen, the public enterprises were unable to demonstrate economic viability through increased efficiency and productivity.

Burdened with a huge responsibility to run a welfare state where markets were shut off from the provision of public goods such as education, health and the distribution of subsidized food, governments' revenues were never sufficient to meet the rising cost to meet the expanding public demands. The loss making public enterprises made this scenario further challenging. Nevertheless, shielded from the Keynesian dogmatism that advocated the role of the government in creating a demand through deficit budgets to create an effective demand, many governments resorted to deficit budgeting in order to support the notion that expansion in government's expenditure would boost the economy. Deficits were largely financed by public debt and printing money, while the former method crowded out private sectors' borrowing, the latter method contributed to rapid inflation. In order to maintain lower cost for debt servicing, explicitly or indirectly the interest rates were controlled by the

government. It became a practice for the banks and other financial institutions to hold government's debts through the reserve requirements. For this purpose, banks were persuaded to maintain usually a high reserve requirement.

2.3 Theories of Capital in Economic Growth

The following section provides a brief exposition on the theoretical models with emphasis on the importance of financial intermediation on economic development. All of these models assume that money supply is exogenously determined. Such an assumption in these models causes the proponents to rely on the assertion that the market rate of interest would always bring about an equilibrium in savings and investment. The underlying idea from this assertion is that when the financial system is under control by government intervention, it fails to adequately generate savings and as such an excess demand for credit prevails. This situation arises as a result of the administratively set interest rate which leads to inefficient allocation of resources. However, it is somewhat puzzling to believe that market determined interest rates would bring about an equilibrium in savings and investment, as there is a clear difference between factors that influence savings and investment. As expenditure is one of the key components in the determination of the national income, and the national income determines the level of savings, the way in which the level of savings can be raised is to reduce the consumption or expenditure. When expenditure decreases, entrepreneurs suffer from losses which would negatively affect the national income. When national income falls, the level of savings would thereby fall. Therefore, it is apparent that any attempt

aimed at manoeuvring the quantity of savings by raising the interest rate may not work. In contrast to this approach, a policy to raise investment would augment the income. When income grows, savings follow a similar trend. Therefore, it is obvious that the savings are the result of investment and thereafter, savings are transformed into investment.

2.3.1 Tobin's Portfolio Choice Model

We have stated in the preceding section that interventionist policies were considered by most of the developing countries in the early 1950s and 1960s as the best possible method to rectify most of the problems confronting them after their independence. It was viewed that continuous underdevelopment was largely due to market failures and hence there was a key role for the government to play. According to Sikorsky (1996), it was after James Tobin's (1965) seminal work "Money and Economic Growth", that the formalization of these ideas emerged into a coherent theoretical framework. Sikorsky states that this framework was based largely around Tobin's seminal paper. Tobin extended the Solow Growth Model by the inclusion of finance and analysed the effect of monetary policy on economic growth. Tobin showed that real capital formation can be raised by increasing the growth rate of money stock through which process interest rates can be reduced. This would result in increasing the value of physical assets through inflation. Based on the assumptions of market clearing, neo-classical economic model and continuous equilibrium conditions in physical savings and investments, Tobin's two asset portfolio choice model establishes that the growth is dependent on capital deepening. When individual choice for

portfolio allocation shifts from real money balances to physical capital influenced by relative yields of assets and tastes, this would lead to capital deepening. The lower the yield on money compared to the marginal productivity of capital, the greater the amount of real capital that the individual will hold in their portfolios. Capital deepening that takes place through this mechanism will consequently lead to economic growth. Tobin's analysis begins with a non-monetary economy where all savings are necessarily accumulated in the form of physical capital. The government now introduces money into the economy resulting in lowering the steady-state level of capital accumulation as a part of the new money so introduced will be held as real balances to meet precautionary and speculative demand. The only way such money balances held by individuals can be offset is to absorb it into the government's hand by running a deficit budget to be financed by borrowings. Tobin incorporates this into a formal model as follows;

$$S = s(y(1 - g) = d + w(k, r) \quad (2.1)$$

$$d = m(k, r)w \quad (2.2)$$

$$w(k, r) = \frac{sy(k)(1 - g)}{1 + (1 - s)m(k, r)} \quad (2.3)$$

In the above model; y is the output per unit of capital which corresponds to an equilibrium value of capital intensity k , w is the warranted rate of growth of capital stock, d is the deficit for a unit of capital, and $m(k, r)$ represents the required amount of money per unit of capital in equilibrium. This, according to Tobin, is the policy set return on money, r . On

the assumption that the government purchases goods and services at a fraction of national income, g , then disposable income is $y_d = y(1 - g) + d$. This disposable income identity allows in deriving an aggregate supply equation which is synonymous of a standard savings-investment equality condition. The equation showing the government's deficits $d = m(k, r)m$ represents the equilibrium value of money ($m(k, r)$) and the warranted growth rate of capital stock ($w(k, r)$). This effect comes due to the fact that deficit spending by government which adds to wealth is held in the form of either money or capital in individual portfolios.

The conclusion arrived from the foregoing equilibrium analysis is that an increase in the warranted rate of capital accumulation necessitates an increase in the propensity to save and at the same time a decrease in the propensity to hold money as an asset. Capital deepening is a result of individual choice on the portfolio allocation between the physical capital and real money balances, which is governed by relative yields of assets and the assets holders' tastes. Whenever the return on money is lower than the marginal productivity of capital, individuals hold real capital in their portfolios. This would lead to capital deepening with the ultimate result of higher level of economic growth.

2.3.2 McKinnon-Shaw Framework on Financial Repression

The negative consequence of excessive government intervention in financial markets in developing countries was first systematically recorded by

Ronald McKinnon (1973) and Edward Shaw (1973) in their seminal work.⁹ The McKinnon and Shaw hypothesis postulates that government controls and interventions in financial system which limit the operations of market mechanisms lead to financial repression and slow down the economic growth and development. They highlight some of the negative consequences of financial repression exerted through interest rate ceilings, practices of directed credit and high reserve ratios that restrict credit on economic growth. McKinnon has shown how the common public policies in developing countries have been evolved for circumventing the domestic capital market in industry and agriculture by resorting to interventionist measures. Broadly categorized into seven major areas, he analyses their common biases and inefficiencies in dealing with unemployment, productivity growth, and income distribution in developing countries.¹⁰ They assert that the excessive governmental intervention in the financial markets in developing countries, which was termed as “financial repression” discourages the savings, divert the meagre funds to inefficient production units thereby resulting in the least remunerative rate of return on capital.

Under financial repression, the real rate of interest is reduced below market equilibrium rates, thereby greatly increasing the investor demand for

9 Though their work was carried out independently of each other, both came up with theoretical explanations in support of financial liberalization and its consequent result in accelerating the economic growth.

10 The seven categories are (a) tariff protection for infant industries (b) import licensing and financial leverage (c) corruption and monopoly privilege (d) cheapening of capital goods (e) agriculture's terms of trade (f) land reform and (g) foreign direct investment and commercial credit.

funds. However, such an increased demand cannot be met by the low level of savings due to the low interest rate applicable on deposits. In addition, imposition of large reserve requirements is another component of financial repression, which curtails banks' lending ability. The governments' policies were hitherto dominated by Keynesian and structuralist opinions, which emphasise, among other things, that low interest rates would result in a higher level of investment and thereby contribute to increased economic growth.

The McKinnon-Shaw analysis concluded that lessening financial restrictions in developing countries can exert a positive effect on growth rates as interest rates move towards their competitive market equilibrium. This advice was soon followed by the IMF and the World Bank in their policy prescription to governments in the developing countries.

McKinnon's theory rejects the monetary models of Keynes, Keynesians and structuralist economists. Both McKinnon and Shaw challenge the policy for maintaining interest rate at low level by government intervention coupled with high reserve ratios and directed credit. Moreover, they were also critical of discriminatory taxation of the financial intermediary sector as being harmful to economic growth. They cited empirical evidence in support of their theory from the liberalization experiences in Taiwan China in the early 1950s and South Korea in the mid 1960s; two countries that followed a positive path of financial liberalization.

According to McKinnon, one major characteristic of the developing countries is the fragmentation of the economy that results from the public

interventionism in response to market failures purported to have been the reasons for underdevelopment. Fragmentation occurs when government policies discriminate within individual firms and households; in the sense that they face different effective prices for goods and productive resources, which prevent their access to the same kind of technology. McKinnon was critical of heavy government subsidies including tax concessions, tariff protection, import licensing and low cost bank finance, the most part of which benefits the small urban elites thus creating a substantial level of income inequalities between the rich few and the larger segment of the poor. A carelessly prescribed set of government policies makes capital markets fragmented as such that it leads to wasteful use of other factors, i.e., land and labour, in addition to suppressing entrepreneurial development and application of inferior technologies in key sectors.

As the principle mechanism for supporting the import substitution industrial policy, which became a common character in every developing country, McKinnon says that the tariff protection for infant industries was introduced to curtail competing imports through which internal price of the domestic goods was raised to generate a cash flow to the new industries. Agreeing with Harry Johnson, McKinnon argues that instead of such tariff protection, a sufficiently developed capital market would have better served the new industry with funds until its maturity in which case the industry could afford to make the repayment of principal and interest. In industries where technology can be easily copied and more generalized labour-force training is required, the ideal way to support such industries without tariff protection would be to

establish pilot projects supported by government subsidies or provide vocational training.

However, in developing countries, the machinery and intermediate goods required for the industries were brought under an import licensing regime and the way in which the import licensing was handled gave a financial leverage to some firms. Assigning an exclusive licence for import of key materials would give a company ability to borrow finance without much difficulty. In most of the cases, import licensing became part of a project package where subsidized domestic bank finance was also arranged. Moreover, forced industrial consolidation brought about by assigning import licenses for machinery and key inputs to a few hands gave monopoly power with an additional social cost. Encouraged by tariff protection, however, in a given industry a large number of enterprises emerged but due to limited capital availability, they remained small in scale.

Commenting on the corruption and monopoly privileges, McKinnon says that “without a functioning capital market there is a substantial pressure to extend state privileges so that the recipient can obtain financing to get a new fertilizer plant built or to exploit a new mineral deposit or perform some other essential function”.¹¹ Everything from obtaining a monopoly privilege, cheap bank credit, tax concessions and privilege access to goods which were of limited supply from the state enterprises meet with favouritism.

¹¹ Ronald McKinnon, *Money & Capital in Economic Development*, The Brookings Institution, Washington, D.C.,

As trade policy was formulated in such a way that it would reduce the cost of capital goods and industrial material, this process affected the entire configuration of relative prices. As capital goods became cheaper, industries had a strong inducement to overuse imported capital goods. McKinnon points out that “ubiquitous excess capacity in plant and equipments and the adoption of overly mechanized “modern” production techniques with imported components can be explained in part by official policy that cheapens their relative costs”.¹²

The set of policies that influenced the relative prices in favour of newly emerging industrialists made a heavy burden on the agriculture. While the protective tariff accorded to safeguard the domestic industry evidently raised the prices of several manufactured products consumed by the farming communities, certain action were directly instituted to keep agricultural prices low. In support of his argument, McKinnon cited a few examples where the beef prices were kept low through export restrictions in Uruguay, Argentina and Brazil to maintain low food prices for the urban centres; raw jute and cotton exports were curtailed in Pakistan to provide cheap inputs to manufacturing. Devastating effects resulting from such policies on agriculture was overlooked by the governments as they were “convinced that rural economic “surplus” – whether in the form of redundant labour or of inferior savings opportunities – somehow had to be transferred to the industrial sector, where investment opportunities seemed more favourable”.¹³ In Sri Lanka, from time to time export of coconut and

¹² *Ibid*, pp. 25

¹³ *Ibid*, pp. 26

coconut products was banned as a response to rising cost of living. The outcome of the policy regime was the unfavourable terms of trade against the agriculture.

In the case of foreign direct investment, McKinnon is of the view that developing countries demonstrated contradictory behaviour. During certain periods, foreign direct investment was encouraged with tax concessions, subsequently to negate them with the threat of nationalization. Reasons for such ambivalence were rooted in economic reasons more than policy changes due to political events. There was a fear that allowing free flow of foreign direct investment would transfer the ownership of enterprises to foreigners at rock bottom bargaining prices thus weakening the domestic entrepreneurial capacity.

A wider acceptance has been given to the exposition by McKinnon (1973) and Shaw (1973) of the interventionist policies of governments in developing countries in the credit market as the cause of growing distortions and inefficiencies in the financial system and dualism in the production structure. As a response to such developments, they advocated financial liberalization in order to make a viable financial mechanism. Over the past three decades, their findings dominated the theoretical foundation for financial sector analysis and policy guidance. The prime modality through which the financial liberalization be addressed is to abandon the central role of the government in setting the interest rate. Increasing the interest rate according to competitive market equilibrium would help to increase the savings rate thereby simultaneously reducing the rate of inflation. This would generate additional investment funds eventually contributing to more investment that leads to economic growth. The McKinnon and Shaw theory suggests a positive relationship between interest rate and

economic growth as increases in interest rates create incremental increase in output. McKinnon assumes that all economic units are restricted by self-financing and that indivisibilities in investment play a key role in developing countries. This assumption implies that before undertaking a project, the potential investor must have accumulated all the required money balances. When real rate of interest on deposits are higher, this would lower the opportunity cost of saving real balances to invest thereby accelerating the process of financing investment projects. Unlike in Tobin's portfolio model where money and capital are considered substitutes, in McKinnon's model money and capital are seen as complements, which is given in a demand equation for real balances (M/P);

$$M/P = L(Y, I/Y, d - \pi^*); \quad \frac{\delta(M/P)}{\delta(I/Y)} > 0 \quad (2.4)$$

where Y is real GNP, I is the investment term, and $d - \pi^*$ is the real interest rate. The positive partial derivative indicates the complementarity between real money balances and investment. Also known as "Complementary Hypothesis", this implies that the demand for real money balances (M/P) depends on real income, Y , the ratio of gross investment to GDP, (I/Y) and the real deposit rate of interest $d - \pi^e$, where d is the nominal deposit rate and π^e is the expected rate of inflation. The McKinnon-Shaw model draws a positive relationship on the investment ratio to the real rate of return on money balances on the assumption that real return on bank deposits raises the demand for money and would be a complementary to investment if the real return on capital rises.

The McKinnon-Shaw model assumes that while the savings (S) and interest rates (r), and savings and the growth of national income are having a positive association, investment (I) and interest rates (r) have a negative relationship.

$$S = S(r, g) \quad S_r, S_g > 0,$$

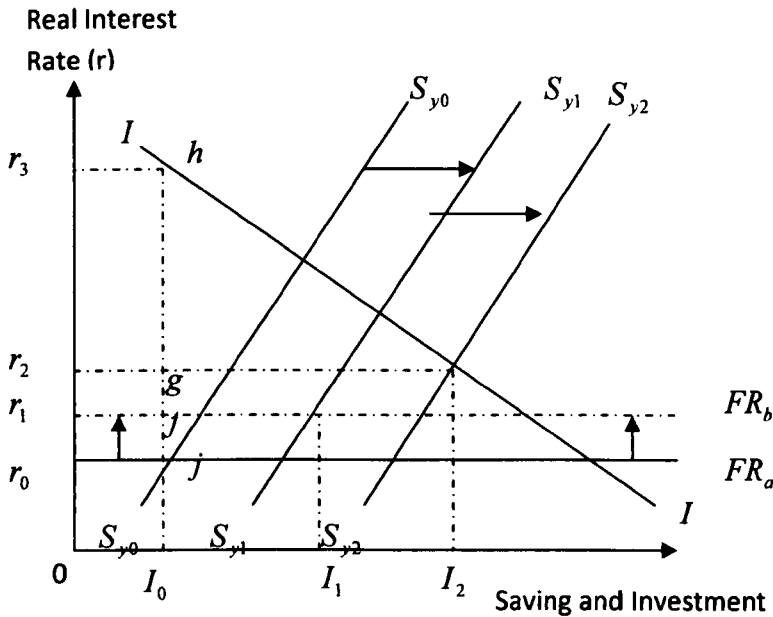
$$I = I(r) \quad I_r < 0$$

The underlying fundamental factors of the McKinnon-Shaw financial repression model are illustrated in the figure 2.1.

In this diagram, the vertical axis measures the interest rates (r) and the horizontal axis measures the savings and investment. Savings denoted by s_y is a function of the interest and income and is positively correlated with the interest. Investment is negatively correlated with the interest as shown by I . In a financially repressed economy where the interest rate is determined by the governmental authorities, this rate is kept below the market determined rate as shown by r_0 corresponding to FR_e which denotes the financial repression. At this interest rate, there is an acute shortage of funds for investment as the prevailing interest rates do not attract adequate savings. Hence the level of investment is limited to I_0 and the investors are subjected to pay an interest rate of r_3 , assuming that no ceiling is imposed on the lending rate. Moreover, often the interest rate lies below the inflation when the inflation accelerates thus making the real interest rate to be negative. Under such a scenario, as a hedge against

inflation, savings are diverted to buying non-depreciating assets, but highly unproductive sectors such as lands and other real estate properties.¹⁴

Figure 2.1 – Relationship between interest rate, savings and investment



In most of the countries where repressive financial regime prevails, similar to the ceiling on deposit rates, ceilings on lending rates are also imposed. In these countries, the banking sector does not operate in a competitive environment. However, while lending rate ceilings can be evaded by the private

14. However, purchase of lands does not make investment for the country. Fry (1995) says that whenever the real interest rate falls, there is a strong tendency for the individuals to remove their savings from banks in order to purchase lands. As the price of lands will boost up overtaking the general price level, this would result in increasing the wealth/income ratio of the household sector thereby encouraging the household sector to consume more at present and future. Fry points out that this process would reduce the amount of savings out of current income as demonstrated in the saving theories based on inter-temporal utility maximization.

sector banks using compensating balances to offset the portion of cost, the state sector banks would strictly adhere to the lending rate ceilings. As the lending rate ceilings give a huge subsidy to borrowers, there is a strong tendency to channel the allocation of funds governed not on the basis of economic potential of projects, but in consideration of transaction costs and the risks involved in possible default. Lending decisions are also influenced by political pressure, quality of collateral and hidden benefits to bank officials. This area marked by $r_0 - r_3 - h - j$ in figure 2.1 represents the amount of investment financed by such lending.

It is clear that in the presence of lending rate ceilings, the average efficiency of investment projects becomes lower, making projects with lower level of returns profitable. Loans denied prior to such lower ceilings will be entertained now creating an adverse selection. As shown by the dots lying between FR_a and FR_b in figure 2.1, the loans are concentrated in projects, returns on which are marginally above the ceiling interest rate which would become no longer profitable at an increased interest of r_1 . When the ceiling on the interest rate is increased from FR_a to FR_b , savings as well as investment will respond positively to such increase by rising from r_0 to r_1 and the marginally profitable projects at lower ceiling rate will then be replaced by projects with somewhat greater return. This process would contribute in increasing the average return on investment, thus augmenting the level of national income. When national income rises, the quantity of savings would also increase as shown by the shift in the saving function from S_{y_0} to S_{y_1} .

The policy prescription by McKinnon and Shaw is to do away with government intervention by completely abolishing the interest rate ceilings both on deposits and lending thus to allow the market to determine the rates. Such a policy once put in place would produce the best possible outcome of maximizing investment and its overall efficiency. This is depicted in figure 2.1 where a new equilibrium is established at the interest rate of r_2 corresponding to which a higher level of saving and investment has been achieved at an increased income of S_{y_2} .

McKinnon is of the opinion that financial repression promotes economic dualism in developing countries where traditional technology with low level of productivity could be observed alongside modern and high productivity sectors. Financial repression creates disparity among entrepreneurs for their credit access. He further states that when access to low cost credit is limited only to certain entrepreneurs this would result in inefficient allocation of credit which would be obvious from the different levels of return to investment across the economy.

However, one of the shortcomings of this theory is that it does not give much attention to the existence of unorganized money markets (UMMs) in developing countries, which are catering to a large number of informal sector business operators (Auerbach and Siddiki, 2004). It is true to say that a significantly large number of rural populations are kept out of the modern banking system even up to the present day in many developing countries due to

the inability of poverty stricken borrowers to meet required collateral and other procedures (Ghatak, 1975).

2.3.3 Kapur's Model of Liberalization

A further theoretical refinement came from Basant Kapur's (1976) model of liberalization policy, which illustrated the growth enhancing effect of increases in interest rates that would bring about a high amount of savings for investment. A similar conclusion is found in Shaw's debt-intermediation view which states that higher interest rates boost the quantity of savings, thereby activating the role of the financial intermediary sector and in turn making an increase in the level of investment. Considered as a first generation financial repression model, Kapur's model applies to a labour-surplus developing economy in the form of typical Harrod-Domar production function as illustrated below;

$$Y = \sigma K ,$$

where Y is real output and K is total utilized capital. Capital is comprised of fixed capital and working capital, but not all fixed capital is fully used. Therefore, there exists an underutilized surplus capital. The utilized portion of fixed capital is represented by α and runs in constant ratio with the working capital which equals $1-\alpha$ of the total utilized capital. Therefore, any increase in the working capital, say $\$x$ amount would increase the total utilized capital by an amount of $\$x/(1-\alpha)$. An assumption made by Kapur as well as Mathiason was the existence of a constant output to capital ratio as given by σ in the production function. Comparing the possible outcomes from alternative approaches for

stabilization, Kapur maintains that a significantly more favourable short-run effect on real output can be obtained from an initial increase in the average nominal interest rate than an initial lowering of monetary expansion. Kapur's point of departure is based on the simplifying assumption that all credit from the financial intermediary sector is made to finance the working capital. At any given time, the total quantity of working capital will be equivalent to $(1 - \alpha)K(t)$, where $K(t)$ is the total utilized capital flows and α is the share of the fixed capital. It is assumed that borrowing from banks is needed to finance a portion of the working capital which is a fixed fraction, θ . The balance will have to be financed from earnings retained by the enterprise. The increments in real working capital will be funded by a section of bank borrowings. Moreover, the increased cost of replacement of working capital resulting from inflation $P\theta(1 - \alpha)K$ will also be required to be met by a portion of borrowed cash from the banks.

In terms of the above considerations, an equation (2.5) to reflect the changes in the capital stock is derived with following assumptions;

$$\pi q \frac{\dot{M}}{P} = \frac{\dot{L}}{P}; \quad \pi = \frac{\dot{P}}{P}; \quad \mu = \frac{\dot{M}}{M} = \frac{\dot{L}}{L}$$

The equation (2.5) implies that any incremental rise in the capital stock will be the result of the positive differences between the real bank borrowings and the increase in the nominal replacement cost of the exhausted working capital out of bank finance.

$$\dot{K} = \frac{1}{1-\alpha} [\mu q \frac{M}{P} - \pi\theta(1-\alpha)k] \quad (2.5)$$

The demand of money for desired level of real balances is given in equation (2.6). It is expressed as an exponential function of the expected yield on deposits ($d - \pi^e$).

Assume γ be the growth rate of the economy. Then dividing equation (2.5) by K and substituting in the production function, $Y = \sigma K$, the equation (2.7) can be expressed in terms of γ , which is the growth equation. The exponential function permits Kapur to show the existence of a positive value of μ that maximizes the growth rate γ , in the equation (2.7). It is assumed here that the deposit rate d is fixed. Any increase of μ above this particular equilibrium level would reduce the growth rate of national income. Therefore, Kapur maintains that under financial repression, the value of μ is much higher than the equilibrium value. Therefore, in his opinion, a higher steady state level can only be achieved by the reduction of μ , the rate of money creation. He concludes that exceedingly higher than the required equilibrium rate of money growth would be inflationary. When increases in the nominal value of working capital is financed by a greater share of bank finance, there will be a reduction in credit available to finance the capital stock. This will lead the real size of the banking sector to contract causing a decline in the rate of capital accumulation consequently leading to an economic slump. The key point Kapur makes is that monetary disequilibrium is detrimental to capital formation and economic growth.

On the short-run dynamics, Kapur defines the inflation rate, π , as a function of divergence from monetary equilibrium in relation to the aggregate supply of goods and an expectations term as shown by equation (2.9). The equation (2.10) is obtained after substituting the equations (2.7) and (2.9) into (2.8). The equation (2.11) gives a somewhat modified version of Cagan's adaptive expectations model implying that deviations of actual inflation from expected inflation lead to the changes in inflationary expectations.

$$\frac{\dot{M}}{P} = Y e^{-a(\pi^* - d)} \quad (2.6)$$

$$\frac{\dot{K}}{K} = \frac{\dot{Y}}{Y} = \gamma = \mu \frac{\sigma q}{(1-\alpha)} e^{-w} - \pi \theta \quad (2.7)$$

$$\mu + W = \pi + \gamma \quad (2.8)$$

$$\pi = h \left(\frac{M}{PY} - \frac{\hat{M}}{PY} \right) + \pi^* = h(e^{-w} - e^{-w^*}) + \pi^*; h > 0 \quad (2.9)$$

$$W = -\mu \left(1 - \frac{\sigma q}{1-\alpha} e^{-w} \right) + (1-\theta)\pi^* + (1-\theta)h[e^{-w} - e^{-a(\pi^* - d)}]$$

(2.10)

$$\frac{d\pi^*}{dt} = \beta(\pi - \pi^*) = \beta h[e^{-w} - e^{-a(\pi^* - d)}]$$

(2.11)

$$\dot{W} = 0 = \frac{d\pi^*}{dt}$$

(2.12)

The equation (2.12) shows an equilibrium condition subject to a constant velocity (W) and perfect foresight in expectations. The effects of two competing policies namely, an increase in the deposit rate, d , and a decrease in the rate of monetary expansion, π , in a self-containing dynamic system is shown in equations 2.10 to 2.12.

Kapur demonstrates that an increase in the interest rate, d , would immediately contribute to bring about downward trend in inflation, which in turn encourage the asset holders to instantaneously increase their desired real money balances. The lower inflation in the current period will have an impact making downward inflationary expectation, π^* . The result of such downward inflationary expectation would be a new level of equilibrium of inflation lower than before. It is also possible that the initially reduced price level could be offset by a falling velocity, W , (2.10), which raises the share of money to output. Thus, the initial reduction in the price level may overshoot the newly

achieved level of equilibrium and it pushes an increase in W to stimulate π converging back to its long-term position.

2.3.4 Galbis's Model

Based on Harrod-Domar production functions in a neoclassical framework, Vicente Galbis (1977) constructs a two-sector model incorporating a traditional economic sector and modern economic sector to demonstrate the effect of financial repression. One of the key tenets of his revelation is the growth enhancing effect of high interest rates on the overall economy even if the savings are interest inelastic. The growth enhancing effect arises from the fact that the high interest rate brings about a qualitative improvement in capital stock. Under financial repression, when nominal interest rates are low, there is a natural tendency to invest in low-yielding investment activities. In order to move away from the subsidized interest rates, Galbis recommends a policy for raising the nominal interest rates with a view to bringing about the efficient allocation of the resources in the financial system based on his model outlined below;

$$Y = Y_1 + Y_2 = r_1 K_1 + w_1 L_1 + r_2 K_2 + w_2 L_2 \quad (2.13)$$

$$I_1 = H_1(r_1, d - \pi^*) Y_1 ; \quad \frac{\partial H_1}{\partial r_1} > 0 ; \quad \frac{\partial H_1}{\partial (d - \pi^*)} < 0 \quad (2.14)$$

Sector 1 represents the traditional economy with low rate of return to capital investment, r_1 , while sector 2 represents the modern economy with higher rate of return to capital investment, r_2 . As the rate of return to capital investment in each sector differs, it is inefficient. The mechanism of income

growth as depicted in equation (2.13) indicates that more advanced technological sector attracts the greater proportion of inputs. With identical depreciation rates, both sectors of the economy operate in a competitive manner. As the traditional sector has no access to bank finance, its investment is completely dominated by self-financing. Equation 2.15 depicts the saving and investment identity of this sector.

$$S_1 = I_1 + \frac{d(M_1/P)}{dt} \quad (2.15)$$

Their savings are equal to their investment and the real bank deposits. The availability of the modern sector's investment resources are given in the equation (2.16).

$$I^s_2 = S_2 + \frac{d(M1/P)}{dt} = \frac{d(M2/P)^s}{dt} \quad (2.16)$$

In the presence of a competitive banking system, the traditional sector's accumulated bank deposits can be channelled towards the modern sector as bank credit for investment. This is in addition to borrowing out of the modern sector's own money balances held in the banks. The modern sector's investment function takes the form as given in equation (2.17), where l is the loan rate of interest.

$$I^D_2 = H_2(r_2, l - \pi^*) Y_2 ; \frac{\partial H_2}{\partial r_2} > 0 ; \frac{\partial H_2}{\partial (d - \pi^*)} < 0 \quad (2.17)$$

Investment decisions are taken by this sector subject to the rate of return on capital and the real rate of interest on loans. According to Galbis, it is a critically important that the return on capital, r_2 , should be considerably large in comparison with loan rate, $l - \pi^*$. On the presumption that incremental demand for financial assets by the modern sector as shown in equation (2.18) and that an exogenous money supply as depicted in equation (2.19), Gilbis demonstrates how policies affect on transfer of resources between the two sectors.

$$\frac{d(M_2 / P)^D}{dt} = \beta I^D_2 \quad (2.18)$$

$$\frac{dM^s_2}{dt} = \frac{d\bar{M}^s_2}{dt} \quad (2.19)$$

[With the assumption that the real interest rate is set by the monetary authorities at $(l - \pi^*)_a$, a level considered to be satisfactory and lower than the equilibrium level, Galbis then focusses his analysis on the consequences of such lower rate. As the traditional sector considers that they could earn a higher return on their own investment activities, they are hesitant to maintain bank deposits. However, the consequence of their decision is a lower return to investment of the traditional sector than that of the modern sector. The potential growth and income foregone as a result will make the traditional sector worse off. Moreover, the modern sector will not be better off as they too lose potential income due to the fact that their capacity to undertake more productive activities is constrained by resource limitations.

Galbis observes a clear disequilibrium between the real supply of, and demand for, investment funds that creates instability in the financial system leading to exacerbating the initial effects from the lower interest rates. The equation (2.20) is based on the assumption that the modern sector is free to borrow to meet their required funds at the prevailing rates. When credit demand is higher than the deposit mobilization, there exists a large credit crunch. This would result in building up inflationary pressure, according to Galbis. The outcome of the inflation is to further aggravate the imbalances in the financial system through the falling real interest rates on financial assets.

$$\left(\frac{d(M_2 / P)^D}{dt} \right)_A = \beta H_2 (r_2, (1 - \pi^*)_A) Y_2 \quad (2.20)$$

Sikorsky (1996) questions Galbis' assertion about the inflation caused by the excess demand for investible funds. "Given that the nominal interest rate is fixed, so that the real interest must be falling, and bank lending seem to be implicitly constrained by the size of their deposits, what mechanism allows the price to rise if money supply is exogenously controlled?"¹⁵

2.3.5 Mathieson's Model

In an open economy framework, Mathieson (1979) introduces the idea of a rapid liberalization programme, which advocates simultaneous reforms to establish a free economy reasonably within a shorter period of time. The motivation for a rapid phase of financial liberalization with overall policy mix is

¹⁵ Trevor Sirkorsky (1996), *Financial Liberalization in Developing Countries*, p. 78

suggested in order to prevent opposing forces from rallying against the process of reforms. Largely influenced by the neoclassical free market ideals, he examines the impact of capital flows on stabilization and financial reforms. His model investigates the interplay of financial liberalization and exchange rate policy in the context of a comprehensive programme of stabilization. An increase in the domestic interest rate will have a positive impact on capital inflows and hence on savings too. However, when capital inflows rise, it will make upward pressure on the exchange rate thus making exports uncompetitive. This results in worsening the balance of payment subsequent to which there will be widespread expectations for a possible depreciation of the currency followed by a capital flight. Such a scenario will destabilize the economy with falling investments and output, coupled with rising unemployment. Mathieson, therefore, emphasises the need for a well coordinated exchange rate policy to avoid unsavoury effects from capital inflows initially on the trade balance. Underlying theoretical explanations in the Mathieson model have been widely credited and since the early 1980s, the stabilization programmes of the IMF heavily drew from it. Mathieson's model is presented below from (2.21) through (2.25).

Assuming that the country is about to open up for capital flows, Mathieson begins his theoretical exposition specifying an inflation rate as given in the equation (2.21). The domestic price level is denoted by P and imported goods price level by XP_f where X is the exchange rate and P_f is the world price level. In consideration of a demand-pull structure, the inflation function includes income and expectations. As lifting of capital controls affects the

equilibrium in the credit market due to the changes in the deposit levels in the banking system and therefore the supply position of loans, the deposit-income ratio will be dependent upon the portfolio allocation between domestic assets and foreign assets as depicted by equation (2.22).

$$\pi = \dot{P} / P = \Psi(XP_f - P + \pi^* + Y_f) \quad (2.21)$$

$$\frac{D}{PY} = f(r_d - \pi^* r_f + x^* - \pi^*) ;$$

$$\frac{\partial f}{\partial(r_d - \pi^*)} = f_1 > 0; \quad \frac{\partial f}{\partial(r_f + x^* - \pi^*)} = f_2 < 0 \quad (2.22)$$

$$L = (1 - k) D \quad (2.23)$$

$$H = DC + XR \quad (2.24)$$

$$\gamma = \dot{K} / K = s(r_k - r_l) + (1 - \alpha x)\sigma ; s^l > 0 ; s'' < 0 \quad (2.25)$$

One of the innovative ideas in regard to the determination of real yield on foreign assets is that the real yield component will be dependent upon the anticipated real foreign interest rate plus the expected amount of capital gains from a depreciation of exchange rate x^* .

The credit market equilibrium will be determined by the amount of deposits, L , which is subject to vary according to the nominal supply of bank loans, $(1 - k)D$, where k denotes the reserve ratio, as shown by equation (2.23). He forms a money market condition similar to the traditional neo-classical open economy identity where the level of base money, H , is equal to the sum of the stock of domestic credit, DC , and the domestic value of foreign reserves, XR . Here X denotes the exchange rate and R denotes the amount of foreign reserves. Under a fixed or managed exchange rates system, the base money is considered as endogenous since the money supply is subject to private sector behaviour. This is because the authorities are required to alter their reserve holdings in order to meet the exchange rate target. Whenever the amount of domestic credit grows faster than the demand for nominal money, the portfolio adjustment is likely to generate a deficit in the balance of payment. Although the authorities cannot control the rate of money growth, they can influence the balance of payment through controlling domestic credit.

The equation (2.25) illustrates how firms' investment decisions determine the growth rate of the real income, γ . As shown by this equation, investment decisions of firms are affected by the marginal productivity of

capital, $MP_k = r_k$, the loan rate r_l , the increase in the general price level, π , and the expected rate of depreciation of the exchange rate, x^* .

Subject to the above conditions, the authorities take action to make necessary adjustments to correct an assumed situation of repression and disequilibrium by introducing required reforms and putting in place a programme of stabilization. For this purpose, Mathieson spells out an optimal criteria for policy makers in order that they can control deviations from the target growth and inflation rates.

2.3.6 Minsky's Financial Instability Hypothesis

Eclipsed for several years from the mainstream economics, Hyman Minsky's (1992) financial instability hypothesis re-emerged after the Russian debt crisis in 1998 as formidable explanation of the financial crises in the capitalist economies characterized by endogenous instability. As the crises occur due to the structural changes within the economy itself, such instabilities are considered to be endogenous. According to Minsky, crises are compounded out of the internal dynamics of capitalist economies and the system of interventions and regulations that are designed to keep the economy operating within reasonable bounds.¹⁶

Minsky identifies three distinct income-debt relations for economic units namely hedge, speculative and Ponzi finance¹⁷, based on the time varying

¹⁶ Hyman Minsky (1992), "The Financial Instability Hypothesis", Working Paper No. 74, The Jerome Levy Economic Institute of Bard College

¹⁷ The term 'Ponzi finance' has come into usage after Charles Ponzi, who had run a deposit taking financial institution in the US offering unusually high interest rates in a swindling racket in early 1920s.

nature of expected gross profits and payment commitments. In the case of hedge financing units, their expected income flows are more than sufficient to meet the contractual payment including both interest and principal in each of the consequent periods. According to Minsky, "inasmuch as equity liabilities do not commit payments, the larger the equity share in the financial structure of a unit, the greater the likelihood that the unit is a hedge financing unit".¹⁸ As for the speculative units, this sector's income flows would be only sufficient to meet the interest payment on debts, but the revenue flows are not enough to meet payments for the maturing debts of the principal. In order to meet its commitments for payment, the unit has to rollover the maturing debts. As such the units in this sector are compelled to go to the financial market to borrow. The worse scenario in the payment situation is experienced by the Ponzi financing units. As its financial flows are weak due to the poor performance of assets, it lacks revenues to pay both the interest payments on the debts as well as even any part of the maturing principal. These units therefore ventures into borrowing to pay interest apart from refinancing the maturing debts. On the balance sheet of Ponzi units, it can be seen that while the total sum of equity has declined, the debt has risen, thus increasing the debt equity ratio. Assuming that hedge financing units are the dominant sector in the economy, Minsky says that it appears profitable for the sector to borrow short-term as relative cheapness of such debts. This will encourage the units to build up their capital assets, which follows the investment demand to increase and capital assets to rise in prices.

¹⁸ Hyman Minsky (1995), "Financial Factors in the Economics of Capitalism", *Journal of Financial Services Research*, 9, 197-208

The increased investment helps the profits to rise encouraging a further boost to speculative finance. This process will change the hedge units' financial balance sheet position by increasing the ratio of debt to income, and of debt to liquid assets ultimately turning them into speculative units. The result would be that more and more businesses increasingly turn to rely on the financial sector such as banks, with a view to financing their assets. As the financial structure of the businesses sector become fragile, this situation will affect the health of the financial sector when there is a modest change in the cash flow, capitalization rates and payment commitments of the former. As the debt-income and debt-liquidity ratios have increased together with deteriorating gross profits, the business units become more vulnerable to meet their debt obligations. However, under such a scenario, the demand for credit will rise with a warning signal to the financial sector of the growing risks associated with lending. This will follow a steep rise in interest. When the interest rates goes up, that would raise the cost of production of investment goods, while lowering their demand price turning the economy from a boom to bust. What follows from here is that business firms are now compelled to sell off their assets at fire-sale prices in order to make their payment requirements. Banks, hard-pressed for recovering the large volume of loans, find their balance sheets are dwindling as the collaterals deteriorate when downward pressure builds up on the assets prices of economy. The banks will start to cut back their lending thereby leading to the contraction of the economy with the reduction in spending on investment and consumption, consequent on which profits and labour income will also get affected. In Minsky's opinion, the first theory of the instability hypothesis is that the economy has financing

regimes under which it is stable, and financing regimes in which it is unstable. The second theorem of the financial instability hypothesis is that over periods of prolonged prosperity, the economy transits from financial relations that make for a stable system to financial relations that make for an unstable system.¹⁹

2.3.7 Finance and Growth Debate

The role and the contribution of the financial sector in economic growth and development has been a widely debated issue in the literature. Some economists, however, do not agree that there is a role of finance in economic growth. Such thinking traditionally continued from the classical economic theory which assumed only on the effects of real factors influencing the economic growth. According to standard growth theory, economic growth is the result of innovation, human and physical capital accumulation. In the neo-classical growth theory, only a little focus is given to finance.

In contrast to the above opinion, Gurley and Shaw (1955), Goldsmith (1969), and Hicks (1969) argue that development of the financial systems has a fundamental relevance to fuelling economic growth since underdeveloped financial markets contribute to deceleration of the economy. It was postulated that better financial institutions, along with a greater number of financial products and services would impact positively on the saving and investment process thereby accelerating economic growth.

¹⁹ Hyman Minsky (1992), "The Financial Instability Hypothesis", Working Paper No. 74, The Jerome Levy Economic Institute of Bard College

The existing literature, where different explanations and conclusions are given, has been broadly classified into three strands (Federici and Caprioli, 2009). The first strand is that more developed financial systems are able to absorb shocks and to limit the length of macroeconomic cycles to a shorter period. In the presence of higher level of financial development, it is believed that the convergence process to the new steady-state condition could be reached at faster speed (Aghion, Bachetta & Banerjee, 1999). The second line of approach shows when financial imperfections are present how it affects output as shown by Bernanke and Gertler (1989). They developed an "overlapping generation costly state verification model" developed by Bernanke and Gertler (1989) where agency costs are inversely related to the borrower's net worth. If there were no financial imperfections, only an exogenous productivity shock would create output fluctuations. In analysing how credit constraints interact with aggregate economic activity over the business cycle, Kiyotaki and Moore (1997) reached a similar conclusion. The third strand of literature focuses how financial development affects long-term economic performances. Work by some authors (King and Levine, 1993a; Obstfeld, 1994; Quinn, 1997; Levine, 1997; Klein and Olivei, 2008; Levine, Loayza and Beck, 2000; Bekaert, Harvey and Lundblad, 2005) provide evidence on the relationship between the degree of international financial integration and economic growth.

However, several authors including Diaz-Alejandro (1985), Bhagwati (1998), Rodrik (1998), and Stiglitz (2002a), do not support the view that free movement of capital generates considerable benefits to developing countries.

They claim that the cost of liberalization outweighs the benefits, ultimately creating crises.

Bhagwati (1998) does not agree with the notion that there is a corresponding similarity between free trade in goods and services and free capital mobility. Pointing to what Kindelbeger has famously observed, Bhagwati notes that capital flows are characterized by panics and manias. Each time, a crisis arising from capital flows hit a country, it results in causing a serious economic downturn. Experience from the debt crises in South America in the 1980s shows that the region could not overcome the economic instability for decades. Mexico which was largely exposed to short term capital inflows met with devastation in 1994. In East Asia; Indonesia, Thailand and South Korea bearing a heavy burden with short-term borrowing went into almost bankruptcy in 1997, having to restore their economies with large bailout plans of the IMF. In order to reverse the continued flow of capital, a country must take appropriate action to restore the business confidence. Reforms to be introduced under the bailout plans included raising the interest rates. Throughout East Asia this destroyed the firms with large amount of debts. The countries were also encouraged to sell the domestic assets which were highly undervalued due to the credit crunch, in a fire sale to foreign buyers. Apart from such economic setbacks, Bhagwati points out that these countries had to face the problem of

losing their political independence in pursuing their economic policies they deem fit.²⁰

Bhagwati views that having diverse political and social backgrounds as well as historical experience, it is extraordinary that China and Japan have achieved high growth rates without capital account convertibility. The economic success in Western Europe was also achieved without capital account convertibility. If one considers capital flows to be highly productive, there is still an important difference between embracing free flow of portfolio capital and having a policy for attracting foreign direct investment. Bhagwati states that to some extent, it may be possible that the amount of foreign direct investment may be slowed down due to not allowing free flow of portfolio capital. However, he says that there is little evidence to support this claim. Therefore, a country that encourages foreign direct investment is unlikely to suffer negatively just because of the presence of restrictions on portfolio capital movements.

Stiglitz (2002a) favours the argument for foreign direct investments, which brings with it not only resources, but technology, access to markets and also valuable training, contributing to human capital improvement. Foreign direct investment is not volatile and hence not disruptive. He comes to the conclusion that it is the short-term flows that can rush into a country and in the same manner abruptly precipitate. Drawing from the experience of the East Asian countries during the financial crisis, he shows that from 1996 to 1997 the

²⁰ Jagdish Bhagwati, "The capital myth: The difference between trade in widgets and dollars" *Foreign Affairs*, volume 77, no. 3, May/June 1998, pp 9

turnaround of capital flows amounted to US\$105bn which accounted for more than 10% of the combined GDP of these economies. Stiglitz questions the validity of standard efficiency argument based on which capital market liberalization has been evolved and states that the behaviour of capital markets differ from that of ordinary goods and service markets. This difference comes from the very nature of the information requirement in the case of capital markets. The central function of the capital and financial markets is information that help appraise the projects and the firms in order to ensure that money goes for the highest yielding project. Information is also important in the case of monitoring the success of each of those activities. He goes further on to state that although there are relatively few studies on the capital market liberalization, but evidence from such studies do not support for liberalization. On the argument for the economic stability that would result from capital market liberalization, he is of the view that growth is slowed down for several years after a crisis has cropped up, pointing to the large unit root literature which suggest that a country which has suffered a fall in GDP due to a financial crisis, persistently remains below the level of output that was there prior to the crisis and do not completely recover. Furthermore, the distributional impact of such instability particularly in developing countries is severely felt as the poor bares the brunt of the burden in the absence of or inadequacy in social safety nets. In regard to the argument for capital market liberalization on account of its contribution to diversification and enhancement of stability, Stiglitz points to the pro-cyclical nature of the capital flows exacerbating economic fluctuations and therefore systematically associated with greater economic instability. Additionally, capital market

liberalization would expose a country to situations that take place beyond its territory. For example, an unexpected change in attitudes or perceptions of investors on the merging market economies can show the way to increased outflow of capital. More evidence in support of this argument is available from other writers. Shiller (2000) shows that excess volatility in the assets market is created by herding behaviour and that would make sudden outflows of short-term capital. Stiglitz is of the view that foreign direct investment or other forms of long-term investment is not affected by restrictions on short-term flows and says that short-term capital does not contribute in providing solid investment as short-term capital can be pulled out with a sudden notice. Hence firms are unlikely to venture into productive long-term investment on the basis of short-term funds. Naming China and India, the two countries that show resilience and grew with remarkably high growth rates despite a difficult global economic environment, Stiglitz points out that both countries have maintained strong restrictions on capital account transactions. In the case of China, he explains, having a high level of restriction on short-term capital flows, China continues to be the top most in getting foreign direct investment. In the meantime, countries that have imposed restrictions on short-term capital flows including Chile on inflows and Malaysia on outflows were not adversely affected. However, he points out that uncertainty arising from greater risk of economic volatility or higher probability of recession associated with capital market liberalization certainly makes investment less attractive. On the argument that freeing capital flows allows countries to bring about proper disciplines, Stiglitz (2002) says that such openness makes countries particularly sensitive to corporate or capital tax

rates, or to changes in interest rates thereby imposing a severe restriction on the government's ability to follow legitimate objectives. There are several channels through which capital account openness would have a negative effect on growth. In the case of developing countries, given the limited ability to diversify risks, instability increases the risk premium, a rise in the expected return on investment. Again a crisis situation may negatively affect a firm's net worth, which would discourage the firm from investing. Stiglitz says that "in the more extreme cases, as in East Asia, crises lead to bankruptcy, and corporate bankruptcy leads to undermining financial institutions; in both cases, there is a loss of organizational and informational capital, a loss which cannot easily be reversed. There are important asymmetries and hysteresis effects: the booms do not make up for the losses, nor do the gains by some make up for the losses of others".

Rodrik (1998) is of the view that temptation to consider capital account liberalization as a natural follow up to the already established current account liberalization does not seem realistic as there is a fundamental difference in the way both markets operate. The market for goods and services operate in most instances with a certain degree of efficiency and predictability while financial markets are subjected to market failures arising from asymmetric information, incompleteness of contingent markets, and bounded rationality. He points to several familiar situations which have been highlighted in the literature. Asymmetric information combined with implicit insurance that result in excessive lending for risky projects, mismatch between short-term liabilities and long-term assets, herding behaviour resulting in turn in excess volatility and

contagion effects, and high expectations that lead to bubbles are some of the problems that create anomalies in financial markets. On the counter argument that financial markets get the correct signals such as external shocks or policy failures, Rodrik argues that in that case the magnitude of crises should have been commensurate with the changes in fundamentals, but which was not the case. Concerning the position that deviation in fundamentals would be the cause of crisis, he states that there were no changes in economic fundamentals that can be attributed to the reversal of capital flows during the 1996 East Asian crisis. Even after adopting better monetary and fiscal policies, crises were experienced in countries, for example ERM crisis in Europe in 1992 could not be blamed for careless monetary and fiscal policies. Rodrik says that it is a fact that financial crises will always be with us and there is no magic bullet to stop them. He does not agree with the notion that capital controls are costly to economic performance and states that capital controls prevent risk spreading through global diversification of portfolios. Using partial scatter plots relating capital account liberalization to three indicators of economic performance, namely, per capita GDP growth, investment as a share of GDP and inflation for 100 countries both developed and developing, during the period from 1975 to 1989, he comes to the conclusion that countries without capital controls have grown faster, invested more, or experienced lower inflation.

Boyd and Smith (1992) maintain that the financial liberalization and growth link stand only in the case of a strong level of financial and institutional development. In the presence of other distortions in the financial sector such as prices and trade, they state that it is likely that FDI could distort the resource

allocation and slow down growth. This suggests that FDI does not necessarily contribute to growth without first addressing other issues adequately. Under such situations, FDI could be harmful to the economy with provisions that favour FDI.

Drawing from the neoclassical analysis on the implications of free flow of capital, Henry (2007) argues that the conclusion drawn from the purely cross-sectional regressions, that capital account openness and economic growth has no positive relation is somewhat a misconstrued idea. He provides three reasons in support of his argument. Firstly, he shows that the neoclassical model provides no theoretical basis for testing whether the capital account policy has a permanent effect on differences in long-run growth rates across countries. According to the neoclassical model, when capital moves from a surplus capital to a capital-poor country, there will be a temporary increase in the growth rate of the GDP per capita of the latter. A temporary increase in growth will eventually raise the living standard of the country's population. Accordingly, Henry states that "however, as it is the increase in the level of GDP per capita that is permanent - not its rate of growth - theory dictates that one tests for either a permanent level effect or a temporary growth effect".²¹ Henry is of the view that essentially, the neoclassical model makes no predictions about the correlations between capital account openness and long-run growth rates across countries, nor does it suggest the causal link needed to justify cross-sectional regressions. He also says when liberalization of capital account takes place, it is critically

²¹ Peter Blair Henry (2006), "Capital Account Liberalization: Theory, Evidence, and Speculation" *Journal of Economic Literature*, vol. XLV, pp. 887-935

important to make a distinction between debt and equity. Countries liberalizing debt flows, in particular short-term dollar dominated debt flows, may face greater risks whilst deriving substantial benefits from the opening up of the equity markets.

Secondly, Henry argues that many of the papers cover both developed and developing countries in the sample whereas the theory maintains the need for a separate examination of the two groups of countries. Henry is of the view that lumping both developing and developed countries together in the sample does not produce valid results in showing a significant impact of capital account liberalization. It only increases the sample size, but in the absence of an empirical methodology to explicitly determine the fundamental theoretical difference between the two group of countries, the cross-sectional studies undermine its ability to interpret the data. According to the neo-classical model, a developing country which lacks capital, experiences net capital inflows after liberalization leading to a permanent fall in the cost of capital and a temporary increase in economic growth whereas a developed country with surplus capital should experience the opposite.²² Pointing to the results of the studies obtained by Rodrik (1998) and Levin and Zervos (1998), Henry states that when both developing and developed countries were included in the sample, the outcome was that capital account liberalization had no effect on investment and growth, but in sub-samples of developing countries and developed countries, the outcome may have been contrary to such findings.

²² However, Henry points out that despite a fall in the GDP of the developed country because it exports capital, its GNP increases as a result of income accruing to its capital invested abroad.

Finally, Henry states that most of the models developed are subject to a measurement error contained in the variable that is used to capture the real effect of capital account liberalization. Drawn from the qualitative data contained in the International Monetary Fund's (IMF) Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER), a variable, 'SHARE', has been worked out to measure the impact of capital account liberalization on economic growth in these models. The data in the AREAER contains the regulations on capital account transactions in member countries. Employing a binary variable, the years where restrictions on capital movements are present is assigned with the value one, and zero otherwise and the number of years where capital movements were free is expressed as a ratio of the total period under investigation. A main problem associated with the variable, SHARE, is that it is a binary measure of capital controls that captures either a completely closed or completely open position without attaching values in proportion to the degree of intensity in openness.

Federici and Caprioli (2009), using a set of quarterly data from thirty nine countries and employing a Vector Autoregressive (VAR) framework to provide an assessment of empirical evidence on the effect of financial development on macroeconomic volatility find evidence that more financially developed countries are able to avoid currency crises. On the other, countries with very low financial development are susceptible to crises. Their conclusions are worthy to note. They maintain that premature reform of international capital liberalization can be highly risky, if its not supported by collateral reforms.

One school of thought is that such liberalization would promote financial development thus contributing to efficiency gains and creating diverse opportunities. Another school takes the view that liberal financial policies and capital market openness would lead to uncontrolled massive outflows of capital and would hurt growth under the currently widely accepted regime of flexible exchange rates, particularly in developing countries.

Towards the end of the twentieth century, countries in the developed world had put in place fully-pledged systems of liberalized capital markets virtually eliminating all policies that hinder the movement of financial capital across borders. In the 1990s, a number of developing countries too followed policies towards capital account liberalization, a trend that encouraged the Interim Committee of the International Monetary Fund (IMF) to make a recommendation in 1997 to amend its Articles of Agreement to take on a new formal commitment to capital account openness. The underlying importance of this proposal was that international capital mobility increases aggregate welfare by facilitating efficient allocation of investment irrespective of political boundaries, similar to that of free trade in goods. Almost after the enunciation of the IMF proposal, however, the Asian financial crisis hit a severe blow to this acceptance thereby somewhat regaining a place in the political and economic debate for capital controls as a potentially desirable way to mitigate volatility in international capital markets and to maintain national policy autonomy. Some argued critically that the theoretical efficiency gains from capital account openness are often not realized in practice. Even before the Asian financial crisis, the debate on the consequences and desirability of capital account

liberalization for developing countries had been very much in focus. In the context of financial turmoil in the US with sub-prime issue that suddenly turned into a global crisis in 2008, the debate has been further fuelled due to the aftermath effects that felt throughout the developing world. The issues are centred on the impact of the globalizing financial markets. Despite the impressive number of countries that followed policies of capital account liberalization in the 1990s, a substantial number of countries in the world retain significant restrictions on their capital accounts even to this date, and a reverse situation on capital account liberalization has come into play.

An inventory of measures to gauge the intensity with which the capital controls are imposed is given by Hali J. Edison, Michael W. Klein, Lucas Antonio Ricci and Torsen Slok (2004). As shown by them, most of the measures are qualitative and rules-based, and eleven such measures were listed.

Among the quantitative measures, Martin Feldtjen and Charles Horioka (1980), developed a measure based on the savings and investment maintaining that gaps between the two reflect the status of free capital flows. When savings and investments are highly correlated, it is concluded that there were significant barriers to capital movements. Researchers also focused on measuring the extent of capital account liberalization taking into account the actual inflows and outflows as a percentage of GDP.

The Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) of the International Monetary Fund (IMF) provides details of various measures that are employed by countries to restrict the

movements of capital flows and this would be the best source to obtain such data. However, the World Bank's listing does not distinguish between strongly administered capital controls and those that are somewhat absorbent, as observed by Hali J. Edison and others (2004). In the method developed by Dennis Quinn (1997), he has taken the degree of intensity into account on a scale from 0 to 4 to reflect the order of status from restriction to liberalization.

The Code of Liberalization of Capital Movements of the Organization of Economic Co-operation and Development (OECD) is an alternative measure of capital account liberalization. It provides data on eleven categories of international transactions to reveal the extent to which the restrictions apply.²³

Some economists (Brune, Garrett, Guisinger and Sorens, 2001) argue that consistent with the Mundell-Fleming framework, countries with fixed exchange rates have had less open capital accounts, presumably because of fears of losing national policy autonomy. According to them, capital account liberalization has also been less frequent and less extensive in poorer countries that lack the kind of domestic institutions that even the IMF recognizes are likely to be preconditions for reaping the benefits of free finance. Mundell (1963) argued that under an extreme degree of capital mobility, a country cannot maintain an interest rate different from the general level prevailing abroad. Thus this would lessen the ability of the country concerned to control the domestic money market. Known as the Mundell-Flemming trilemma framework, it says

23 These eleven categories are direct investment, repatriation after liquidation of direct investment, admission of securities to capital markets, buying and selling of securities, buying and selling of collective investment securities, operations in real estate, financial credit and loans, and personal capital movements.

that a country can simultaneously choose any of the two goals from the following three; monetary independence, exchange rate stability and financial integration, but not all the three goals.

From a political economic perspective some authors (Berger, Sturm and de Haan 2001) have argued that traders involved in the imports and exports of goods, as well as foreign investors and multinational firms support financial market liberalization. The greater the reliance of a country on foreign trade and the more important foreign direct investment is for the country, the more open its capital account. It is also argued that stable democracies tend to have more open capital accounts and that democratization has led countries to adopt policies towards capital account liberalization.

Finally, it should be mentioned that without liberalizing both domestic financial sector and the external sector, a country cannot expect to put in place a distortion-free market environment. Hence measures should include, on the domestic market sector side, interest rate liberalization, money market reforms and anti-monopoly legislations and on the external side, relaxed rules for FDI, foreign equity inflows and outflows, and proper exchange rate mechanism. In the case of reserve requirements, suggestions have also been made by others that there should be some relaxation on the reserve requirement. Fry (1995) has pointed out that given the substantial increase in banks' off balance sheet activities, combined with the introduction of a capital adequacy requirement, the retention of reserve and liquid asset ratio requirements appears redundant as well as damaging. Therefore, he suggests that any reserve ratio requirements should be lowered systematically to 5 percentage points until they reach zero.

2.4 Financial Liberalization and Economic Crises

Crisis literature connects financial liberalization initially to large booms in borrowings and very high assets prices, ultimately leading to collapses. Under such circumstances, a considerably large amount of outflows of speculative hot money is unavoidable. Investors may overreact to shocks; when they are optimistic pour capital beyond what fundamental dictates, or under pessimism take reverse positions with massive withdrawals, as seen following the crises in East Asia, Russia and Latin America in the late 1990s. Evidence shows financial globalization has influenced business cycle spills over across countries in the 1990s (Kose and Prasad, 2010). Following the episodes of currency crises, destruction of economic activity in some countries was estimated to be around two or more years of GDP growth (Eichengreen and Rose, 1999). The following section focuses on some of the reasoning of crisis situations and suggestions to prevent or overcome from such crises, as appearing in the literature.

2.4.1 Unsustainable Exchange Rates

A currency crisis can occur when the monetary authorities are trying to maintain the exchange rate at an unsustainable level disregarding the underlying causes that determine the real demand for and supply of foreign exchange. When such a policy is pursued by the monetary authorities it would create downward or upward pressure on the currency. Assume that the country has foreign reserves sufficient for only a few months of imports or paying off for capital outflows; in the case of downward pressure on the exchange rate, limited availability of foreign exchange hinders the capacity of the monetary authorities

to protect the exchange rate from depreciating. Monetary authorities' capacity to act when there is upward pressure being built on the exchange rate is limited by the fear of inflationary consequences resulting from the growth of money supply or by the willingness to carry on with sterilisation operations, which in turn push the interest rate upward, ultimately resulting in further capital inflows. Popove (2001) emphasises that "once either a brisk devaluation or revaluation occurs, there is a shift in relative prices and terms of trade, which may provoke supply-side recession and that changes in relative prices of assets dominated in foreign and domestic currencies may cause disruptions in the payment of credits (debt and banking crises)".²⁴

Krugman (1979) has shown how a currency crisis of this nature results from policy inconsistencies, in particular, between deficit budget financing by increased money supply and at the same time trying to maintain a fixed exchange rate. This would result in an overvalued currency thereby discouraging exports and encouraging imports leading to current account deficits. In anticipation of possible exchange rate devaluation, capital outflows start to take place. Such a situation develops into a balance of payment crisis, in which the speculators attack the currency eliminating the last of the reserves. Before that however, on some occasions, the government resists the crisis by resorting to secondary reserves either drawing from a gold tranche or negotiating for an emergency loan. On such occasion, the capital that has flown out returns, which would strengthen the reserve position of the government, although it is

²⁴ Vladimir Popove, (2000), "Currency crises in Russia and other transition economies", MRA Paper no. 28117, pp. 29

temporary. Afterwards, another crisis will follow forcing the government to call on further reserves. Krugman states that “there may be a whole sequence of temporary speculative attacks and recoveries of confidence before the attempt to maintain the exchange rate is finally abandoned”.²⁵ The government then becomes unable to defend its exchange rate any longer. Krugman’s analysis falls into the first generation or exogenous policy models.

Pesenti and Tille (2000) have come up with another qualification to Krugman’s analysis. Since a speculative attack is prompted by the foresight of the market in regard to the signalling of a possible devaluation, it is important to note for the analysis their perceived understanding on the devaluation is influenced by “*future policy stand*” and not by the “*past observations*”. Putting it differently, it cannot be argued that a country not running a substantial fiscal deficit would not experience a currency crisis due to the reason that the fiscal balance observed does not provide a fair indication on the effective government liabilities. Assuming a country where there is no public deficit or debt, but whose private sector is subject to a series of financial difficulties resulting from heavy borrowing threatens the profitability of the financial intermediary sector. The government at that stage may intervene to bail the private sector out, consequent on which, the income and wealth between financial intermediaries and taxpayers are altered since the bailout is financed by taxpayers’ money. Having noted the weaknesses of the private sector, the investors can now expect that the government would initiate a bailout plan in the foreseeable future

²⁵ Paul Krugman (1979), “A Model of Balance of Payment Crisis”, *Journal of Money, Credit and Banking*, vol. 11, no. 3 pp..311-325

resulting in an expansionary monetary policy. Pesenti and Tille (2000) maintain that “since such expansion is inconsistent with maintaining the exchange rate peg, investors will expect the currency to depreciate, and this expectation will trigger a speculative attack”.²⁶

A currency crisis can also be caused by the failure of the government to honour its debt obligations. Popov (2001) shows that “if debts are denominated in foreign currency, like the Mexican Tesobonos in 1994, the connection is obvious – outflow of capital in the expectation of default and/or devaluation leads to a depletion of reserves and triggers devaluation”.²⁷ However, when the obligations are denominated in domestic currency, investors tend to believe that the government would resort to finance the public debt by printing money which would result in inflation and subsequent devaluation. Therefore, investors switch to foreign currencies. Popov suggests that the currency crisis in Mexico in 1994 and several other Latin American countries in the early 1980s were the result of the failure of the respective governments to honour the debt obligations.

In the case of second generation models, Obstfeld (1994) presents an analysis on currency crises caused by surmounting debts as a result of the conflict between a fixed exchange rate and the government's desire to pursue more expansionary monetary policy. In response to the fundamental weaknesses arising from an already overvalued currency and an unsustainable current account deficit, there could be some self-fulfilling panic among the investors is

²⁶ Paolo Pesenti and Cedric Tille (2000), "The Economics of Currency Crisis and Contagion: An Introduction", FRBNY Economic Policy Review, New York, September, pp. 3-16

²⁷ Vladimir Popov, (2000), "Currency crises in Russia and other transition economies", MRA Paper no. 28117, pp. 29

also at work in anticipation of a possible devaluation as evidenced from the financial crisis in Mexico.

Literature also provides details of a third type of currency crisis that occurs due to excessive accumulation of private debt and identifies the root cause of the East Asian financial crisis in the 1997-98 period to this type of crisis. The East Asian crisis was linked to exceedingly high expansion of borrowing by the banks and the corporate sector abroad causing mistrust and resulting in the crisis. However, a variety of factors contribute to a currency crisis, and usually combines the features of all the three described above.

Sachs, Tornell and Velasco (1997) addressing the currency crises that engulfed Mexico in 1994, with its reverberations in a number of developing countries around the world (also known as the Tequila Effect), examine the predictive power of three measures of fundamental risk in currency market. The first measure is the appreciation of the real exchange rate during the capital inflow period (1990-94) relative to average value of the preceding period (1986-89) as an indicator of greater risk in currency depreciation in 1995. This is because sustained investor confidence after liberalization attracts capital inflows despite poor economic fundamentals, thereby appreciating the exchange rate. However, the appreciation of the exchange rates to such a high level may give a signal to investors that the exchange rate is unsustainable. The second measure is how rapid the increase in commercial bank lending to the private sector measured against as a percent of the GDP. They argue that prior to a crisis, a bank lending boom is an indicator of greater weakness in bank balance sheets and therefore, more vulnerability to reversals of investor confidence. The third

measure is the ratio of M2 to foreign exchange reserves which indicates that panic action by bank depositors is likely to lead to exchange rate devaluation. It is the most appropriate yardstick that can be used to compare the level of reserves because it takes into account the potential amount of liquid monetary assets that will be converted into foreign exchange.

They state that for a group of 20 emerging economies, the differences in these fundamentals go far in explaining why during 1995 some emerging economies were hit by financial crisis while certain others were not. When panic spread after the Tequila crisis, while previously weakened countries such as Argentina, Brazil and the Philippines could not escape from contagion, the strong countries with solid fundamentals suffered only a very short-lived downturn in capital inflows. The latter group included the neighbouring Chile and Columbia which experienced slight and transitory market reaction to the Mexican crisis. Though Thailand and Malaysia had equally large current account deficits as a percentage of GDP, these two countries did not suffer from reversals of capital inflows. Despite a strong reserve position and good macroeconomic performance, the Thai Baht had come on speculative pressure in early 1995 but it was short lived as the central bank intervention restored the confidence. In mid January 1995, the Malaysian Ringgit also came under speculative pressure, but it did not last long when the central bank sharply increased the interest rate. They conclude that among the Asian countries studied, Malaysia happened to come under the least strain in early 1995.

Their main conclusion is that “some degree of previous misbehaviour was a necessary condition for crises: overvalued real exchange rates and recent

lending booms coupled with low reserves relative to the central bank' short term commitments rendered economies vulnerable to the mood swings of fickle international investors. In the absence of these fundamental weaknesses speculation and contagion were at worst short-lived, and the Tequila effect left no hangover behind.”²⁸

In regard to the Mexican crisis, a similar explanation was given by Cordon, Solomon and Eichengreen (1999). Overvalued exchange rate as a result of large capital inflows, the balance of payment crisis caused by excessive expansionary fiscal and monetary policies, accumulation of short-term foreign currency denominated debt and significant increase in consumption demand that contributed to high current account deficits are cited as some of the reasons for the crisis.

As foreign investors held almost one-third of Mexican government securities amounting to US\$ 23bn by 1994, foreign dominance in the domestic financial market was blamed for the crisis. However, the facts do not support this argument. Fry (2000) traces the origin of the crisis to a rise in the US federal funds rate starting by 0.25 percent in February 1994 followed by four more interest rate increases, finally raising the rate to 5.5 percent by the end of November 1994. In the meantime political unrest was also created after the assassination of a presidential candidate. Both, the increased interest rates elsewhere in the OECD countries and the political unrest contributed to a sudden outflow of capital, to which the Mexican central bank responded to by

²⁸ Sachs, Jeffrey, Aaron Tornell and Andrés Velasco (1997), “Financial Crises in Emerging Markets: The Lessons From 1995”, The Weatherhead Center for International Affairs, Harvard University, Paper No. 97-1, Page 36

sterilization. To respond to the increased fiscal pressure, the government took action to decrease its reliance on domestic currency dominated debt, and to increase the issuance of Tesobonos, which are the dollar-indexed short-term debt paid in pesos. Even after the 15 percent devaluation of the peso in December 1994, the foreign holdings of Tesobonos remained stable. Folkerts-Landau and Ito (1995) conclude that “the pressure on Mexico’s foreign exchange reserves during 1994, and in particular just prior to the devaluation, came not from the flight of foreign investors or from speculative position-taking by these investors, but from Mexican residents. Indeed investors did not start to sell their Mexican equity holdings in any sizable quantities until February 1995.”²⁹

According to Mishkin (2006), the root cause of the Mexican crisis could be traced with the mismanagement of the privatization of the banking sector in 1991. The terms of the outcome of the privatization were dictated by cosy and often corrupt relationship the government had with rich, influential elites who had business interests in the financial sector. The government wanted the competition to be minimised in the banking sector, therefore the four major banks that controlled 70% of bank assets were kept intact. Another weak point was that the capability of the bidders both in terms of availability of capital and management capacity was not considered due to the fact that the government was under pressure from the prospective buyers to acquire the banks for themselves. This paved the way for the buyers to resort into leverage and pay out funds of others to buy the banks. As the new owners of the banks did not have

²⁹ David Folkerts-Landau and Takatoshi Ito (1995), “*International Capital markets: Developments, Prospects and Policy issues*”, World Economic and Financial Surveys, August, Washington, D.C., International Monetary Fund, pp.7-8

much of their own capital entered into the banks, they felt much ease and were also encouraged to borrow high risk loans. Mishkin goes further stating that consequent to a deposit insurance scheme implemented by the government giving a guarantee for all deposits, “depositors even the most sophisticated, had no incentive to monitor the Mexican banks because they would not incur any losses if a bank failed”.³⁰ Only for the namesake there was the National Banking Commission (Comision Nacional Bancaria), which was not provided with resources to develop required expertise to monitor the performance of banks. All these contributed to weak market disciplines thus creating significant moral hazards. In the absence of effective government regulations and supervision of banks, a massive sum of insider lending swelled. As much as 20% of all large loans outstanding from 1995 to 1998 were taken by bank directors at interest rates 4% lower compared to other loans. Moreover, due to poor accounting rules, bankers could refrain from disclosing losses. Hence bad loans were replaced with new loans allowing the borrowers to settle the principal together with any outstanding interest without paying any attention to their net worth. The banks did not have credit departments to undertake risk analysis before a loan was granted. Therefore, a proper pre-assessment on borrowers’ ability to honour a loan was not undertaken. Mishkin states that “the huge incentives to take on risk and the flow of foreign capital into Mexico to fund bank lending resulted in extremely rapid growth of bank credit to private non-financial enterprises, which grew from 10% of GDP in 1988 to over 40% of GDP in 1994”.³¹ On the basis of

³⁰ Frederick S. Mishkin (2006), “*Mexico, 1994-1995*”, in *The Next Great Globalization*, Chapter 5, pp.74,

³¹ pp. 79, *ibis*

generally accepted accounting principles, the non performing loans exceeded 50%.

More theoretical and empirical evidence in support of a strong link between lending booms and financial crises can be found in the literature. Hausmann and Gavin (1995) with empirical evidence test to show that rapid growth in the ratio of bank credit to GDP preceded the financial troubles in Argentina (1981), Chile (1981-82), Columbia (1982-83), Uruguay (1982), Norway (1987), Finland (1991-92), Japan (1992-93) and Sweden (1991). Also in the case of the economic recession in the United States in 1990-91, that was preceded by a lending boom known as the savings and loan crisis in 1980s and 1990s.

2.4.2 Financial Contagion

As explained in the case of the Mexican crisis, the possibility of currency crises spilling into other countries has been a widely discussed issue (Eichengreen, Ross and Wyplosz, 1996; Dornbusch, Park and Claessons, 2000; Schmukler, Zoidfo and Halac, 2006) . The crisis that occurred in Thailand in 1997 was swiftly transmitted to Indonesia, South Korea and Malaysia, while the crisis in Russia in 1998 had a contagious effect in a much larger scale on several emerging market economies and developed countries as well. The contagious transmitting of a crisis to other countries can be the result of weak domestic fundamentals or due to capital market imperfections (Schmukler, Zoidfo and Halac, 2006). However, it is also argued that such a speculative attack on one

currency stemming from an attack on another is an additional effect above and beyond the economic fundamentals (Eichengreen, Ross and Wyplosz, 1996).

As identified in the literature, there are three major channels through which instability in foreign exchange markets can be contagiously transmitted from one country to other countries. The first channel of contagion may arise due to trade between two countries or two countries competing for similar export goods in third countries, which is known as real integration contagion. The second channel of contagion may be due to financial integration in which international investors are in a position to globally diversify their funds across countries. The third channel refers to the herding behaviour where individual investors follow the crowd of others to get in or out of the market showing an extreme market sentiment.

Let us look at how the real integration contagion which focuses on trade and FDI flows between countries work. When two countries trade with each other or compete in a third country for a similar product, devaluation in one country would affect the export competitiveness of the other and thereby on the current account. Similarly, if both countries are competing for FDI from the rest of the world, the country which has devalued its currency would be in a better position to attract more investment and that position would force the other country to follow suit. That means to devalue its currency in order to be able to maintain its competitiveness. The currency crisis in the Republic of Ireland in early 1993 was provoked subsequent to the depreciation of the British pound in September 1992 as the latter happened to be the most important market for Irish exports. As Sweden and Finland competed in the same third country markets for

their exports, Finland's devaluation in August 1992 had a negative impact on Swedish exports (Eichengreen, Ross and Wyplosz, 1996).

However, as the financial crises in the latter part of 1990s had a wider spread impact including on assets prices across countries and regions, it was felt that real integration channel was not adequate to demonstrate the transmission of a shock. Impact of the crises on financial markets was strongly felt; it was considered that the link in financial integration could explain how a shock could be transmitted across countries and regions through this channel. This second channel of contagion through financial integration emphasises such crises to various monetary and financial sector vulnerabilities including imperfect financial market conditions, incomplete contracting, shortcomings in government policies, linkages between financial institutions and generally on financial markets. Explaining the linkage between currency and banking crises, James Stoker (1995) shows how causation runs from balance of payment problems to a banking crisis. When a country is committed to a fixed parity, an initial external shock such as an increase in foreign interest rates will result in the loss of its foreign reserves. If the government cannot sterilize, the situation will develop into a credit crunch, thereby increased bankruptcies and financial crisis. Contagion through the real sector spreading into financial sector can also be possible. As Mishkin (1996) argues that after a devaluation, the banks may be driven to a difficult scenario if a large portion of their liabilities is denominated in foreign currency. Kaminsky and Reinhart (1999), on examining empirical regularities of 76 currency crises and 26 banking crises over the period from 1970 to 1995 find strong evidence of links between banking crises and currency

crises, after financial liberalization, with banking crises beginning generally before the currency collapse. They conclude that increased access to international capital markets appears to activate a boom-bust cycle by providing easy access to financing. When international investors, in response to their perceived notion of the future interest rate or exchange rate, engage in shifting their portfolio investments outside the country it pushes downward pressure for its assets.

2.4.3 Preventing Currency and Financial Crises

It is obvious from the foregoing that currency and financial crises have been the result of improper implementation and management of financial liberalization. As precautionary advice to emerging market economies on how such crises could be avoided, Mishkin (2006) offers a number of measures to be followed in reforming the financial sector in order to sustain stability and avoid crises. In this respect, prudential regulations and supervision of banks in an appropriate manner is a vital aspect to maintain a proper balance. Among his suggestions; restricting foreign currency dominated debt, implementing deposit insurance schemes, stopping connected lending, building up adequate equity capital as well as adopting a new way of supervisory role. Most of his proposals are summarized below.

The banks have a vital role in gathering and processing information on the financial status of business firms and households that would be helpful in addressing the information asymmetry. However, when banks are inundated with

bad loans, its net worth also declines thus resulting in deterioration of the balance sheets of banks. This would lead to a banking crisis where banks are now making every attempt to cut back their lending. As financial information is not gathered this would create a bad scenario in the case of asymmetric information problem. Mishkin says that depending on the severity of banking crises, it may lead to financial crises with a likely ramification on the foreign exchange market. As financial crises can occur due to poor conduct of business by banks, the government's role in supervising and guiding with effective prudential regulation could prevent such crises. While emphasising the fact that "one size fit for all" is not the suggested course of action and hence it is required to modify to fit particular nation's circumstances, he draws our attention to several key points based on experiences of many countries.

Firstly, he suggests that it is required to put a limit to currency mismatch by discouraging the issuance of foreign-dominated debt particularly for those firms who sell their products largely in the domestic markets. This would make a country far less prone to financial crises because the banking system then cannot intermediate foreign-denominated loans amounting to unbearable limits. Importance of such limitations is suggested as a policy option by Levy-Yeyati (2001). Caballero and Krishnamurthy (2003) also demonstrate that firms that can borrow in foreign currencies abroad do not recognize the social value in providing insurance to domestic firms that do not have access to foreign borrowing and hence advocates a curtailment on such borrowing.

Secondly, Mishkin suggests the introducing deposit insurance schemes to protect depositors from losses when banks become insolvent. This would

prevent depositors from withdrawing their deposits in panic in the wake of a banking crisis. Such a scenario can be viewed as a positive effect, but there are negative effects as well. Deposit insurance schemes are likely to create moral hazards for banks in which case they take unusually high risks. Therefore, it has been pointed out that deposit insurance schemes would present the risk of greater instability making banking crises to occur more frequently. The World Bank studies have revealed that a higher incidence of banking crises were associated with greater instability created as a result of deposit insurance schemes. However, it was pointed out that such a dangerous situation would be possible only in the absence of effective regulations and supervision of the financial institutions where rampant corruption is the rule of the day.

Thirdly, he strongly recommends the need for restricting connected lending and also preventing commercial enterprises from owning financial institutions. Due to strong connections, loans made by financial institutions to their owners, managers, business associates, friends and families are not well supervised. During certain periods, there were instances in Sri Lanka, on the influence of political power where loan applications from connected parties were approved without the criteria for proper scrutiny of applications. Connected lending can be curtailed in different ways; regulatory provisions limiting connected lending, regulations governing loan disclosures and the authority for bank examiners to verify the accuracy of loan details, prohibition of and strict punishment for dummy accounts by banks are some of the ways in which controls can be established.

Either complete ownership of banks or a considerable portion of their equity held by commercial enterprises creates encouraging surroundings for connected lending. The chaebol³² form of ownership of merchant banks was partly instrumental in the financial crisis that engulfed Korea in 1997. Introducing regulations to prevent the ownership of banks by business enterprises can be considered as an useful mechanism in ensuring financial stability in emerging market economies.

Fourth item on Mishkin's agenda is that banks should have sufficient equity capital in order to be able to take less risk. Banks tend to be more precautionary when they invest or lend if their assets are greater than liabilities.

Fifthly he advocates that a further move from the traditional supervisory approach where it was focussed on the quality of a bank's balance sheet at a given point in time, and rather on whether the bank complies with capital requirements is necessary. As banks' ability have widened in taking huge risks as quickly as possible in light of innovations of new financial products, it is essential to pay more attention to banks' behaviour in overall risk management. Bank examiners in emerging market economies can do it by examining how banks manage risks in order to promote a safer and sounder financial sector. In this context, the variables to look at are (a) the quality of risk measurement and monitoring systems, (b) the adequacy of policies to limit activities that present

³² It is a form of family owned multinational business conglomerates originated in South Korea in early 1960s. The word "chaebol" means "business family" or "business clan" in Korean. The chaebol structure can encompass a single large company or several groups of companies. A chaebol is owned, controlled or managed by a single family dynasty. Hanjing, Hanwha, Samsung, Hyundai, SK Group, Doosan and LG Group are among the biggest and most prominent chaebol.

significant risks, (c) the adequacy of internal controls to prevent fraud or unauthorized activities on the part of employees, and (d) the quality of oversight of risk management procedures by the board of directors and senior management. Moreover, Mishkin suggests that once the assessment is over, the bank's supervisory agency should make sure that this information is available to public and that the banks which are not on par with risk management can be assigned poor rankings. In this way it can be ensured by the bank supervisors that best practices for risk management will spread across the entire banking industry in the country.

Finally, Mishkin suggests that banks should be encouraged for disclosures through market based disciplines, as solely relying on bank supervisors for financial institutions' risk controlling would not be successful. On one hand, financial institutions may keep information hidden from bank supervisors and on the other, supervisors may also be corrupt or give into political pressure thereby resulting in no proper supervising role being possible. To overcome such shortcomings, it is suggested to allow impartial market to discipline financial institutions to check on their risk taking behaviour and to control them. Under disclosures requirements, the banks need to reveal their state of balance sheets. That way it encourages the banks to maintain more capital, because no one is keen to place their funds into institutions which do not have adequate capital. One of the key advantages in the disclosure provisions over capital requirement is that if the capital requirement is too low that would not make much impact and if this is too high there is a tendency for banks to evade them. However, market disciplines can be brought in through the

disclosure of the status of banks' balance sheets. Individual depositors and creditors would not put their money in a bank that does not have adequate capital as shown in the balance sheet. Equally important is the disclosure of the ratio of bank's lending in foreign currency to its capital. This is a helpful indicator in revealing the extent of currency mismatch. In the presence of a growing mismatch which is reflected from a bank's balance sheet, the depositors and other creditors would be very cautious in bringing in their deposits. Under such a scenario, the financial institutions who have lent extensively in foreign currency to business institutions whose products are largely sold in the local market would be in difficulty in an event of a currency depreciation as that would result in a surge in bad loans. Hence banks would have a compelling need to limit the currency mismatch.

In view of the fact that typically financial institutions can take on higher risks than any other businesses and that they are normally given the government's protection under financial safety net, Mishkin insists that disclosure in the form of conventional balance sheet and income statements would not be sufficient. Further, he insists that a wide range of information on the quality of assets, the amount of risks associated with them and the procedure adopted to deal with such risks in order to manage them are considered to be of paramount importance. Hence the Government needs to have bank directors and managers responsible for timely and accurate disclosure of such information.

Recent studies have shown that disclosures of this nature are the most successful mechanism in ensuring the smooth and reliable functioning of the banking sector.³³

The banks primary role of allocating scarce capital efficiently is sometimes undermined by corruption. Barth, Lin, Lin and Song (2008) find corruption to be a particular problem in bank lending practices in developing and transition economies due to the lack of adequate laws, objective courts, prudential regulations and other appropriate institutions to sufficiently contain corruption. They conclude that greater competition in bank lending and information sharing via credit registries/bureaus could bring down the level of corruption both directly and indirectly. In addition to these activities, the authors assert that objective courts and better law enforcement tend to reduce corruption in lending and that greater private and foreign ownership of the banking industry are also associated with more integrity in lending. Beck, Demirguc-Kunt and Levin (2005) find that more than strengthening the traditional official supervisory control, “a supervisory strategy that focuses on empowering private monitoring of banks through the disclosure of accurate and timely information reduces lending corruption”.³⁴

It is also suggested that financial institutions should be regulated under credit ratings in order to bring about market disciplines. Citing the experiences

³³ A series of new measures were proposed by the Enhanced Disclosure Task Force of the Bank for International Settlements in its report produced in October 2013. See references under BIS (2013).

³⁴ Thorsten Beck, Asli Demirguc-Kunt and Ross Levine (2005), “Bank Supervision and Corruption in Lending”, *NBER Working Papers*, no. 11498, National Bureau of Economic Research, Inc, pp. 45

from Argentina which made credit rating as part of a supervisory mechanism introduced in 1996 as an example, Mishkin commends over the success of the credit rating scheme as it played a pivotal role in promoting a healthy banking system.³⁵ Under the credit rating system, financial institutions having more than US\$50mn in assets were required to have annual ratings from two agencies registered with the central bank and disclose the outcome of ratings to the customers through branches. Depositors and other creditors would not deposit their funds in financial institutions assigned with poor ratings, thus providing an incentive for banks to operate in a minimum risk level and thereby maintain higher ratings.

Mishkin, however, questions about the genuineness of prudential regulators and supervisors (agents) to act in the public's interest (interest of the principals) as they tend to act in preserving their personal interests, which is known as the principal-agent problem. In order to protect the interest of the public or the principals, the prudential supervisors and regulators or agents have a big role to play. It is expected from them that they curtail the currency mismatch, put an end to connected lending, guarantee that banks have sufficient capital and less risks and finally ensure that the banks strictly follow the disclosure provisions. Moreover, the financial authorities should not be lenient on banks that are near bankruptcy situation and such banks should not be allowed to continue operating. In developing countries it is often seen that under bribes or political pressure, public officials loosen their grip on prudential

³⁵ However, he says that the ultimate collapse of the financial system in Argentina was due to the failure of regulatory system to deal effectively with currency mismatch and the large holdings of government bonds.

supervision, a major source of financial crises in emerging economies. Mishkin points to the crises in Mexico and Korea in the late 1990s as examples to this phenomenon.

2.5 Concluding Remarks

The literature review examines the existing research on the growth and development impact of financial and capital account liberalization on the economies of developing countries. It was noted that the lifting of restrictions on international capital account in developing countries began from as far back as the 1970s with the elimination of some restrictions in countries such as Argentina, Chile and Uruguay. However, by the mid 1980s to early 1990s, a considerable interest was seen in other parts of the developing world for the liberalization of the capital account transactions. Some of the developing countries such as Bahrain, Bolivia, Indonesia, Malaysia, Panama, Saudi Arabia and Singapore had their capital account liberalized by 1986. In Taiwan, until the revised Banking Law was introduced in 1989, market friendly banking sector reforms were lagging. While for local citizens, capital account control was relaxed in 1987, it was extended only in 1994 for the corporate sector. In the case of Thailand, it undertook an initiation of systematic and sustained financial reform in 1990 after accepting the obligations under article VII of the IMF Agreement.

This process started with a series of trade, financial and banking sector reforms, and finally extended to cross-border financial transactions. There was no uniform phase or policy set as such to be followed and therefore, the approach and the timescale differed from country to country. Moreover, there is

a considerable heterogeneity among the countries in their economic structure, income and growth level, human capital, natural resource endowments and trade openness.

The literature focuses on both the benefits and costs of easing restrictions on capital controls. The basic hypothesis tested in some of the studies was that capital account openness and stock market liberalization might have a positive effect on economic growth in the countries covered in the respective studies. Some studies have focused on the issue that stock market liberalization may have decreased the cost of capital thereby leading to greater investment and increased per worker output. We also find empirical studies in which the focused hypothesis was to test the impact of capital flows on stock returns, stock market efficiency, inflation and exchange rate or effect on volatility of stock returns, inflation and exchange rate that might arise as a consequence of capital flows. In some of the studies where focus was given on the impact of financial liberalization, stated hypotheses included whether or not financial repression policies affect financial deepening or make an impact on both savings and investment. However, they do not point to a uniform conclusion. It appears from the survey that they employed a diverse range of theoretical models and differing methodologies to analyze the macroeconomic implications on the liberalization outcome. As most of the empirical studies were approached by the neoclassical growth model, a considerable number of these studies established that capital account liberalization has no impact on permanent growth rate. However, in contrast to this opinion, some authors express that neoclassical theory does not predict the correlation between capital account openness and

long-run growth rates across countries. According to them, what the neoclassical theory does predict is that capital account liberalization in a capital-poor country will temporarily raise its per capita growth rate, which permanently increases the standard of living of its people. Therefore, in the neoclassical framework, testing for a permanent growth effect is irrelevant. This is because capital accumulation, which is subject to diminishing return is the only channel through which liberalization affects growth. A large number of studies offer empirical evidence in support of the significant benefits for economic growth and welfare from capital account liberalization. Furthermore, they argue that cross-sectional regression designed to measure long-run differences in growth rates across countries is not suitable when a country's transition takes place in a relatively slower speed. Nevertheless, there are several other studies which do not find evidence to support the potential growth impact. Some studies reveal unambiguous results on growth in financially less developed countries. In the case of financial and currency crises such as what was experienced in East Asia, some authors blame it on the incompatibility of an underdeveloped domestic financial market with an open capital account.

Proper sequencing of the capital account liberalization process is a key issue addressed in the literature. It is suggested that there is a fundamental need for an integrated approach to capital account liberalization and financial sector reforms. As reflected from the literature, it is the conventional view that this process should begin after the liberalization of current account and the domestic financial system.

The literature also focuses on the imminent threat from the occurrence of intermittent financial crises after capital account liberalization. Some authors say that such crises occur due to sudden speculative attacks, unsustainable exchange rates, herding behaviour and contagion currency crises. However, according to some others, the blame for such unhealthy results should go to premature reforms, absence of minimum set of instruments and institutions, lack of markets for the effective management of exchange rate and absence of rational monetary policies. In this respect, suggestions have been made for a wider array of prudential regulations and measures that should be in place in order to ensure stability and sustainability in the system.

In our work, we analyse in chapter 4 the impact of financial liberalization in Sri Lanka that was introduced in 1977 and test the hypothesis whether this process helps to generate more saving and encourage private investment. In chapter 5, we focus our attention on the effects of FDI flows, private lending by banks and financial deepening on economic growth in order to evaluate how far the liberal economic policies contribute to economic growth and test the hypothesis whether their coefficients were significant and positive. In chapter 6, we investigate the assets and liability position of the entire economy, sub-grouped into five sectors, namely the government; the central bank; the commercial banks; and, others representing the business and household sectors from the balance sheet approach (BSA). This mechanism was developed by the IMF in early 2000 to examine the strengths and the vulnerabilities of individual countries to possible exposure to financial risks.

Chapter 3

Sri Lanka's Economy: Macroeconomic Performance and Institutional Development

3.1. Introduction

As part of a policy package under the guidance of the IMF, Sri Lanka commenced a unilateral trade liberalization process in 1977 with the opening up of its goods sector, and also allowing its currency, the Rupee¹ to float freely for some time, initially on the foreign exchange market thereby moving away from a fixed exchange rate regime to a flexible exchange rate regime. Prior to 1977, Sri Lanka's Rupee was aligned to the US dollar and Sri Lanka practiced a multiple exchange rate system since 1968. The exchange reforms included a unification of the exchange rate. Thus adoption of a realistic exchange rate for the Rupee was aimed at rectifying the price distortions that carried through as a result of an overvalued currency induced by the stringent trade and payment restrictions. The government was considering to partially liberalizing the capital account sooner rather than later, moving away from the fixed exchange rate system was consistent with the theoretical exposition as reflected from the Mundell-Fleming framework. According to the Mundell-Fleming approach to open economy, fixed exchange rates, capital mobility and domestic monetary policy autonomy cannot be simultaneously maintained and therefore, Sri Lanka's initiative

¹ Rupee is the currency used in Sri Lanka

was inconsistent with Mundell-Fleming model as briefly presented in the previous chapter.

The liberal trade and economic policies adopted by Sri Lanka encouraged foreign direct investment (FDI) which led the internationalization of production through an export-led development. The entry of foreign banks to some extent reduced the monopoly of the state banks. In the goods sector, import tariffs were slashed, several Non-Tariff Barriers (NTBs) were removed including import quotas, licensing, release of foreign exchange conditioned upon export earnings and other numerous import controls. The eligibility hitherto granted only for the exporters of non-traditional goods to own and maintain foreign currency accounts on debiting a certain amount of exchange earned from such exports known as Convertible Rupee Accounts (CRAs) were also done away with. All bi-lateral trade and payment agreements hitherto existed under which goods were exchanged on commodity to commodity basis with some selected countries were gradually dismantled. Some of the state trading enterprises were privatized or liquidated. Policies for investment liberalization were introduced to encourage export led growth. Investment Protection Agreements were entered into with several countries in order to create confidence in the mind of potential investors. Sri Lanka also became a party to the Multilateral Investment Guarantee Agreement, which was established and operating under the auspices of the IMF/WB. Sri Lanka's 1978 constitution guarantees the rights and the ownership of the foreign investors. Avoidance of Double Taxation Treaties were also negotiated and entered into with several countries to facilitate and encourage foreign

direct investment. Foreign companies registered in Sri Lanka were accorded with national status and foreign participation in the Stock Market was allowed. To encourage inflows of foreign investment into the country, in 1979 the Board of Investment of Sri Lanka was established.

The objective of this chapter is to review Sri Lanka's achievements in the transformation from a somewhat closed economy to a more realistic liberal one in response to its economic liberalization process. In doing so it compares and contrasts the two different regimes from macroeconomic perspective and also examines the adequacy and appropriateness of the institutional developments that have evolved over the past three decades to deal with the issues with respect to managing the economy. This section examines the impact of trade, investment and financial policies on economic growth looking at the macroeconomic indicators such as real per capita income, real interest rate, factor quality and savings and investment. It also pays attention to structural changes in the configuration of the GDP, industrial output, and foreign trade, performance of the financial sector and privatization and restructuring of state enterprises.

This chapter is organized as follows; the first section is the introduction and the second section presents a detailed picture of economic and trade policies followed by Sri Lanka after the independence and their consequences on the overall economic growth and development. The third section deals with the liberal trade and economic policy regime that was followed after 1977 with special reference to the regime change. In the fourth section, the issues connected with the growing amount of public

debt are dealt with. The fifth section focuses on the evolution of the financial sector and the sixth section touches upon the performance of it. The seventh section examines the performance of the Colombo Stock Exchange and the eighth section deals with capital market development. The investment environment is covered in the ninth section and the final section is devoted to concluding remarks.

3.2. Economic and Trade Policies after Independence

Having regained its independence after 130 years of colonial rule in 1948, the independent Sri Lanka's newly elected government adopted a social welfare policy arguing that provision of adequate social services was a means not of creating wealth but of distributing it.² Therefore, the government fiscal policies were heavily influenced by welfare oriented distributive policy strategy through taxation and pricing policies of public enterprises and also by the expenditure programmes. Apart from providing free health for every citizen in the country and education from year one to university level, the main staple food distributed under ration was also subsidized. The main staple food of Sri Lankan society, rice, was distributed under ration system during the WWII and the successive governments continued to maintain the ration system under which rice was distributed among all citizens at a price of one half the cost due to political sensitivity attached to it.³ Thus over the time

² Central Bank of Ceylon, Annual Report, 1950

³ The very first Annual Report of the Central Bank of Ceylon published in 1950 had alarmed that "as the number of commodities that are subsidized grows an increasingly heavy load of work falls upon an overburden government administration". It further said that "from the economic point of view a widespread system of subsidies has a tendency to hide real costs, to distort the country's economy, and sometimes to act as a serious barrier to efficiency. Even before the decision to increase the subsidy on rice as of December 11, 1950, the cost of subsidies was so large as to be heavy and seemingly unending drain upon the exchequer".

rice earned a characteristic almost similar to a public good, considered to be both non-rival and non-excludable.⁴

Early post independent era until 1956, Sri Lanka followed market friendly policies. After 1956, encouraged by pro-socialist tendencies, Sri Lanka embarked upon an interventionist policy towards trade and economic spheres in much vigour. During this period, import controls were built up, movement of capital from Sri Lanka of companies incorporated outside Sri Lanka and individual residents outside Sri Lanka were tightened and release of foreign exchange for travel and education were restricted. The government's role also grew in the production and distribution of various goods and services with the establishment of several state enterprises. Among these, several public sector enterprises had enjoyed the monopoly power and covered the sectors such as petroleum, cement, steel, hardware, chemicals, tyre, graphite, sugar, flour milling, distilleries, paper, ceramic, plywood and timber. The enactment of the State Industrial Corporation Act of 1957 provided for the reconstruction of existing state enterprises as well as the establishment of new industrial entities for the purpose of promoting the development of large-scale and basic industries. By 1976 there were 26 state enterprises in manufacturing alone having a total capital investment of Rs.2,973mn or 12.25% of the GDP in that year. This segment's contribution to export earnings recorded at 12% in the same year. While public enterprises provided a large number of employment opportunities and contributed to

⁴ Research on public goods has been one of the most important economic problems after Samuelson (1954). A *pure public good* is characterized by the following two properties: (1) non-excludability: no agent can be excluded from consuming the public good, and (2) non-rivalriness: consumption of the public good by one agent does not decrease the quantity available for consumption by any other agents. Samuelson, P. A., 1954 "The Pure Theory of Public Expenditure", *Review of Economics and Statistics*. 36, 387-389.

redistribute the nation's wealth, it is also argued that wider-spread inefficiencies, lack of enterprising character coupled with poor management had outweighed the gains. As a large segment of state enterprise continued to operate under losses, the government had to regularly bail out these enterprises thus making it an additional burden on the government budget.

Moreover, Sri Lanka entered into bilateral trade and payments agreements with China, Egypt, Syria and several Eastern European countries.⁵ Such arrangements were encouraged by the unstable export prices for its agricultural commodities and the continued deterioration of the terms of trade position as explained in the Singer-Prebisch argument as detailed in section 2.2. These bilateral trade arrangements had the character of counter trade whereby the exporting country is contractually obliged, as a condition of its sale, to carry out reciprocal purchases to the value equivalent to its exports. Notwithstanding, however, any unsettled balances could be carried forward or settled in an acceptable foreign currency. The exports from and imports to Sri Lanka under these arrangements accounted for 11.08% and 8.69% respectively in 1956. As a percentage of total trade turnover, this represented 10%. In 1963, this share rose to 14% and further expanded to 20% in 1967.⁶ These arrangements were discontinued after the trade liberalization programme was put in place during the late 1970s. The implications of these arrangements were manyfold. Firstly, it took away a considerable volume of trade outside the domain of "open competitive market system" since the group of countries with which Sri Lanka had entered into payment

⁵ These countries included the Soviet Union, Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Romania, and Yugoslavia. The well known China-Sri Lanka Rubber-Rice Pact which was signed in 1952 also continued until late 1970s.

⁶ Annual Reports of the Central Bank of Sri Lanka for the years 1956, 1963 and 1967.

arrangements belonged to a socialist block of countries with the central planned economic systems, fundamentally different from the open market system. As prices were negotiated between the parties, there were ample opportunities to manipulate the prices, in particular, of the goods that were imported by Sri Lanka. Some of the key imported goods included heavy industrial machinery and equipments and intermediate goods. As Sri Lanka had to offer goods in the most primary form, there was no incentive to make qualitative improvements with a view to adding a higher value to its produce. A good example can be seen from Sri Lanka's rubber sector which continued for several decades without any qualitative transformation into a high value range such as Technically Specified Rubber.⁷ After liberalization, the export of natural rubber in the most primary form almost disappeared since a considerable portion of rubber is now utilized in processing industries, turning out solid tyres, motor vehicle tyres and tubes, surgical gloves, auto parts and industrial components, boots and shoe soles and the like. It was largely due to FDI inflows that Sri Lanka's manufacturing sector was able to transform itself into a high value-added product sector. We will be dealing with the positive result of FDI inflows in chapter 5.

Except for the five year period from 1965 to 1970, the rest of the entire period from 1956 to 1977 Sri Lanka witnessed economic policies modelled on pro-left principles. Even during the five year period from 1965 to 1970, the liberal government which was in power did not make many radical changes to reverse the

⁷ See paragraph 224 of the chapter 4 in Matching Employment Opportunities and Expectations: A Programme of Action for Ceylon. The Report of the Agency Team Organized by the International Labour Office, 1971, Geneva.

existing order. The nationalization of major economic activities commenced with the take over of the privately owned public bus transport service in 1958, followed by the foreign banks and a leading local bank in 1961, as well as the nationalization of American oil companies in the same year. The nationalization policies were continued in a massive scale after 1970. Under the Land Reform Act of 1972, the large plantations were taken over by the government. Thereafter, the Sterling plantation companies were also nationalized in 1975. The government enacted a bill under the style of Business Acquisition Act in 1972, which allowed the government to take over any type of enterprise subject to a certain number of employees and amount of capital. To introduce a ceiling on the housing property ownership, a law was enacted in 1974 and a ceiling on housing rentals was also introduced. This action heavily discouraged the construction of private housing for renting purposes. With an ever expanding public sector dominated economy, a number of state enterprises enjoyed the monopoly power in controlling several goods and service markets. In addition, the government played a major role in food distribution through the Food Control Department, having the responsibility to import rice, wheat flour and sugar entrusted upon that Department. The overall outcome of these policies was to discourage private investment and thus contributed to greater inefficiencies. The result was the emergence of a large number of loss making public enterprises.

Until 1977, Sri Lanka experienced a prolonged stagnation with an inflation rate as high as 14% largely fuelled by continuously growing budgetary deficits that amounted to 8% of the nominal GDP. The growing budget deficits were the result of the heavy burden on the government to channel a large amount of resources to

maintain welfare programmes in addition to channelling a considerable sum of its expenditure outlays to the loss-making state enterprises. Despite stringent controls on trade and foreign exchange, the country experienced a highly unfavourable balance of payment situation. As reasoned out by Ghatak and Sanchez-Fung (2007), such persistence balance of payment problems and widening budget deficits were due to poor fiscal management such as printing money to finance fiscal deficits and debt repayments.⁸ We have shown in chapter 2 that a similar argument was developed by Kapur (1976), who demonstrated that exceeding higher than the required equilibrium rate of money growth would be inflationary.

Sri Lanka recorded a high level of unemployment over several decades. The unemployment rate which stood at 16.6 in 1963 gradually dropped to 14.3 by 1968/69, during the period in which a liberal government came in power. However, with the economic policy changes in favour of a pro-socialist model in 1970, which continued until 1977, unemployment ratio again increased to 19.7% by 1975. This was the result of uncertainties caused by takeover policies of private enterprises adopted by the government from 1970 onwards. A much higher level of unemployment was recorded among the educated youth. For an example, those who had the GCE (OL) qualification among the age category of 15-24, the unemployment rate almost exceeded 70%.⁹ Sluggish private investment was one of the main reasons for the increased unemployment. On one hand, private investment was discouraged

⁸ We have referred to their reasoning on the poor fiscal management in chapter 2. See page 22. For a detailed discussion on the twin deficit syndrome, also see chapter 2, "Fiscal Deficits, Public Debt and the Current Account", in *The Economics of Adjustment and Growth* by Pierre-Richard Agénor (2000)

⁹ See paragraph 38 of the introductory chapter in *Matching Employment Opportunities and Expectations: A Programme of Action for Ceylon*. The Report of the Agency Team Organized by the International Labour Office, 1971, Geneva.

due to the presence of rigid policies including the fears generated from the Business Acquisition Act and various regulatory controls coupled with poor infrastructure such as road systems, communication and electricity; on the other, meagre domestic savings did not meet the required rate of investment. Moreover, the government borrowings to finance budget deficits largely crowded out private investment. As evidenced from the main policy implication of the McKinnon-Shaw hypothesis¹⁰, when interest rates remain below the potential market rates or negative under financial repression, such a situation contributes to depress the domestic savings. The McKinnon-Shaw hypothesis can explain Sri Lanka's savings situation as the level of savings has shown a serious decline from 14.8% in 1959 to 8.1% in 1976 as a percentage of GDP in response to falling real interest rates (see table 3.1). This figure, on an average for the eighteen year period from 1959 to 1976 stood at 13%. It can also be seen from table 3.1, the overall annual domestic investment from 1960 to 1975 which stood around 15 per cent was not sufficient to push the economy into a steady state growth path.

¹⁰ This phenomena was discussed in chapter 2 in detail. (see pages 31 through 41). According to the McKinnon-Shaw hypothesis, savings are discouraged by the excessive government intervention in the financial sector in developing countries, which was termed as "financial repression".

Table 3.1 Selected Macroeconomic Indicators for Sri Lanka (1960-2010)

Description	1960-65	1966-70	1971-75	1976-80	1981-85	1986-90	1991-95	1996-00	2001-05	2006-10
Per capita GDP in US\$	145	161	231	251	342	422	608	826	994	1901
Per capita income growth	1.7	4.6	0.9	4.4	4.8	2.1	4.2	4.0	4.3	5.3
GDP constant growth rate	4.3	7.1	2.4	6.2	6.4	3.6	5.5	5.1	4.9	6.4
Population growth rate	2.5	2.3	1.5	1.9	1.4	1.4	1.3	1.3	1.3	1.7
National savings as % of GDP	15.3	12.1	11.2	15.0	16.5	15.1	16.5	21.8	21.4	22.4
Domestic investment as % of GDP	14.8	16.1	15.9	22.0	27.4	22.7	25.1	25.5	23.5	27.2
Rate of inflation	1.13	4.24	7.54	10.29	12.18	12.55	10.29	9.17	11.34	12.13
Budget deficits as % GDP	-6	-7	-6	-13	-13	-12	-10	-9	-9	-8

Source: Annual Reports of the Central Bank of Sri Lanka for 1960 to 2010

Throughout the period from 1956 to 1977, the economic and political climate was not friendly for foreign investment. Among several factors that discouraged foreign investment, one key factor was the limitation imposed on foreign investors in regard to the acquisition of controlling shares. Foreign investors were allowed to take only up to a maximum of 49% stake in any approved investment project thereby leaving a majority stake for local parties. However, when it comes to industries that require heavy investment outlays, it was not possible to find local parties having the ability to meet such high shares of investment with the obvious result that any project requiring a higher amount of capital outlays became unrealizable. During the period from 1952 to 1977, the inward foreign investment was limited to a total cumulative sum of US\$2mn, while outflows were recorded at US\$48mn with the result of net outflows amounting to US\$46mn.¹¹

Another major setback to the domestic industry was that the limited availability of foreign exchange for the manufacturing sector to acquire imported raw material barred a number of industrial units from operating under optimum capacity utilization. This can be observed from the capacity utilization ratios in the private sector industries. The level of overall capacity utilization in the industrial sector in 1974 was 40%. An improvement was seen in 1976 with this ratio approaching 64%. Underutilized capacity levels in industry could be attributable partly by McKinnon's explanation which hypothesises that interventionist policies gave an encouragement for the overuse of imported machinery, which contributed in building up excess

¹¹ Annual Reports of the Central Bank of Sri Lanka

capacity in industries.¹² The other reason is the lack of foreign exchange to industries which were highly dependent on imported raw materials. This segment in the industry had suffered the most, both on account of high marginal cost, and lack of foreign exchange to finance import of required raw materials. The low level of capacity utilization in industry resulted in increasing the average cost of production, thereby making the products uncompetitive necessitating greater protection from imports. This scenario is what exactly highlighted by McKinnon, which we referred to in chapter 2 as common public policies for circumventing the domestic capital market.¹³

As high tariff and other protective instruments shielded the local industry from import competition, the sector did not show much progress in building up the required efficiency and quality of output. In some cases, however, the effective rate of protection became negative due to additional costs involved in the process of acquiring import licenses and approvals of foreign exchange from the authorities for the importation of intermediate goods, raw materials and machinery and equipment required by the industry.

From a socio-economic and political point of view, it has become a necessity to continue to support the domestic agriculture sector which is largely composed of rice farming and other minor crops including vegetables. This sector has been given the utmost attention in the development plans of every successive government. Thus

¹² We briefly mentioned under the section 2.4 in chapter 2, *McKinnon-Shaw Framework on Financial Repression*. For a detailed explanation on this, see pages 25-26 in *Money and Capital in Economic Development* by Ronald I. McKinnon.

¹³ Among the seven major categories cited by McKinnon as common public policy instruments employed in circumventing the domestic capital market, which we have listed in footnote 9 in chapter 2, the first item is tariff protection for infant industries. However, it appeared that industries so accorded with tariff protection never reached the status of maturity to be able to stand for competition without high tariff protection even after several decades of operations.

the domestic agriculture sector has been the top most recipient of transfers of funds from the public spending over several decades to date. It had been over seven hundred years since the abandonment of the fertile farm lands in the dry zone in northern and north-eastern part of Sri Lanka due to foreign invasions that resulted in a massive internal migration from the dry zone agricultural fields to wet zone in the western part and the central highlands. Sri Lanka took an initiative to resettle once again its landless poor from the overpopulated south in the wet zone to the dry zone beginning in early 1930s. Moreover, during the colonial period, a considerably large area of land in the wet zone was bought for tea and rubber plantations, thereby dislocating a considerable peasant population who had lived on these lands over several centuries. It was observed in the early 20th century that the demographic pattern was such that two third of the country's population lived in one third of the land area largely covering the western, southern and central provinces and to some extent in the Jaffna peninsula in the northern province, thus putting excessive pressure on the resources. With substantial investment and efforts to develop the basic infrastructure and the renovation of century-old water reservoirs, the re-settlements were established in the North Central, the Northern and the Eastern Provinces beginning in 1930s until early 1970s. Farm lands were distributed among the families ranging from half an acre to three acres in plot size. In order to protect farmers from income fluctuations due to price shocks, a guaranteed price scheme was also introduced for a number of farm products. Drawing from the experiences in Japan and the United States, an agricultural insurance scheme was also introduced in 1958, operation of which continued until 1973. A new scheme was introduced in

1975. In 1999, an act was passed to establish an Agricultural and Agrarian Insurance Board under which, in addition to a crop insurance scheme, farmers and fishermen pension schemes were also introduced. The government pursued a policy of self-sufficiency in food under which it intervened in domestic factor and product markets (Gunawardana and Somaratne, 2000). Subsidised inputs such as fertilizer, pesticides, improved seeds and planting material and tractors were supplied to encourage farmers. Two major public bodies, namely the Paddy Marketing Board and the Marketing Department assigned with the task of purchasing of rice and other crops at guaranteed prices from farmers were in operation for several decades.

However, Sri Lanka's domestic agriculture continued to suffer from several setbacks. Some of these issues included low productivity, land degradation and fragmentation, poor infrastructure in agricultural regions and lack of properly functioning marketing networks. The absence of property rights in the case of land ownership is also suggested as an inflexible mechanism for transfer of lands thus discouraging potential investments into rice and other crops cultivation.

The welfare regime maintained in the presence of various subsidies coupled with continuous financial support provided to the loss making public enterprises and the general inefficiency in the public service resulted in it being an enormous burden on the treasury to run the economy. As a result, there was a protracted need to maintain a high tariff regime and a high taxation policy in order to raise revenues for the government. The resulting outcome of a high tariff and tax regime had been the evasion of tariff and taxes under various modus operandi thereby encouraging a thriving underground economy (Jayawardena, 1997). Moreover, the continued

presence of foreign exchange restrictions and rationalization of bank credit led to thriving an informal credit and foreign currency market in Sri Lanka. In most of the developing countries, the emergence of informal credit and foreign currency markets is a common character, the presence of which will have important macroeconomic effects (Montiel, Agenor and Ul Haque, 1993).

3.3. Trade and Economic Liberalization Process and its Impact on the Overall Economy

Sri Lanka's experience with trade, economic and financial liberalization now completes almost 35 years. The failure of the policy strategy of the controlled regime was obvious as it was responsible for disengaging the economy to a great extent from the international economy. As such it produced disappointing outcomes in achieving the objectives of growth and development.

Immediately after liberalization, an institutional framework was created to promote an export-oriented investment strategy. Greater Colombo Economic Commission (GCEC), under the President of the country and the Foreign Investment Advisory Committee under the Ministry of Finance and Planning (FIAC) were two such bodies responsible for foreign investment projects. These bodies were entrusted with the responsibility for evaluating and approving FDI projects. The Sri Lanka Export Development Board (EDB) was established to design appropriate policies and programmes in support of accelerated export development. The GCEC and FIAC

were amalgamated to give a speedy and coherent policy mechanism for foreign investment in 1990. Another key step taken for the promotion of export was the establishment of export credit insurance scheme in 1979. Concentrated on two broad policy aspects, namely, export payment insurance and credit guarantees, the Sri Lanka Export Credit Insurance Corporation (SLECIC) was created to cover against non-payment of export proceeds due to commercial and non-commercial risks for all types of exports.

The immediate impact of the trade liberalization measures was the shifting of current account back to a deficit of Rs.782mn (US\$50.1mn) in 1978 from a surplus of Rs.1,266mn (US\$142.2mn) in 1977. The import rose by 30% in 1978 compared to the level of the previous year reflecting the pent-up demand built up over several years of controls. The increase of imports stemmed chiefly from a speeding up of imports of investment and intermediate goods, while imports of consumer goods increased at a lower pace. The year also witnessed a surge in imports of capital goods which were more than doubled partly due to the rapid disappearance of bottlenecks in which the domestic industry had been locked up for a prolonged period and partly due to increased industrial activity with the liberalization. For several years before liberalization, the scarcity of foreign exchange made the government limit the release of foreign resources only to certain essential imports thus inhibiting the inflow of investment goods that were required to sustain economic growth. With the elimination of import licensing for a wide range of goods, import of capital goods and raw materials showed a marked improvement thereby leading to a better utilization of

industrial capacity. The ratio of industrial capacity utilization in 1978 rose to a record high of 78% from an average of 57%, during the four-year period from 1974 to 1977.

Over a period of time since liberalization began, a drastic change in the composition of imports has occurred due to the policy implication on both, trade and investment regimes. By looking at imports, a shift away from the dominance of the consumer goods sector in favour of intermediate goods and investment goods sectors confirm the changing structure of manufacturing and processing industries in Sri Lanka. As can be observed from table 3.2 below, prior to 1977, the consumer goods sector, which took a massive share of over 50% on average, dropped to more than half of that percentage in later years. The intermediate goods sector, which had a share of 15% in 1960 gradually increased and currently dominates the composition of imports. Within a shorter time span, investment good sector expanded from 12% in 1977 to 24% in 1980. Such a shift in imports is evidence of the process in the transformation of economic activities carried out within Sri Lanka. This changed scenario in the growth of intermediate goods and capital goods imports was not merely a result of trade liberalization alone. Alfaro and Hammel (2007) find evidence from a sample of twenty five countries that liberalized their stock markets from 1980 to 1997, after controlling for trade liberalization, other reforms and fundamentals, stock market liberalization are associated with a significant increase in import of capital goods. In the sample of countries, they find that liberalization leads to a 6 percent increase in capital goods as a fraction of total imports and the share of total machinery imports to GDP rises by 12 percent. In the case of Sri Lanka, it is obvious that investment liberalization together with stock market liberalization coincide with

a significant increase in the importation of capital goods. This can be further investigated by looking at the composition of exports.

Table 3.2 End use Classification of Imports as a percentage of total imports (1960-2010)

	1960	1975	1977	1980	2000	2010
Consumer goods	55.0	50.5	42.0	25.5	19.0	21.2
Intermediate goods	15.3	36.0	44.0	49.0	51.8	55.5
Investment goods	6.9	12.4	12.0	24.0	23.6	22.0

Source: Annual Reports of the Central Bank of Sri Lanka

Sri Lanka's exports earnings had long been traditionally dependent upon three major crops, namely tea, rubber and coconuts and coconut products, with these three crops contributing to a share of 97% of export revenues until the early 1970s. Since 1977, this position began to gradually change. Encouraged by private investment, a qualitative improvement in the export structure with a largely value added goods component taking a dominant place has been realized. A growth in the manufacturing sector in Sri Lanka started with foreign investment primarily into the manufacture of garments. This was a direct result of the textile import quota regime prevailing during that period under the Multi Fibre Arrangement (MFA). At the early stages of the development of the manufacturing industry, though Sri Lanka was not seen as an efficient producer, MFA regime provided a shield from other competitive

sources due to the imposition of quotas by the leading importing countries on traditional suppliers and hence a boom in this sector was spread to Sri Lanka. Sri Lanka was able to gradually improve its competitiveness in the manufacturing sector and to sustain a steady level of exports after the fuller liberalization of the textile and clothing sector with the abolition of quotas in 2005 (see table 3.3 below).

Table 3.3 Composition of Major exports as a percentage of total exports (1960-2010)

	1950	1960	1977	1990	2000	2010
Agricultural products	98.0	96.9	78.0	36.0	18.2	24.6
(of which tea, rubber and coconuts)	96.0	90.5	72.0	24.9	15.4	20.8
Industrial products	0.8	1.0	14.0	53.0	77.6	74.3
(of which textile and garments)	-	-	-	31.7	54.0	42.2
Mineral products	0.7	1.0	4.0	4.3	1.8	1.1
Other	0.5	1.1	4.0	11.0	2.5	-

Source: Central Bank of Sri Lanka and Sri Lanka Customs

An upsurge in exports of industrial products was the positive effect of trade and investment liberalization. Industrial exports which had been increasing at an annual average rate of 10% in US dollar terms during 1975 to 1977, increased by 46% in 1978, in the first year after the liberalization. A further 71% growth was followed in 1979. The value of industrial exports expanded to US\$200mn in 1980 from US\$57mn in 1977.

The sector-wise changes in the composition of the GDP provide an indication of the pattern of resource utilization and the significant changes in the different economic activities. As can be seen from table 3.4 below, between 1950 and 2010, the share of agriculture in the GDP drastically declined from 46.3% to 12.8%. However, this substantial decline does not indicate that its relative importance in the economy has been reduced accordingly. The sector continues to play a key role towards livelihood security of the majority of the people of the island. While more than 75% of the population still live in the rural sector, the majority of them rely on farming activities for their income. According to Consumer Finance and Socio-economic Survey for 2003/04, the agriculture sector provides employment to 33% of the workforce. Nevertheless, the contribution of the industry and service sector has rapidly expanded over the past years. Moreover, the GDP in real terms grew at 5.3% during 1977-91 compared with 2.7% recorded for the period 1971-76. The annual average growth in the GDP during 1992-2010 recorded at 5.2%. A complete reverse from a lagging economy to a fast moving dynamic one was the result of the lessening of financial restrictions which exerted a positive effect on growth rates as interest rates move towards their competitive market equilibrium, as concluded by the McKinnon-Shaw analysis.¹⁴

¹⁴ See chapter 2, section 2.3.2

Table 3.4 Sector-wise composition of GDP and Trade Openness*

	1950	1960	1977	2000	2010
Agriculture	46.3	37.8	30.7	19.9	12.8
Industry	19.6	16.8	28.7	27.3	29.4
Services	36.9	45.4	40.6	52.8	57.8
GDP (at current market prices, in US\$m)	812.93	1,410.0	4,104.0	16,596.0	4,9551.0
Trade Openness	66.8	11.9	36.4	77.4	44.0

* Openness measured on the basis of total trade (export plus imports) as a percentage of the GDP

Source: Annual Reports of the Central Bank of Sri Lanka for 1950 to 2010

3.4 Public Debt

Governments usually borrow from the banking sector and non-banking institutions and individuals by issuing securities, bonds and bills. Such borrowings are used to meet the budget deficits. Whenever budget deficits widen, governments are compelled to increase taxes or borrow more heavily from the market. However, public debts should be maintained at a sustainable level in that a country should be in a position to meet its current and future debt obligations without resorting to debt rescheduling and the need for any major fiscal adjustment. Failure to maintain a sustainable level of debt will have a negative impact on the effectiveness of fiscal and monetary policies. For example, countercyclical fiscal policies, such as expansionary

fiscal policy during a sluggish period in economic growth may not have the desired impact, if a country already has a high outstanding government debt, as it would create expectations in the minds of economic agents for higher level of tax burden in the future to service the debt. In order to keep the public debt at a sustainable level, the future primary balances of the government should be maintained at a level sufficient enough to meet all its debt obligations.¹⁵ Consequently, whenever a government runs a primary deficit, which means that government expenditure, excluding interest payments is higher than revenue collection, this shortfall is required to be financed through borrowings. This shows that the total public debt stock in the current year would be equal to the collective sum of the previous year's debt stock and interest payments on that debt stock minus the primary balance of the current year, as presented below;

$$D_t = D_{t-1} + iD_{t-1} - PB_t$$

where, D_t is the debt stock of the current year, D_{t-1} is the previous year's debt stock, i is the effective rate of interest and PB_t is the primary balance. Consequently, the current year's debt stock will be increased as a result of a primary deficit ($PB_t < 0$) or higher interest rate. When the primary balance is zero ($PB_t = 0$) or in other words, when revenues are sufficient to meet the government's total expenditure exclusive of

¹⁵ The future primary balances of the government is the difference between total government revenue and total government expenditure excluding interest payments. As defined in the OECD Glossary of Statistical Terms, it is the net borrowing or net lending excluding the interest payment on the consolidated government liabilities.

interest payments, current year's borrowing would only be necessary to service the debt stocks in the past. Furthermore, when the government is in a position to attain a primary surplus ($PB, > 0$), such savings could be used in servicing past debt. This would ease the government's need for further borrowing in the current year.

Over the years, the debt of the government of Sri Lanka has increased at an alarming rate and at present there has been an on-going debate over the sustainability of government debt. A critical evaluation on the public debt issue was highlighted in its policy paper of the United National Front government in 2002 as a crisis engulfing the entire economy. It stated that "Sri Lanka is in the thick of an economic crisis born of deep and deadly indebtedness and emphasised the need for arresting it soon".¹⁶ During the first decade after independence (1950-59), the government debt stood at an average of 24% of the GDP, and increased to 53% in the next decade (1960-69), then slowly rose to 64.5% during the period from 1970 to 1979, followed by 86% for the period from 1980 to 1989. On an average, the debt burden during the period from 2000 to 2004 approached 102% of the GDP. By the end of 2010, it has reached Rs.4, 590bn (approximately US\$45bn), which represented 82% of the GDP.

Table 3.5 below presents how the budget deficits swelled over years. A rapid expansion in deficits took place after liberalization. It shot up by thirty five fold

¹⁶ In the introduction of the policy paper titled "Regaining Sri Lanka: Vision and Strategy for Accelerated Development", published by the Government of Sri Lanka in December 2002.

Table 3.5 Government Budget Deficits (1950-2010)
(Values in SLRs.mn)

Year	Total Revenue	Total Expenditure	Overall Surplus (+)/ Deficit (-)	Surplus (+)/ Deficit (-) as % of Total Revenue	Surplus (+)/ Deficit (-) as % of GDP
1950	623	786	- 163	-26.2	- 4.1
1960	1,413	1,821	- 408	-28.9	- 6.1
1970	2,736	3,672	- 873	-31.9	- 6.4
1980	13,022	28,388	- 12,746	-97.9	- 19.2
1990	67,964	99,814	- 25,152	-37.0	- 7.8
2000	211,282	335,823	- 146,722	-69.4	- 9.5
2010	818,220	1,280,205	- 445,076	-54.4	- 7.9

Source: Annual Reports of the Central Bank of Sri Lanka for 1950 to 2010

increase to SLRs.445bn in 2010 from SLRs.12.7bn, that figured almost three years after liberalization in 1980. Deficits were largely financed by foreign and domestic borrowings, with privatisation proceeds only contributing from 1991 to 2005. Main sources for domestic borrowing were the captive buyers for government bonds, namely, the Bank of Ceylon, People's Bank and National Savings Bank (NSB), the large three banks and the Employee's Provident Fund, which remain under government control. One of the main weaknesses in the financial markets in developing countries as pointed out by Fry which we referred to in chapter 2 is that the government bond markets are often used only by captive buyers.¹⁷ However, according to Reinhart et al., (2011), even several advanced economies have taken many steps in recent years to create demand for public debt or directly access private

¹⁷ See section 2.2 of chapter 2 for a fuller explanation on the characteristic of financial markets in developing countries.

savings. Central banks have become bigger players than ever in the purchasing of government debt- a situation that could continue for the indefinite future, they assert.

3.5 Financial System in Sri Lanka

Similar to any other country, Sri Lanka's financial system has four major components namely; financial institutions, financial markets, financial infrastructure and financial regulatory framework. Financial institutions consist of banks, finance companies, other credit providing institutions (including micro finance institutions), leasing companies, insurance companies, primary dealers, stock brokers/dealers, investment managers, margin providers, stock underwriters, unit trusts, pension and provident funds. The next component, which is the financial markets, consists of money market, bond market, foreign exchange market and equity market. The third component- the financial infrastructure, refers to the payment and securities settlement systems, clearing systems and trading platform. In addition to such infrastructure, infrastructure service providers including credit rating agencies, credit information registries and financial information providers also operate in this segment. The final component is the regulatory framework, which is characterized by the laws and rules governing the operational modalities of various institutions within the financial system. These components are interrelated, in that risks in one segment can transmit to another through contagion affecting the stability of the entire financial system.

A number of institutions are involved in regulating and supervising the financial system. The Central Bank of Sri Lanka plays a pivotal role in regulating and supervising the banks, financial companies, leasing companies and primary dealers, while the Securities and Exchange Commission is entrusted with the responsibility of supervising the stock exchange and depository system, stock brokers/dealers, investment managers, margin providers, stock underwriters, unit trust management companies, and credit rating agencies. The Insurance Board has the supervisory responsibility over insurance companies and brokers. Supervision of the payment, clearing and settlement systems is also a responsibility of the Central Bank.

Over the past 25 years, financial sectors' (banking, insurance and real estate) contribution to the GDP increased from an average of 1.43% during 1970 to 1976, to an average of 2.83% for 1977 to 1983, and thereafter to 10.65% for 2003 to 2010. Among these three sectors, the insurance sector is relatively underdeveloped accounting for 1.5% of the GDP in terms of its total insurance premium with less than 10% of the total population subscribing to any form of insurance (IMF, 2007).

The banking system includes 22 licensed commercial banks (LCBs) and 9 licensed specialized banks (LSBs). Among the LCBs, the ownership of the two largest banks remains in the government. There are nine privately owned commercial banks and eleven branches of foreign banks. At present 44.4% of the assets of the financial institutions are held by the LCBs. When the share of the LSB is added, this figure goes up further to 53.0%. This shows that the banking sector plays a dominant

role in the financial market. The second largest single assets holder is the Employment Provident Fund which has a share of 13.5%.

The LCBs have a wide network of branches throughout the country which stood at around 2,897 at the end of 2010. This shows a tenfold increase from 280 branches, the number that was in operation in 1976, a large number of which belonged to the two state banks prior to the liberalization process. The only difference between the LCBs and LSBs is that LSBs are not permitted to take demand deposits or undertake foreign currency business while in respect of other functions they remain similar to LCBs. At present, they have a 500-strong branch network in the country. The following table presents a picture on the expansion of the branch network of commercial banks in Sri Lanka over the fifty years.

**Table 3.6 Expansion of Branch Network of Commercial Banks
1960 - 2010**

Year	Number of Branches	Population Per Branch
1960	200	49,480
1970	288	43,451
1980	400	36,867
1990	872	19,512
2000	1,411	13,538
2010	2,897	7,129

Source: Annual Reports of the
Central Bank of Sri Lanka
for 1960 to 2010

3.6 The Performance of the Financial Sector

The high cost of lending by commercial banks is considered to be one of the continuing issues in financial intermediation in Sri Lanka. This situation has been due to a result of several reasons. Firstly, the high prime rates set by the central bank have an effect on the commercial bank rates. Secondly the government's borrowing crowds out the lending opportunities to the private enterprises and thereby banks lending capacity dwindles. Secondly, high rate of non-performing loans are required to be absorbed through provisions and write-offs. Thirdly, the cost of labour is impacting the cost structure of government owned banks which dominate the banking sector in Sri Lanka.¹⁸ Central Bank statistics indicate that during 2004-2005, the interest rate spread remained as high as 9% with an average weighted lending rate of 14.8% to 15.1% and average weighted deposit rate of 5.3% to 6.2%. The interest rate spread became slightly lower during 2006 to 2008, registering rates between 6.69% and 7.54% and thereafter, lowered further down to 3.04% in 2010. The high spread in interest rate can be attributable to compensate for high risk premium arising from credit risk, market risk, liquid risk and operational risk. Moreover, a combination of factors, of which some are specific to banks and others structural and macroeconomic such as inflationary expectations. Another reason is that in the absence of a developed security market in Sri Lanka, banks heavily rely on interest earnings activities as their major source of revenue. Additionally, the banking sector enjoys a predominant role

¹⁸ ADB, 2005, Sri Lanka Financial Sector Assessment, Manila

as the major provider of external funding to enterprises in view of the underdeveloped nature of the capital markets. Hence, there is no competition to banks that could force a reduction in spreads.

One of the key progressive developments in the financial sector in Sri Lanka is the considerable decline in the effective liquidity ratio (ELR) from 40 per cent that prevailed during late 1950s to late 1970s, to 32 per cent in 2006 and further to 27.75 per cent in 2008. This shows how financial liberalization has effectively impacted on the ELR. We have pointed out in chapter 2 that banks are required to maintain a substantially higher level of statutory reserve levels under financial repressive regime, a character Fry (1995) was very critical of.¹⁹

A significant role is played by commercial banks in facilitating the general public in their daily banking requirements. Since the liberalization of the commercial banking in Sri Lanka, there has been a tremendous improvement in every aspect of banking activities to satisfy the customers. Competition among banks have helped in longer operational hours for public and shorter queuing time. Several new financial products have also been made available. Customer courtesy and care has also been improved in particular within the government-owned two major banks namely, the Bank of Ceylon and the People's Bank.

¹⁹ As pointed out by Fry, both the McKinnon-Shaw school and the neostructuralists expect higher reserve requirements to reduce funds available for investment by reducing the demand for deposits or reducing the fraction of a given volume of deposits that is available for investment. See for an elaborative discussion on the required reserve ratio in financial development, chapter 7 in Maxwell J. Fry (1995). *Money, Interest and Banking in Economic Development*

Table 3.7 Distribution of Number of loans by Formal and informal institutions to households in Sri Lanka (1953-2003/04)

Number of Loans percentage							
	1963	1973	1978/79	1981/82	1986/87	1996/97	2003/04
Formal institutions	7.6	11.5	10.7	9.7	16.6	43.1	45.0
Informal institutions	92.4	88.5	89.3	90.3	83.4	56.9	55.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Loan value percentage							
Formal institutions	n.a	n.a	25.3	38.0	39.8	67.3	61.1
Informal institutions	n.a	n.a.	74.7	62.0	60.2	32.7	38.9

Source: Consumer Finance Survey Reports 1963-2003/04

An improved service to the rural sector in Sri Lanka can be seen from the amount of loans catered to the household sector. According to periodic consumer finance surveys conducted in Sri Lanka, the results of which is depicted in table 3.7 above, it was revealed that a greater volume of financial needs of the household sector had been met by the informal institutions at the early periods. During this period, importance of the informal sector's lending in meeting the financial needs of household sector has been declining. In particular, a significant shift towards the role of the formal institutions in meeting the financial requirements of the household sector has taken place by 1996/97 to almost exceeding 67% of the total loan amount from 39.8% recorded in 1986/87. The wider spread of commercial bank branch

network, longer operational hours, application of electronic transfer systems, access to bank accounts from any branch within the same network and attractive banking products coupled with somewhat positive interest rates are the underlying reasons for the formal institutional sector to take precedence over the informal sector in the household sector credit disbursement.

3.7 Performance of the Colombo Stock Exchange

Share trading in Sri Lanka began in the late 19th century, with the booming tea and rubber plantations. Owned by the British planters, the trading in shares in the limited liability companies engaged in the plantations sector was handled by the Colombo Brokers Association. At the early stages, these operations were largely confined to the secondary market, as the primary market to raise capital for startups was floated in the London Stock Exchange. On establishment of the Colombo Stock Exchange (CSE) in 1985, the responsibilities of the Colombo Share Brokers Association ceased, thus ending its role which had spanned over a period from 1896 to 1985. Sri Lanka followed a similar approach to most of the countries already having stock exchanges by enacting laws modelled on the US Securities and Exchange Commission Law. Formed as a limited company and incorporated under the Companies Act, the CSE has a mutual ownership structure and currently has a membership of 15 institutions, all of which are licensed to operate as stockbrokers and is operated on a fully automated trading platform. As a modern exchange, the CSE now offers state-of-the-art technological infrastructure to facilitate an "order-

driven trading platform" for securities trading, including shares, corporate debt securities and government debt securities. The technology introduced by the Exchange has significantly enhanced the competitiveness of the CSE and has provided a more efficient and transparent market. It also has branches in four major cities in the country.

The vision of the CSE is to contribute to the wealth of the nation by creating value through securities and to contribute to redistribute wealth among the island's population. This can be achieved when operations of the Stock Markets become more popular and a wide array of stocks at varying prices are on offer. Although professional stock investors, through stock price increases benefit from capital gains and dividends get a chance to share in the wealth of profitable businesses, Sri Lanka pursues the policies towards creating an equity owning democracy.

Foreign investment in the stock market is freely permitted except in the case of a few companies where there are certain restrictions imposed. Investment in shares in Sri Lanka and repatriation of proceeds take place through Share Investment External Rupee Accounts (SIERA) opened with licensed commercial banks. Income from investments such as interest, dividends and profit realized from such investments are not subject to Exchange Control Regulations by the Sri Lankan Government.

In terms of transactions of a number of shares, the most attractive sectors in the Colombo Stock Exchange are (1) banks, finance and insurance, (2) hotel and

travels, (3) telecommunication, (4) manufacturing, and (5) beverage, food and tobacco.

The debt market in the CSE has not been active although from time to time debentures were listed. Underdeveloped character of the private debt market, particularly the corporate bond market has been due to lack of institutional investor base, high cost of debt issues and attractive bank credit to high net worth companies.

As in the case of any other Stock Exchange, the operations of the Colombo Stock Exchange and activities of brokers are overseen by a regulator known as the Securities and Exchange Commission of Sri Lanka (SEC). Established under an act of Parliament in 1987, the CSE has been entrusted with the responsibilities of regulating the securities market, granting licenses to stock exchanges, stock brokers, and stock dealers who engage in trading in securities in order to ensure that the market operates in an orderly and fair manner to protect the interests of investors. The Colombo Stock Exchange operates under a license issued by the SEC. The SEC, under law, has the authority to take action to prevent and combat with insider-dealings. It also has provisions to maintain a Compensation Fund for the purpose of granting compensation to any investor who suffers pecuniary losses resulting from failures of a licensed stock broker or a dealer to meet his contractual obligations.

The SEC is also empowered to deal with listing requirements of companies, which are the set of conditions imposed by a given stock exchange upon companies that want to be listed on that exchange. Such conditions sometimes include minimum number of shares outstanding, minimum market capitalization, and minimum annual income. Sri Lanka's experience was that at the outset, public companies did not show

much interest in market capitalization and used to supply only a minimum number of shares to obtain a quotation in the market. In order to respond to this unhealthy development and to ensure an increased supply of shares, the admission requirement for listed companies were revised by increasing the minimum issued capital level from Rs.100,000 to Rs.5,000,000 and raising the percentage of the issued capital that should be in the hands of the public from 20% to a range of 20% to 40%. The percentage applicable to each company is determined on the basis of the level of total issued share capital, with low capital companies being required to offer a higher percentage.

In 1987, merely two years after the establishment of the CSE, the market capitalization stood at Rs.18.4bn or 9.4% of the GDP. This rose to Rs.64.6bn or 15.2% of the GDP in 1992. As of the year 2010, with 241 listed companies, representing twenty business sectors the market capitalization reached a record high of Rs.2, 210 billion (US\$ 19.5 billion), which corresponds to approximately 39.4% of the GDP of the country. The respective figures for the period from 2003 to 2010 are presented in the table 3.8.

Over the quarter century that followed since the establishment of the Colombo Stock Exchange with a new face, the market witnessed mixed

Table 3.8 Share Market Indicators of Colombo Stock Exchange (2003-2010)

Item	2003	2004	2005	2006	2007	2008	2009	2010
All Share Price Index (a)	1,062.1	1,506.9	1,922.2	2,722.4	2,541.0	1,503.0	3,385.6	6,635.9
Year-on-year Change (%)	30	42	27.6	41.6	(6.7)	(40.9)	125.3	96.0
Milanka Price Index (a)	1,897.8	2,073.7	2,451.1	3,711.8	3,291.9	1,631.3	3,849.4	7,061.5
Year-on-year Change (%)	38	9	18.2	51.4	(11.3)	(50.5)	136.0	83.4
Market Capitalisation (Rs. bn.) (a)	263	382	584	835	821	488.5	1,092.1	2,210.5
As a percentage of GDP (%)	15	19	24.7	30.0	22.9	11.4	22.9	39.4
Market price Earnings Ratio (a)	11.1	10.8	12.4	14.0	11.6	5.4	16.5	25.2
Turnover to Market Capitalisation (%)	28	15	19.6	12.6	12.8	22.6	13.0	25.8
Average Daily Turnover (Rs.mn)	-	-	-	-	-	465.0	593.6	2,396.3
Value of Shares Traded (Rs. bn.)	73.8	59.0	114.6	105.1	105.1	110.4	142.5	570.3
Number of Shares Traded (mn)	2,255	2,752	5,218	3,912	2,952	3,155	4,929	18,489
Number of Companies Listed	244	242	239	237	235	235	231	241
Introductions (b)	3	3	3	1	0	1	0	2
Number of Initial Public Offers/Offers for Sale (b)	4	2	3	2	0	2	3	8
Number of Rights Issues	18	25	18	16	21	9	14	31
Amount raised through Rights Issues (Rs.mn.)	6,425	65,945	3,501	4,705	44,622	4,409	6,205	28,669

(a) End of the year (b) Resulting in new listings of companies

Source: Colombo Stock Exchange

performances. With a market capitalization of Rs.10.3 billion at the end of 1985, it rose to Rs.81.6 billion in six years time in 1991 and thereafter, showing radical swings between Rs.12.3 billion to Rs.143.2 billion in its capitalization during the ten year period, settled at Rs.88 billion in the year 2000. The All Share price Index which stood at 121.97 at the end of 1985 reached 837.79 by end of 1991. Since then, after hovering around 600, it gradually moved upward to 978.97 by end of 1994. Thereafter, it surpassed the 1000 mark for the first time, hitting a record high at 1006.96 on 7th January 1994 and swiftly moving to 1375.12 in less than two months by the end of February. Again the down turn of the market began in the same year, with both indices falling, reflecting the impact of market correction, according to some analysts (Central Bank of Sri Lanka, 1994). Other factors that contributed to the decline were high interest rates and weakened non-national participation. From December 1994 to end May 1995, the ASPI fell from 986.7 to 693.8 showing a 30% reduction. Then it moved down over the years and then reached a 384.4 mark on 17th August 2001 and remained at low for several months until its slow recovery towards mid 2003. The Market gained a steady recovery thereafter, rising the index to 1751.9 on 31st March 2005. Such violent oscillations on the index have been mainly due to the uncertainties created by the prolonged civil war in Sri Lanka. Sudden escalations of fighting in the Northern and Eastern Provinces and also occasional bomb blasts in the city of Colombo, had a major impact on the performance of the market over the past. However, a complete reversal of the investor sentiments could be seen due to positive political developments that resulted from the ceasefire agreement signed in

2001. Buoyed by improved investor confidence, unprecedented growth in both indices of the CSE has been seen with a large increase in foreign investment. The All Share Price Index, which was hovering around the 500 mark since August 2001, surpassed the 1500 mark by end of 2004. As of 2005 the CSE had recorded a consistent annual growth of over 30% in the All Share Price Index (ASPI) over the previous three years. When the war came to an end in early 2009, an increase by 125%, unprecedented rise in the All Share Price Index was recorded. The year 2010 showed a further improvement with a 96% increase.

In the meantime, the market capitalization as a percentage of GDP was increased from 11% in 2008, to 22% in 2009 and again in the following year it rose to 39%, the highest level ever achieved since the creation of the CSE.

In the case of the CSE, there are currently two indices, namely the All Share Price Index (ASPI) and the Milanka Price Index (MPI). While the ASPI is based on all listed companies, the MPI is based on a representative group of blue chip companies only.

However, one cannot have a proper valuation of stocks as the stock values may be 'contaminated' by inflation, merely looking at the stock market index. Therefore, one has to examine the real inflation-corrected indices and a data plot to see the real level of rise or fall. Real Standard and Poor's (S&P) Composite Stock Price Index is an example.

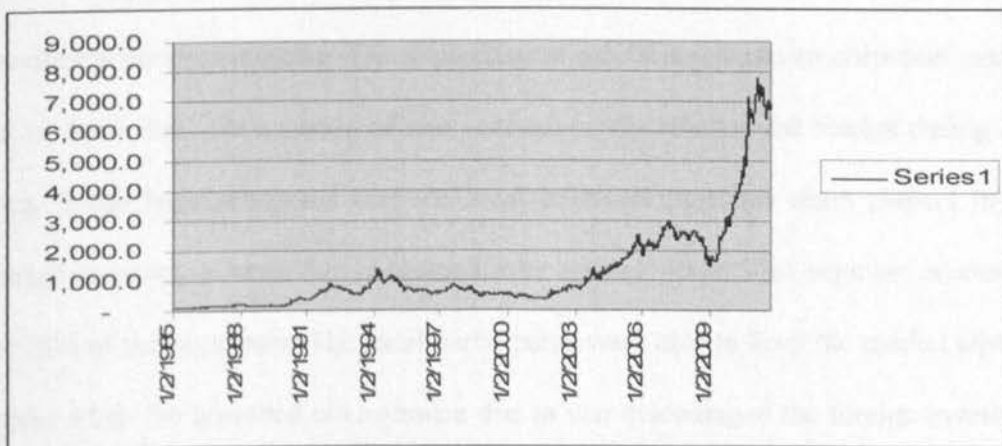
In the case of the All Share price Index of the Colombo Stock Exchange, it has been pointed out that a substantial rise in some years was due to general increase

in price levels. In 2005, 30% of the increase was due to inflation, while 20% was attributed to the increase in volume of shares listed (Annual Report of the CSE, 2005).

Throughout history, it is evidenced that improved political stability and recovery in economic activities had a favourable impact on foreign investor activities in the Colombo Stock Exchange. It has also been observed whenever yield from fixed income securities either low or negative in real terms, had a positive impact on the share market. When the civil war ended in May 2009, a sudden surge on the market was witnessed.

At the end of that year, the All Share Price Index rose to 3385.6 from 1503.0 as registered in the previous year, reflecting a 125.3% increase. Accordingly, as a percentage of the GDP, market capitalization increased from 11.4% in 2008 to 23% in 2009.

Figure 3.1 – Colombo All Share Price Index (CASP)
(2 January 1985– 30 September 2011)



Source: Colombo Stock Exchange

It has also been observed that the market turnover was highly correlated to low interest rates and exchange rate (Annual Reports of the CSE, 2003, 2004 and 2005). During the periods when the stability of the exchange rate prevailed, the foreign inflows to the market were active. As the exchange rate remained somewhat stable during 2005, net foreign inflows to the CSE experienced a remarkable increase amounting to US\$62 million in 2005.

A visual inspection of the above graph indicates that over the past 20-year period stock prices, while subject to drastic oscillations, underwent a longer period of persistent downturn trends. Long periods of declining trends could be seen from January 1992 to February 1993, February 1994 to August 1996 and August 1997 to September 2001. A slight decline can be seen again from 2006 to 2007 and the situation was further aggravated in 2008 in the wake of the escalating civil war that year.

Needless to mention, investors also look for corporate earnings in their investment decision-making. The imposition of a 20% surcharge on corporate income tax in April 2001 for a period of one year adversely affected the market during that time. It has been witnessed that the local investors were the main players in the market turnover, a trend that continued over several years. This segment accounted for 75% of the purchases. The local participants were able to keep the market alive at a time when the unsettled environment due to war discouraged the foreign investors. Another reason attributable to the discouragement of the foreign investors could be the continuous depreciation of the Sri Lankan rupee against foreign currencies.

Sri Lanka's capital market is not fully liberalized. In the case of share market operations, foreigners are free to bring in and take out money under the Share Investment External Rupee Accounts (SIERA). Non-resident Sri Lankans (those who live abroad) are permitted to remit money for investment in Sri Lankan companies through a special kind of account known as Rupee Accounts for Non-Resident Sri Lankan Investment (RANSI). Funds can be used to invest in shares, government securities, debentures, and in real estate and dividends, profits and income and also funds on sales and liquidation can also be repatriated. However, locally residing people do not have access to such accounts and are not permitted to remit abroad their profits or funds on liquidation of their assets. Hence, the funds that are directed to the share market by the local residents are not convertible. Therefore, the degree of convertibility of currencies affects the share markets differently and, countries having partially liberalized capital markets do differ from those with fully liberalized capital accounts as such funds held by resident people cannot flow freely out of the country. Effects of feedback generated from news are felt disproportionately on the two segments of market participants in a partially liberalized capital market.

3.8 Concluding Remarks

Sri Lanka is the pioneer nation in South Asian region to freely open up its frontiers to foreign trade and investment. Its liberalization process began in 1977 and continued until the fuller liberalization of the current account in 1994 and partial liberalization of the capital account, from time to time, to the present day.

When it gained its independence in 1948 after a foreign rule of 130 years, the country inherited a dual economic structure and a greater number of people remained in poverty, malnutrition, and joblessness. There was a growing number of landless people, the land being the only asset that could be the symbol of any person's wealth in the country living at that time as there were no factories producing factory-products. The country's economy was characterized as 'dual', since there is a considerable and clear division in terms of ownership, processes of production, financing and exchange of output in the modern sector vis-à-vis the traditional sector. The modern sector dominated with tea, rubber and coconut cultivated in large-scale plantations, transport of which were catered to by the then modern railway system to the harbour and provision of finance from banks had been the most privileged enterprise ever to appear on the soil of the island. The sector was managed in Sri Lanka by Agency Houses on behalf of Sterling Companies, headquartered in London and their necessities were looked after by the then government. The labour for these plantations was harnessed from South India. This sector's produce were mostly destined to Europe. In contrast to such an organized network of business, there were rural folk toiling on tiny pieces of land for them and their family's survival, without any support from the government or banks. In most cases, as they were not the owner of the land, there were no provisions for collateral to facilitate a loan even under extreme circumstance if it was possible. The successive governments after the independence made an earnest attempt to change the system to redistribute in favour of the rural folk, urban workers, malnourished mothers and uneducated children, but the process went out of control from 1956 until 1977, when the government policy

initiatives ransacked everything that were to be given to the people. The very first private business to be brought under nationalization (takeover by the government) in 1958 was the public bus transport companies owned by a group of enterprising individuals. The agony was that no compensation was paid to the owners. It was the beginning of ruination of the birth of an entrepreneurial class among the locals in the island. Over time, there were much celebrated hundreds of government-owned business enterprises which were run by a class of hand picked managers having political links to the governing party, whichever in power. Every enterprise happened to be a loss-maker, but supported through the government budget running into deficits which were annually passed in Parliament. The credit disbursement from the nation's largest two banks, which were under the whip of the government were also manipulated through directed credit to favour some selected enterprises. The budget deficit expanded from an annual average 2.3% of the GDP during 1950 to 1956 to 6.3% of the GDP over the period from 1956 to 1976, while the government debt rose from 22% of the GDP to 57% during the same period. Soaring unemployment among youth and lack of opportunities coupled with unequal distribution of wealth overheated public anger at large. Unrest continued with frequent anti-government demonstrations and in 1971 a group of youth and student rallying behind a socialist movement took to arms in an abortive attempt to topple the government with sporadic and surprise attacks on police stations, security forces and public property. Although the government was able to put down the uprising, it failed to make much progress in addressing the main issues such as rising unemployment, scarcity of essential food

items and widening income disparity. A complete reversal of the existing economic and financial order was seen as an urgent demand.

Pro-socialist policies, by which politicians played the game, did not work for Sri Lanka as Sri Lanka's troubled economy was deeply rooted in the restrictive policy regime followed from 1956 onward. And the country, by 1977 was readying to open up its frontiers to foreign investment and private enterprise-led economy, which had been barred almost for twenty long years.

The result of freeing of the economy was apparent. During the 27-year long period from 1950 to 1977, the cumulative sum of FDI which was recorded to be a negative US\$45.5mn rose to a formidable figure of US\$5,694.3mn by 2010. As Stiglitz (2002b) points out, foreign direct investment brings with it not only resources, but technology, access to markets and also invaluable training, contributing to human capital development, Sri Lanka too witnessed such a progressive trend and development. In the case of Sri Lanka the FDI inflows also accompanied technological know-how, access to markets and valuable training to labour thus transforming its manufacturing sector into a highly dynamic sector. One of the key beneficiary sectors from the liberalization was exports. The total exports which nearly doubled from US\$328mn in 1950, to US\$740mn in 1977 over 27 years, showed a eight-fold increase over the next 27 years from US\$846mn in 1978, to US\$6351mn in 2005. A considerable amount of FDI went into the export sector, in particular, manufacturing. The per capita income growth which averaged at 2.3 per cent over a sixteen-year period from 1960 to 1976, rose to an average of 4.2 per cent over the period from 1977 to 2010. The national savings as a percentage of GDP per annum

also rose from 13 per cent to 18.4 per cent during the same corresponding period. A striking improvement was the dramatic decline of unemployment rate of 20 per cent in 1976 to 4.9 percent in 2010.

Over the past three decades, despite serious difficulties stemming from the civil unrest, natural disasters and heavy burden on the balance of trade from petroleum imports, coupled with international financial crises from which Sri Lanka continued to suffer, the island nation achieved a considerable progress in transforming its economy into a sound and sustainable growth path. Having surpassed its per capita GDP from a level of less than US\$350 in the early 1980s and reaching over US\$1900 in 2010, it achieved the status of a middle income country. The economy, over the past few years grew an average rate of 6.4%. It performed well by achieving the highest Human Development Index rank in South Asia in 2011. It had also almost achieved the targets of Millennium Development Goals by 2012.

The results in our models which are presented in chapter 4 provide evidence showing that financial liberalization implemented since 1977 has positively contributed to the increased volume of savings and private investment. We also evaluated the effects of FDI flows and bank credit to private sector on per capita economic growth also holding several other variables as control variables, in chapter 5. In our model, we find sufficient evidence in support of the hypothesis that there is a positive contribution of FDI flows and bank credit to the private sector on per capita economic growth.

Chapter 4

Financial Liberalization in the context of the McKinnon-Shaw Hypothesis

4.1 Introduction

As mentioned in the previous chapter, the economic reforms introduced in Sri Lanka in 1977, envisaged among other things, the liberalization of the financial sector as one of the key policy instruments for promoting growth. It is broadly accepted that the presence of an efficient financial system based on a free-market mechanism is a sine-qua-non for economic development. As the primary task of a financial system is to organize channelling scarce funds to productive investment and consumption activities, a more efficient financial sector can facilitate this process by channelling the saving to highly productive investment projects effectively. The experience gained by the banking sector in channelling credit, and monitoring borrowers to ensure the proper use of funds would be helpful in further facilitating the inflows of foreign capital. Thus the level of development of the financial intermediary sector, dependent upon its ability to perform the critical tasks such as mobilizing saving, contributing to allocate capital, monitoring the projects and risk managing, could play an important role in determining the extent to which capital flows affects growth.

As stated in chapter two, the McKinnon-Shaw financial liberalization hypothesis asserts that there is a positive impact of interest rate on saving and

investment provided that the interest rate is determined by the free market forces. However, we have also shown in that chapter that the empirical findings in the literature have produced contrasting outcomes. A number of studies have reached inconclusive results of the effects of interest rate on savings and yet some other studies have shown negative results. Nevertheless, there are other studies that find evidence in support of the McKinnon-Shaw hypothesis of financial liberalization.

This chapter presents the results of an econometric analysis on the impact of financial liberalization on saving and investment in Sri Lanka. By doing so, it examines whether the financial liberalization implemented in Sri Lanka since 1977 had made any positive contribution to saving and investment as hypothesised in the McKinnon and Shaw model. In this respect, our key hypothesis is to test whether the interest rates after financial liberalization has contributed to the growth in saving and investment. The chapter is organized as follows; section two discusses on the methodology and data, section three briefly explain the procedure regarding bound testing as developed by Pesaran and Shin (1999) and Pesaran *et al.* (2001), which has some advantages over conventional cointegration testing, section four focuses on the application of error correction model to interest and saving equation, the outcome of the diagnostics of the interest and saving equation is covered in section five, section six discusses on the empirical results of the interest and saving model, section seven presents an analysis on the interest and investment model and its empirical results, and finally, concluding remarks are covered in section eight.

4.2 Methodology and Data

The study employs an Autoregressive Distributed Lag (ARDL) approach to estimate the effects of interest rate on saving and investment relationship using annual data for a period of 51 years from 1960 to 2010. The data for the analysis were obtained from the Annual Reports of the Central Bank of Sri Lanka. The ARDL approach was advanced by Pesaran and Pesaran (1997). Considerably a longer period of time may pass between the economic decision-making process and the final result of the change in a policy variable. Hence, it is expected that adjustment of the dependent variable, y , to changes in any of the independent variables, x s' could be widely distributed over a lengthy period of time. It is widely believed that real long-term interest rates are the key determinant of long-term saving and investment decisions and while their influence on household expenditure on durables and saving as well as business investment play a major role on business cycles and transmission of macroeconomic policy. The ARDL model takes into account such dynamic behaviour and uses the lagged values of both dependent variable and the independent variables in order to account for long-term implications. Hence, the ARDL approach would be the ideal modelling method to examine the relationship between the interest rates and saving as well as the interest rates and investment.

When we examined our time series data, we found that some of the series were $I(0)$ of order of integration, and some others were $I(1)$. If all the series were in the order of $I(0)$, meaning that they were stationary, we could simply model the data

at level, using the OLS estimation. If all the series were $I(1)$, and not cointegrated at level, we could estimate them using a standard regression model after differencing all of the series. When all the series are integrated of the same order, and they are also found to be cointegrated, we could apply an OLS regression model at level to obtain the long-run equilibrium relationship. Additionally, we could also estimate an error-correction model (ECM) using an OLS to obtain the short-run dynamics of the relationship between the variables. Our data set do not meet either of the above three requirements as they were in different level of order of integration. This warrants us to use an ARDL approach to estimate our data.

Several authors (Pesaran and Pesaran, (1998); Laurenceson and Chai, (2003); Pesaran and Shin, (1999); Jalil, et. al, (2008); Giles, (2013) suggest that there seem to be a number of advantages in the ARDL modelling. They can be used to estimate long-run and short-run dynamics even when the variables in question may include a mixture of stationary and non-stationary time series. The bounds test does not require pre-testing of the series to determine their order of integration since the test can be conducted regardless of whether they are purely $I(1)$, purely $I(0)$, or mutually or fractionally integrated. As observed by Laurenceson and Chai, (2003), Shrestha and Chowdhury (2007), Jalil et. at, (2008), and Mukhopadhyay and Pradhan (2010), the ARDL modelling incorporates sufficient number of lags to capture the data generating process to specific modelling framework. However, in this analysis, the bound test approach as well as the Johansen cointegration test has been applied to examine whether the variables have long-run association. Thereafter,

VAR lag order selection criterion is performed to determine the number of lags to be chosen for both equations.

The first part of the McKinnon and Shaw hypothesis is associated with the linkage between interest rate and saving, according to which the aggregate saving is a function of aggregate income and interest rate. To test this, saving is considered as the dependent variable, which is proxied by time and saving deposits held at banks. The independent variables are (1) income proxied by GDP, and (2) interest rate on savings proxied by the average weighted deposit rate in this model. The deposit rate offered by banks can be used as a proxy for return on savings. Data on real average weighted deposit rate (RAWDR) is obtained after subtracting the rate of inflation from the average weighted deposit rate (AWDR) as provided in the Central Bank annual reports. Average Weighted Deposit Rate (AWDR) is calculated by the Central bank every month, based on the weighted average of all outstanding interest bearing deposits of commercial banks and the corresponding interest rates. Thereafter, the annual rates are calculated from the average of monthly rates. We also attempted to add as a regressor, the expansion of bank branches, on account of its impact on growth in banking activities. However, as it produced a highly insignificant result, we decided to drop it from our model. Thus, the first equation developed to assess the relationship between the interest rate and savings is as follows;

$$LRTSD_t = \alpha_0 + \alpha_1 LRGDP_t + \alpha_2 RAWDR_t + e_t \quad (4.1)$$

(+) (+)

LRTSD Log of (real) time and savings deposits
 LRGDP Log of (real) GDP
 RAWDR Real average weighted deposit rate

The behavioural assumptions require that α_1 and $\alpha_2 > 0$ and these parameter restrictions are required to be tested. Therefore, as a priory, in parenthesis are the signs of the coefficients.

The second part of the McKinnon and Shaw hypothesis shows a positive association of the real interest rate on investment via saving. In other words, an increase in the amount of saving in response to a rise in real interest rate creates more funds available for investment. The dependent variable in this model is the log of total bank credit granted to private sector, which is taken as a proxy for investment. The independent variables are (1) the log of time and savings deposits, (2) prime lending rate (3) refinancing rate and (4) the log of real borrowing by the banking sector from the central bank. The data on average weighted prime lending rates as given in the annual reports of the Central Bank were used for the prime lending rate. This rate is calculated by the Central Bank based on weekly commercial banks' lending rates offered to their prime customers. The monthly rates are average values of weekly rates based on which the annual rates were calculated. Commercial banks' maximum unsecured rates on advances were used as a proxy for refinancing rates. In the case of interest rates, the real rates were calculated after subtracting the respective annual inflation rates based on the GDP deflator

corresponding to each year from the nominal interest rates. It can be argued that both the lending rate and the refinance rate could collectively make an impact on the size of the credit supply. Hence, there is a justification of taking both rates into account in this model. The commercial banks' borrowing from the central bank as a percentage of total lending was considerably higher exceeding 10% during mid 1970s to early 1990s. However, over the past ten years, measured on the basis of percentage to total bank lending as well as in absolute terms, the amount of borrowings from Central bank were substantially reduced. Such reduction in borrowing from the central banks could be attributed to the reason that high growth in saving deposits lessened the increased reliance of the banking sector on external borrowing. As borrowing from the central banks makes an impact on the lending capacity of banks, this has also been included on the right-hand side variables. The second equation modelled to assess the relationship between the interest rate and investment which takes the following form;

$$LRTC_t = \beta_0 + \beta_1 LRTSD_t + \beta_2 AWPLR_t + \beta_3 RFR_t + \beta_4 LRBCB_t + e_t \quad (4.2)$$

(+) (-) (-) (+)

LRTC	Log of total bank credit (in real terms)
LRTSD	Log of (real) time and savings deposit
AWPLR	Average weighted prime lending rate
RFR	Real refinancing rate
LRBCB	Real borrowing from the Central Bank

According to the behavioural assumptions, it is required that β_1 and $\beta_4 > 0$ and β_2 and $\beta_3 < 0$. As a priory, the signs of the coefficients are indicated in parenthesis which are required to be tested.

The hypotheses to be tested are that following financial liberalization, the interest rate has had a positive effect on both savings and supply of credit, and that if so, increased savings has had a positive contribution on lending.

4.2.1 Test on the Stationarity of the Series

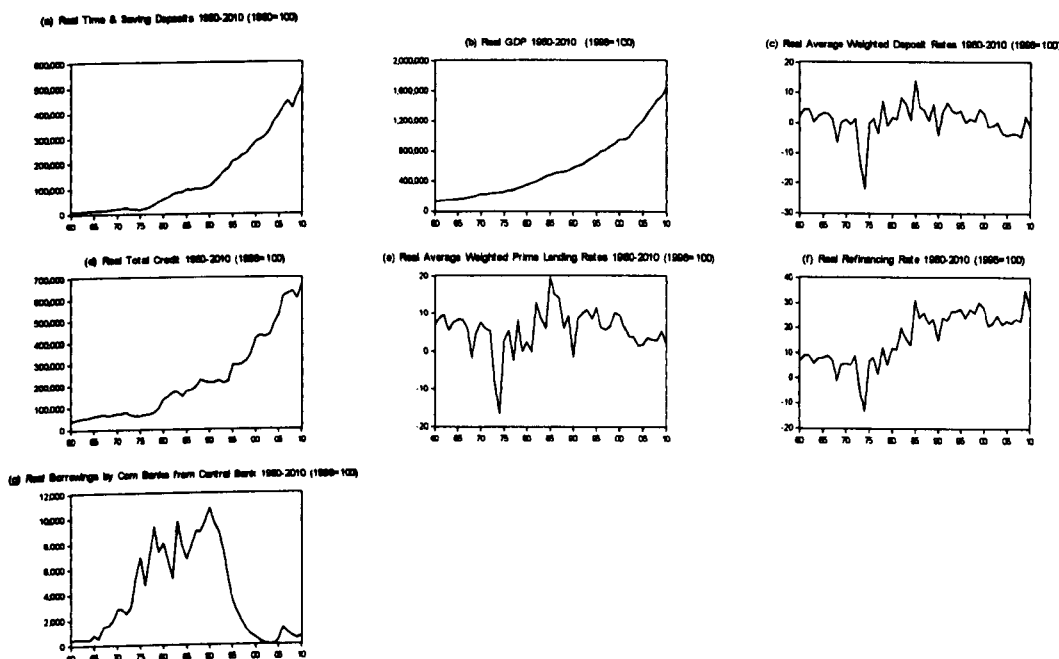
The time series data are used in this analysis. Therefore, it is important to ascertain whether these data series are stationary or non-stationary before embarking on a regression analysis. The underlying reason for this is that there is a danger of obtaining apparently significant regression results even from unrelated data which are not stationary. In order to avoid such spurious results, it is required to test for stationarity. A time series is stationary when its statistical properties such as mean, variance and autocorrelation are all constant over time.

With respect to each of the variables, both dependent and independent, tests were performed on individual series to examine whether the series are stationary or not. If any series is not stationary, differencing is required to make the series stationary. If non-stationary series are used for estimation, the results could be spurious. Therefore, hypotheses testing and forecasting cannot be performed with such results. However, there is an exception to this rule. It is also possible that a linear combination of two or more non-stationary series could be cointegrated implying that they share similar stochastic trends and therefore any apparent regression relationship between them is not spurious. Hence there is a standard sequence of the steps to deal with time series data for modelling. The first step of

this sequencing process is to ensure that the group of the data series are stationary or not. The next step is to select the lag length on the basis of the appropriate criteria. Thereafter, the model can be estimated provided that the series of variables were found to be stationary in their original form. However, if they found to be nonstationary, a test for cointegration should be carried out. If such nonstationary variables are cointegrated, they can be used for estimation at level.

There are several methods for testing stationarity of series such as Dickey-Fuller test, Augmented Dickey-Fuller test (ADF), Philips-Perron test and Peron-Vogelsang test. Among them, the most widely used test procedure is the ADF test and hence this test is used. Plots of the time series data on all variables displayed in figure 4.1 exhibit the behaviour of each of them.

Figure 4.1 Time series Data Plots on all Variables



These plots are (a) the real time and saving deposits, (b) real GDP, (c) real average weighted deposit rates, (d) real total credit, (e) real average weighted prime lending rates, (h) real refinancing rate and (g) real borrowing by commercial banks from the central bank. While the real time and savings deposits, and the real GDP and the real total credit display upward trending behaviour, the rest of the series, namely, the real average weighted deposit rates, the real average weighted prime lending rates, the real refinancing rates and the real borrowing by the commercial banks from the central bank, appear to wander up and down. As all the series have the characteristics of trending either upward or downward and fluctuate around a constant value, it can be established that the Dickey-Fuller test to be performed is the intercept with a trend.

Tables 4.1 and 4.2 present the results of the ADF tests respectively of model one (interest and saving relationship model) and model two (interest and investment relationship model). As can be seen from these tables, we have applied all three forms of testing procedure - firstly with constant and trend, secondly with constant only, and finally without trend or constant. The real average weighted deposit rates and the real average weighted lending rates were converted into decimals. The rest of the variables were converted into log form before performing the unit root tests. As per data given in table 4.1, the real average weighted deposit rate (RAWDR) is the only variable found to be stationary at levels in all three forms. The log of real time and saving deposits (L_RTSD) became stationary at first difference and the log of real gross domestic product (L_RGDP) has become

stationary at first difference in constant form as well as constant and trend form. Thus, two variables were found to be integrated of order zero $I(0)$ and one variable was found to be integrated of order one $I(1)$ in the first model. In regard to the time series variables for the interest and investment relationship model, a similar result can be observed from the data in table 4.2 below where the ADF test results revealed a mixed outcome on the stationarity condition. Only in the case of RAWPLR (Real Average Weighted Prime Lending Rate), it became stationary in all three forms at level. The two series, namely, L_RTSD (Log of Real Time and Saving Deposits) and RRFRR (Real Refinancing Rate) achieved stationarity condition at level under the constant and trend form. The other two variables became stationary in all the three forms after first difference.

Table 4.1 Augmented Dickey-Fuller Unit Root Test on variables in interest and saving model: equation -1

Variables	Level			First Difference		
	None	Constant	Constant & Trend	None	Constant	Constant & Trend
L_RTSD	3.44 (1.00)	-0.74 (0.83)	-3.48 (0.05)	-2.52 (0.01)	-4.51 (0.00)	-4.51 (0.00)
Critical value at 5%	-1.95	-2.93	-3.51	-1.95	-2.93	-3.51
L_RGDP	14.65(1.00)	0.74. (1.00)	-3.92 (0.02)	-0.59 (0.45)	-7.64 (0.00)	-7.67 (0.00)
Critical value at 5%	-1.95	-2.92	-3.51	-1.95	-2.92	-3.50
RAWDRD	-4.71 (0.00)	-4.74 (0.00)	-4.70 (0.00)	-8.23 (0.00)	-8.15 (0.00)	-8.06 (0.00)
Critical value at 5%	-1.95	-2.92	-3.50	-1.95	-2.92	-3.51

Therefore, in the case of second model, three variables were integrated of order zero $I(0)$ and two variables were integrated of order one $I(1)$.

Table 4.2 Augmented Dickey-Fuller Test on the variables in interest and investment model: equation - 2

Variables	Level			First Difference		
	None	Constant	Constant & Trend	None	Constant	Constant & Trend
L_RTC Critical value at 5%	4.11 (1.00) -1.95	-0.30 (0.92) -2.92	-2.70 (0.24) -3.50	-4.73 (0.00) -1.95	-5.93 (0.00) -2.92	-5.87 (0.00) -3.50
L_RTSD Critical value at 5%	3.44 (1.00) -1.95	-0.74 (0.83) -2.93	-3.48 (0.05) -3.51	-2.52 (0.01) -1.95	-4.51 (0.00) -2.93	-4.51 (0.00) -3.51
RAWPLR Critical value at 5%	-2.94 (0.00) -1.95	-4.30 (0.00) -2.92	-4.26 (0.00) -3.50	-7.17 (0.00) -1.95	-7.10 (0.00) -2.92	-7.02 (0.00) -3.51
RRFR Critical value at 5%	0.31 (0.77) -1.95	-0.85 (0.79) -2.92	-4.02 (0.01) -3.50	-7.50 (0.00) -1.95	-7.54 (0.00) -2.92	-7.48 (0.00) -3.51
L_RBCB Critical value at 5%	-0.20 (0.61) -1.95	-1.69 (0.43) -2.92	-1.99 (0.59) -3.51	-5.38 (0.00) -1.95	-5.33 (0.00) -2.92	-5.38 (0.00) -3.51

4.2.2 Selection of Lag Lengths

The selection of the order of lag length is an important step in the ARDL modelling. There are several criteria available for determining the lag length and most prominent among them are the Akaike Information Criterion (AIC) and Schwarz Information Criterion (SIC)¹. In some cases, the Hannan-Quinn Information Criterion is also used. Similar to in autoregression, the AIC or SIC can be applied to determine the number of lags in an ARDL model which has several coefficients. The AIC criterion takes the following form;

$$AIC(K) = \ln \left[\frac{SSR(K)}{T} \right] + K \frac{2}{T} \quad (4.3)$$

The K denotes the number of coefficients including the constant, the T denotes the number of observations and SSR denotes the sum of squared residuals. The SIC is

¹ Since Schwartz Information Criteria (SIC) is derived using the Bayesian arguments, SIC is also know as Bayes Information Criterion.(BIC).

defined in the same manner, but only difference is that it replaces 2 with $\ln(T)$ in the equation (4.3) above. Several models with various lag lengths can be tested and accordingly the model having the lowest value of the criterion can be selected as the most suitable model.

The results of the lag order selection under different criteria are depicted in tables 4.3 and 4.4 below. As can be seen from the table 4.3, in respect of equation one, Schwarz Information Criterion and Hannan-Quinn Criterion indicate one lag length as the best result while Sequential Modified Test shows the lag length to be

Table 4.3 Lag Order Selection Criterion for equation 1; variables: L_RTSD, L_RGDP and RAWDRD.

	Sequential Modified LR Test	Final Predictor Error (FPE)	Akaike Information Criterion (AIC)	Schwarz Information Criterion (SIC)	Hannan-Quinn Information Criterion (HQ)
0	NA	3.30e-05	-1.80	-1.69	-1.76
1	369.61	1.08e-08	-9.83	-9.36*	-9.65
2	27.65*	8.06e-09*	-10.13*	-9.31	-9.82*
3	12.18	8.61e-09	-10.07	-8.90	-9.63

(Notes: * indicates lag order selected by the criterion. LR: Sequential Modified LR test statistic (each test at 5% level), FPE Final Prediction Error, AIC: Akaike Information Criterion, SC: Schwarz Information Criterion, HQ: Hannan-Quinn Information Criterion)

two. The Akaike Information Criterion and the Final Predictor Error (FPE) indicate four lags as the suitable lag lengths. However, in the case of annual data, the lag length should not exceed more than one. Hence it was decided to select one lag length for both equations. It is also pertinent to mention here that several authors

Table 4.4 Lag Order Selection Criterion for equation 2; variables: L_RTC, L_RTSD, RAWPLRD, RRF RD and L_RBCB

Lag	Sequential Modified LR Test	Final Predictor Error (FPE)	Akaike Information Criterion (AIC)	Schwarz Information Criterion (SIC)	Hannan-Quinn Information Criterion (HQ)
0	NA	1.06e-07	-1.87	-1.67	-1.80
1	352.21*	5.74e-11*	-9.40*	-8.22*	-8.95*
2	34.92	6.55e-11	-9.30	-7.14	-8.49
3	27.90	8.50e-11	-9.14	-5.99	-7.95
4	30.29	9.36e-11	-9.24	-5.11	-7.69

(Notes: * indicates lag order selected by the criterion; LR: Sequential Modified LR test statistics (each test at 5% level); FPE: Final Prediction Error; AIC: Akaike Information Criterion; SC: Schwarz Information Criterion; HQ: Hanna-Quinn Information Criterion.)

have suggested that Schwarz Information Criterion as the consistent model-selector.²

Therefore, the equation one selects an ARDL (1,1,1) form model. In the case of equation two, there was no difficulty to select the lag length as every criterion indicated one lag length. Therefore, the equation two took the form of (1,1,1,1).

4.2.3 Cointegration Analysis.

The next step is to examine whether the variables in each of the two models are cointegrated. A group of series is cointegrated when there exist a long-run relationship among all the variables. Under such a scenario, the system is in equilibrium. As stated earlier, the underlying reason for cointegration test is to examine whether the particular groups of variables can be used for estimation without differencing. If they are cointegrated, it is not required to take the differences of the variables to make them stationary as the cointegrated variables

² Professor Dave Giles, ARDL Models - Part II - Bounds Tests, On-line from davegiles.blogspot.com

would not produce spurious results. If a system to be in equilibrium in the presence of k number of variables, there should be $k-1$ number of cointegrating relations or equations present with one stochastic trend driving the system, k being the number of variables. Accordingly, as there are three variables in the first model (saving-interest rate relationship model), there should be two cointegrating equations present if the system to be in equilibrium. In the case of the second model (investment-interest relationship model) which has five variables, there should be four cointegrating equations and one stochastic linear relationship, if the system to be in equilibrium. However, such a conclusion can only be maintained under the Engel and Granger two-step residual-based procedure for testing the null of cointegration as well as under Johansen's system-based reduced rank regression approach when the underlying variables are integrated of order one. As the variables in each of the models have shown different order of integration, the conventional cointegration testing procedure can not be applied. As such the ARDL bound testing methodology introduced by Pesaran, Shin and Smith (2001) has demonstrated that irrespective of the presence of purely $I(0)$ or purely $I(1)$ or mutually cointegrated, the existence of a relationship between variables could be tested. The statistic underlying the test procedure is the Wald test to be performed in a conditional unrestricted error or equilibrium correction model (ECM). In respect of different numbers of explanatory variables, Pesaran et al. (2001) provides two sets of asymptotic critical values one for the lower bound rates and the other for the upper bound rates on the assumption that all the regressors are either $I(0)$ or $I(1)$ respectively. If the computed Wald or F-statistic exceeds the upper bound critical value at the appropriate level of

significance, it is to be established that there is evidence of cointegration or long-run relationship between the variables. However, if the computed Wald or F-statistic falls below the lower bound critical value at the appropriate level of significance, the conclusion is that there is no cointegration or long-run relationship between the variables. Finally, if the computed Wald or F-statistic falls between the lower and upper bound critical values, it is to be determined that the result is inconclusive.

4.3 Bound Testing Procedure

In regard to the bound testing, the basic procedure to be followed can be explained as follows. After it has been established that the variables in the model are of different order of integration that include I(0) and I(1) but precisely not I(2), it is required to formulate an unrestricted error correction model, which is a particular type of ARDL model. At this stage, the lag structure is also required to be determined. Now consider the conventional ECM for cointegrated model which is given below.

$$\Delta y_t = \beta_0 + \sum \beta_i \Delta y_{t-1} + \sum \gamma_j \Delta x_{1t-j} + \sum \delta \Delta x_{2t-k} + \varphi z_{t-1} + e_t ; \quad (4.4)$$

In this model, z_t , is the error correction term which is the residual series obtained from the long-run cointegrating regression model which takes the following form;

$$y_t = \alpha_0 + \alpha_1 x_{1t} + \alpha_2 x_{2t} + v_t \quad ; \quad (4.5)$$

The next step is to formulate the following model which is very similar to the conventional ECM model. The only difference is that it has replaced the error correction term, z_{t-1} with a series of different terms such as y_{t-1} , x_{1t-1} and x_{2t-1} .

$$\Delta y_t = \beta_0 + \sum \beta_i \Delta y_{t-i} + \sum \gamma_j \Delta x_{1t-j} + \sum \delta \Delta x_{2t-k} + \theta_0 y_{t-1} + \theta_1 x_{1t-1} + \theta_2 x_{2t-1} + e_t \quad ; \quad (4.6)$$

It can be observed that the only difference between the conventional ECM given in (4.4) and the equation in (4.6) is that the error correction term, z_{t-1} in (4.4) has been replaced with terms, y_{t-1} , x_{1t-1} and x_{2t-1} . It can also be seen from equation (4.4) that the lagged residual series z_{t-1} in the equation (4.4) is the same as $(y_{t-1} - \alpha_0 - \alpha_1 x_{1t} - \alpha_2 x_{2t})$ in the equation (4.5), in which case the α 's represent the α 's estimated by the long-run cointegrating OLS model. Other than this, no change was introduced to equation (4.6). The variables and the lagged levels in the conventional ECM equation (4.4) remain in the equation (4.6), however, without restricting their coefficients. Hence, this model is called 'unrestricted ECM', which Pesaran et al. (2001) termed as 'unconstrained ECM'.

The ranges given in the summations for different terms in (4.6) are from 1 to p , 0 to q_1 , and 0 to q_2 respectively denote the appropriate values for the lag levels.

It is now time to turn to the topic of how to perform the bound testing. What to do next is to perform an F-test of the null hypothesis, $H_0: \theta_0 = \theta_1 = \theta_2 = 0$; against the alternative hypothesis $H_a: \theta_0 \neq \theta_1 \neq \theta_2 \neq 0$; which says that the null is not true. If the null is rejected, then there is a long-run cointegrating relationship.

4.4 Application of Error Correction Model to Interest and Saving

Equation

Derived from above analysis, the following unrestricted ECM equation can be drawn in respect of the interest and saving relationship model.

$$\begin{aligned} \Delta \text{LogRTSD}_t = & \alpha_0 + \alpha_1 \Delta \text{LogRTSD}_{t-1} + \alpha_2 \Delta \text{LogRGDP}_t + \alpha_3 \Delta \text{LogRGDP}_{t-1} \\ & + \alpha_4 \Delta \text{RAWDRD}_t + \alpha_5 \Delta \text{RAWDRD}_{t-1} + \text{Dum_Lib} + \theta_0 \text{LogRTSD}(-1) \\ & + \theta_1 \text{LogRGDP}(-1) + \theta_2 \text{RAWDRD}(-1) + e_t ; \end{aligned} \quad (4.7)$$

A dummy variable was also included in to the above model on account of the fact that there was a structural break from 1977, in the year the liberalization process was launched. The structural break was confirmed when Chow Breakpoint test was performed. Such pattern of structural change in the GDP and the time and saving series is clearly visible from the graphs shown in Figure 4.1. The dummy takes the value of zero from 1960 to 1976 and one from 1977 onwards. The Chow test was performed prior to inclusion of the error correction variables. The null hypothesis is

that there is no difference between the fit in the full sample (1960-2010) and sub-samples (1960-1976 and 1977-2010) and the alternative hypothesis is that there is a difference. The premise is that if the test statistic is larger than the critical value, the null can be rejected and the alternative will be accepted. At $\alpha = 0.05$, the critical value from $F_{(6,37)}$ distribution is $F_c = F_{(0.95,6,37)} = 2.37$. The test statistic is given below;

$$F = \frac{(SSE_R - SSE_u) / k}{SSE_u / (T - 2k)} = \frac{(0.250901 - 0.156) / 6}{0.156 / 49 - 12} = 3.75$$

As the above test statistic, 3.75 is much larger than the critical value (3.75 > 2.37), the null is rejected and it is concluded that there is a difference between the fit in the full sample and sub-samples. This is the logic behind the inclusion of the dummy variable to take in to account the change in the slope of the relationship between the two periods.

Now it is time to turn to the estimated result of the unrestricted error correction model for the interest and saving relationship equation as shown in table 4.5 below. The estimated results provide values for three coefficients which replaced the error correction term z_{t-1} in the conventional ECM. What is to be tested in the bound testing is to test the null which assumes that these coefficients such as θ_0 , θ_1 and θ_2 are zero in the estimated model. These coefficients are for the respective series

Table 4.5 Unrestricted Error Correction Model for Interest and Saving Model: Equation one

Dependent variable: DL_RTSD
 Method: Least Squares
 Sample (adjusted): 1962 2010
 Included observations: 49 after adjustments

Variable	Coefficient	Std. Error	t-statistics	Prob.
C	-3.60	1.005	-3.587	0.001***
DL-RTSD(-1)	0.19	0.127	1.466	0.151
DL_RGDP	1.08	0.408	2.661	0.011***
DL_RGDP(-1)	0.49	0.377	1.302	0.200
D(RAWDRD)	0.76	0.184	4.123	0.000***
D(RAWDRD(-1))	-0.33	0.229	-1.445	0.156
L_RTSD(-1)	-0.38	0.077	-4.864	0.000***
L_RGDP(-1)	0.59	0.141	4.192	0.000***
RAWDRD(-1)	1.08	0.360	2.997	0.005***
DUM_LIB	0.12	0.043	2.904	0.006***

R-squared	0.667	Mean dependent var	0.086
Adjusted R-squared	0.591	S.D. dependent	0.092
S.E. of regression	0.059	Akaike info criterion	-2.655
Sum of squared resid	0.134	Schwarz criterion	-2.269
Log likelihood	75.044	Hannan-Quinn criterion	-2.508
F-statistic	8.701	Durbin-Watson stat	2.124
Prob(F-statistic)	0.000		

*** at 1% of significance

of L_RTSD, L_RGDP and RAWDRD. A further observation in respect of these three series is that they were at levels with one period lagged. The null hypothesis is that $H_0: \theta_0 = \theta_1 = \theta_2 = 0$; against the alternative hypothesis $H_a: \theta_0 \neq \theta_1 \neq \theta_2 \neq 0$.

The test to be performed is the Wald test. The test results gave a F -static of 11.91, and the $(k+1) = 3$ variables in the model as shown in table 4.6. The bound test tables of Pesaran et al, (2001)³ provides critical values for unrestricted intercept and no trend which is the relevant table in this case and the appropriate critical values that should be looked at is for $k=2$.

The relevant bound test table reveals that the lower and upper bounds for the F -test statistic at the 10%, 5% and 1% significance levels are [3.17, 4.14]; [3.79, 4.85] and [5.15, 6.36] respectively. As the value of the calculated F -statistic of 11.91 exceeds the upper bound even at the minimum significance level of 1%, it can be concluded that there is strong evidence in support of long-run relationship among the three variables.

As an additional check, a bound t -test of $H_0: \theta_0 = 0$, against $H_a: \theta_0 < 0$ was also performed. If the t -statistic for $L_RTSD(-1)$ in equation (4.7) is greater than the $I(1)$ bound tabulated by Pesaran et al. (2001),⁴ this would stand in support of the long-run relationship between the variables. However, if the t -statistic is less than the $I(0)$ bound, it can be established that all the series are stationary, but no cointegration or long-run relationship. As shown in table (4.5), the t -statistic on $L_RTSD(-1)$ is -4.86. It is observed from the table CII(iii) in Pesaran et al, (2001), that the $I(0)$ and $I(1)$ bounds for the t -statistic at 10%, 5% and 1% significant levels are [-2.57, -3.21]; [-2.86, -3.53]; and [-3.43, -4.10] respectively. As the value of t -

³ The bound test tables appear in the article, "Bounds Testing Approaches to the Analysis of Level Relationships" by M. Hashem Pesaran, Yongcheol Shin and Richard J. Smith, published in the *Journal of Applied Econometrics*, vol. 16: 289-326, 2001. See pages 300-301 for table CI(iii) Case III: Unrestricted intercept and no trend.

⁴ See table CII(iii) on page 303 of Pesaran et al (2001)

statistic exceeds the upper bound at 1% significant level, this result reinforces the conclusion that there is a long-run relationship among the variables.

It is also visible from the above results that the long-run multiplier between RGDP and RTSD is $(0.592535/-0.376852) = 0.157$ and RAWDRD and RTSD is $(1.078875/-0.376852) = 2.89$. This means that in the long-run, one unit increase in RGDP will lead to an increase of 0.157 units in RTSD and one unit increase in RAWDRD will lead to an increase of 2.89 units in RTSD. Assuming that the bounds test leads to the conclusion of cointegration, the long-run equilibrium relationship

**Table 4.6 Wald test on bounds for F - statistic
Interest and saving Model**

Test Statistics	value	df.	Probability
F-statistic	11.913	(3, 39)	0.000
Chi-square	35.740	3	0.000
Null Hypothesis: C(7)=C(8)=C(9)=0			
Null Hypothesis Summary:			
Normalized Restriction (=0)		Value	Std. Err.
C(7)		-0.377	0.077
C(8)		0.592	0.141
C(9)		1.079	0.360

Restrictions are linear coefficients.

between the variables can now be meaningfully estimated as set out in equation (4.8)

below;

$$L_RTSD = \alpha_0 + \alpha_1 RGDP + \alpha_2 RAWDRD + e, \quad (4.8)$$

The residual series obtained from the above equation (4.8) of which estimates appear in table 4.7 below, forms the error correction term and it can now be used to estimate the restricted ECM equation as shown by equation (4.4). The only difference of the result that appears in the table 4.7 from the equation (4.8) above is that we have included a dummy variable to take into account the structural break from 1977.

Table 4.7 The Results of Long-run Level Model

Dependent Variable: L_RTSD

Method: Least Squares

Sample: 1960 2010

Included observations: 51

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-9.943	0.537	-18.530	0.000***
L_RGDP	1.602	0.044	36.326	0.000***
RAWDRD	0.964	0.363	2.651	0.011***
DUM_LIB	0.361	0.071	5.119	0.000***
R-squared	0.992	Mean dependent var		11.173
Adjusted R-squared	0.991	S.D. dependent		1.339
S.E. of regression	0.122	Akaike info criterion		-1.291
Sum of squared resid	0.701	Schwarz criterion		-1.140
Log likelihood	36.935	Hannan-Quinn criterion		-1.234
F-statistic	1987.076	Durbin-Watson stat		0.468
Prob(F-statistic)	0.000			

*** at 1% of significance

Accordingly, the following table (4.8) shows the estimated results of the restricted ECM. It can be observed from the estimated results in this table that the error correction term, z_{t-1} , is negative and very significant. This is a further confirmation for the cointegration of the variables. The magnitude of this coefficient

implies that any disequilibrium between the dependent variable and independent variables is corrected at a speed of nearly 105% in a year.

Table 4.8 Restricted Error Correction Model for Interest and Saving Model: Equation one.

Dependent Variable: DL_RTSD
 Method: Least Squares
 Sample: 1962 2010
 Included observations: 49

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.014	0.033	-0.427	0.671
DL_RTSD(-1)	0.918	0.163	5.617	0.000***
DL_RGDP	0.748	0.431	1.734	0.090*
DL_RGDP(-1)	-0.047	0.415	-0.113	0.910
D(RAWDRD)	0.644	0.167	3.867	0.000***
D(RAWDRD(-1))	-0.079	0.186	-0.424	0.673
DUM_LIB	-0.016	0.021	-0.737	0.465
Z(-1)	-1.050	0.232	-4.526	0.000***
R-squared	0.575	Mean dependent var	0.086	
Adjusted R-squared	0.503	S.D. dependent	0.092	
S.E. of regression	0.065	Akaike info criterion	-2.491	
Sum of squared resid	0.171	Schwarz criterion	-2.182	
Log likelihood	69.036	Hannan-Quinn criterion	-2.374	
F-statistic	7.929	Durbin-Watson stat	2.079	
Prob(F-statistic)	0.000			

*** at 1% of significance; * at 1% Of significance

4.5 Diagnostic Tests on the Interest and Savings Model

The validity of above finding is however, dependent upon both strengths and weaknesses of the model. As the linear regression model is susceptible to a number of possible errors, apart from the inclusion of irrelevant variables or the omission of relevant ones, such as serial correlation and heteroskedasticity, it can lead to producing inefficient estimators.

Let us first look at the goodness of fit of the restricted ECM model. As R^2 measures the proportion of variation in the dependent variable as explained by variation in the explanatory variables, this model establishes that almost 57% of the variation in savings is explained by the interest rates, the income (proxied by the GDP) and the past values of both including the saving itself. Therefore, it falls well above the generally accepted threshold of 40% as considered to be the minimum value of the R^2 in a good model.

Next, it can be seen from the t-statistics or the respective p values as to which factors might help explain the dependent variable. Leaving the constant, the dummy and the error correction term, it can be observed from the respective p values of the other variables in the right-hand side that one period lag of the savings and the interest rates on deposits are very significant at 1% level, while the national income (RGDP) is significant at 10% level. As expected, all the three coefficients are positive showing the correct signs.

Moreover, it has been confirmed by the very low p -value (with zero probabilities) for F -statistic for the model that all predictor variables are jointly influencing the dependent variable. This is reconfirmed by rejecting the joint null hypothesis by Wald test as the respective p -values for F -statistic and χ^2 were zero.

Although Durbin-Watson (DW) statistics is a testing procedure for autocorrelation in the case of small sample approximation, it has no meaning in the case of ARDL model as there are lagged dependent variables on the right hand side of the equation. Therefore, to test on the serial correlation, the Q statistics and

Breusch-Godfrey LM test were applied. The Q statistics with substantially high probabilities confirm that the model is free from serial correlation. The Breusch-Godfrey LM test also gave over 5% probability thereby confirming the result of Q statistics. The model is robust on the basis of residual autocorrelation, which confirm that even if autocorrelation is present, it does not affect the estimates (Laurenceson and Chai, 2003).

As shown in figure (4.2) below, the Jacque-Bera test for normality was also performed and it was found that the residuals are normally distributed. The Jacque-Bera test for normality is based on skewness and kurtosis. While skewness measures the symmetry of the residuals around zero, kurtosis measures the peakdness of the distribution. Since for a normal distribution, the kurtosis value is 3, the question to be verified is whether 4.177 is sufficiently different from 3, and -0.394 sufficiently different from zero, in order to determine that the residuals are normally distributed. The Jacque-Bera statistic is given by the following formula;

$$JB = \frac{N}{6} \left(S^2 + \frac{(K - 3)^2}{4} \right)$$

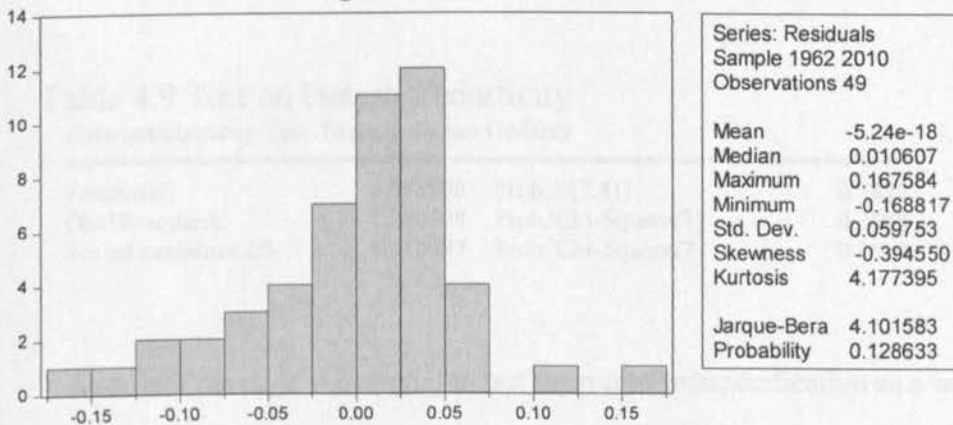
where N is the sample size, S is skewness, and K is the kurtosis. As shown from the formula, a value of kurtosis quite different from 3 and/or large values of the skewness will produce a large JB statistic. The null hypothesis of normally distributed errors can be rejected if a calculated value of the statistic exceeds a critical value selected from the chi-squared distribution with 7 degrees of freedom.

The 5% critical value selected from the χ^2 - distribution with seven degrees of freedom is 14.067. The application of the Jaqure-Bera stastic formula is given below.

$$JB = \frac{49}{6} \left((-0.394550)^2 + \frac{(4.177395 - 3)^2}{4} \right) = 4.101$$

As 5% critical value from the χ^2 - distribution is greater than the calculated value (4.101 < 14.067), there is insufficient evidence to reject the null hypothesis that the errors are normally distributed. This position is also confirmed by the probability value given in the following Eviews output on the ground that 0.13 > 0.05.

Figure 4.2 Jacque-Bera Normality Test for Interest and Saving Model



The presence of heteroskedasticity as opposed to homeskedasticity is a violation of one of the least squares assumptions. If all observations come from

probability density functions with the same variance, then that is homoskedastic. There are two major implications of heteroskedasticity. Firstly, although the least squares estimator is still a linear and unbiased estimator, it is no longer the best estimator. Secondly, the standard errors usually computed for the least squares estimator are incorrect. As a result the confidence interval and hypothesis testing based on incorrect standard errors will lead to misleading conclusions. There are several tests for testing the presence of heteroskedasticity. The table 4.9 below shows the result of Breusch-Pagan-Godfrey test on heteroskedasticity obtained from Eviews. The calculated F - statistic, 1.10 is much smaller than the critical value of $F_{(df,7,41)} 2.25$ at 5% level of significance, the null hypothesis that no heteroskedasticity is present can not be rejected. Thus it is confirmed by the p -value appears in the Eviews output described as "Probability" which indicates that $0.382 > 0.05$.

Table 4.9 Test on Heteroskedasticity
Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.098898	Prob. F(7,41)	0.3820
Obs*R-squared	7.740898	Prob. Chi-Square(7)	0.3560
Scaled explained SS	8.610097	Prob. Chi-Square(7)	0.2819

As a final check, it is essential to test for model misspecification as a way of asking whether the model is adequate or whether any improvement could be made to it. A model can be misspecified, if some key variables are omitted or irrelevant ones are included. Misspecification could also happen when an incorrect functional form

has been chosen or have a model that violates the assumptions of the multiple regression model. Ramsey's RESET test (Regression Equation Specification Error Test) is developed to detect such shortcomings. The appropriate F - statistic can be obtained by following three steps. First we have specified the following equation for estimation of β s using OLS;

$$y_1 = \beta_1 + \beta_2 x_{i2} + \beta_3 x_{i3} + e_i \quad (4.9)$$

And the estimated equation of the above (4.9) takes the form as follows;

$$\hat{y} = b_1 + b_2 x_{i2} + b_3 x_{i3} \quad (4.10)$$

Thereafter, taking the predicted value of \hat{y} from the equation (4.10) and obtaining values for \hat{Y}_i^2 and \hat{Y}_i^3 , use them as additional explanatory variables and estimate the new equation using OLS as follows;

$$y_1 = \beta_1 + \beta_2 x_{i2} + \beta_3 x_{i3} + \gamma_1 \hat{y}_i^2 + \gamma_2 \hat{y}_i^3 + e_i \quad (4.11)$$

Finally, compare the fits of equations (4.10) and (4.11) using F - test to determine whether the two equations are significantly different from one another in

overall fit. If they are found to be different, we conclude that the equation in (4.9) is misspecified. The following formula will calculate the F - statistic for comparison.

$$F = \frac{(RSS_R - RSS_U) / M}{RSS_U / (N - K - 1)}$$

where RSS_R is the residual sum of squares from the restricted equation, RSS_U is the residual sum of squares from the unrestricted equation, M is the number of restrictions, and $(N - K - 1)$ is the number of degrees of freedom in the unrestricted equation. Accordingly, we obtain our calculated F -statistic for the interest and saving model as follows;

$$F = \frac{(0.171382 - 0.170541/2)}{.170541/39} = 0.09616$$

As shown above, the calculated F-statistics of 0.09616 is substantially smaller than the critical value of $F_{(df 2,39)} 3.23$ at 5% level of significance, the null hypothesis of no misspecification has not been rejected. We have performed the Ramsey's RESET test using Eviews, which result is reproduced in table 4.10 below. This is also confirmed by the p value in this table which is $0.91 > 0.05$.

Table 4.10 Ramsey's RESET Test Results on Restricted Error Correction Model for Interest and Savings

	Value	df	Probability
F-statistic	0.096169	(2, 39)	0.9085
Likelihood ratio	0.241061	2	0.8865
F-test summary:			
	Sum of Sq.	df	Mean Squares
Test SSR	0.000841	2	0.000421
Restricted SSR	0.171382	41	0.004180
Unrestricted SSR	0.170541	39	0.004373
Unrestricted SSR	0.170541	39	0.004373
LR test summary:			
	Value	df	
Restricted LogL	69.03613	41	
Unrestricted LogL	69.15666	39	

4.6 Empirical Results on the Interest and Saving Model

As the model adequacy has been established from a series of diagnostic checks, it is now time to explain the results of the model. Let us now discuss the results of both the long-run level model and short-run restricted ECM model presented in tables 4.7 and 4.8 respectively. The results of long-run model reveal that all the coefficients are highly significant at 1% level and also have the expected signs. It shows that both the GDP and the interest rate on deposits are key determinants of the time and saving deposits in the banking sector. It suggests that in the long-run, an increase of 1% in the GDP is associated with an increase of 1.6% in the level of real total bank deposits, while one unit increase in the real rate of interest will boost the real total bank deposit by approximately in Rs.96.00mn. As

there is a dummy variable (*DUM_LIB*) included to take into account the structural change after 1977, its coefficient indicates that the savings will be higher by Rs.36.00mn every year after 1977.

The results produced in table 4.8 reflects the short-run dynamics which shows that only four explanatory variables are significant. It shows that 1% increase of the lagged value for the time and saving deposits (*DL_RTSD(-1)*), which is positive and statistically significant at 1% level could contribute to raise the savings by 0.92% in the short-run. Similarly, a change in the current GDP by 1% will result in raising the savings by 0.75%. However, this coefficient is significant at 10% level. One of the most significant result is the real interest rate on lending (*RAWDRD*) which is highly significant at 1% level and positive. This implies that one unit increase in the interest rate will have a significant impact on the total saving by boosting it by an amount of Rs.64.00mn in the short-run. The coefficient of short-run ECM term is found to be significantly large in magnitude and is statistically significant. It demonstrate that there is a long-run relationship between the variables. This term which has a value of -1.05 suggests a very speedy adjustment process. Nearly 105% of disequilibria of the previous year's shock adjusts back to the long-run equilibrium in the current year.

4.7 The Model on Interest and Investment: Equation Two

The second part of the McKinnon and Shaw analysis is associated with the positive effects of the real interest rate on investment via savings. This relationship (as reflected from equation 4.2) has been modelled on the premise that there is a strong positive linkage between the supply of credit by banks and the investment demand by the industrialists on one hand, and a negative relationship between the interest rate and borrowings on the other. Banks' ability to supply credit depends largely on the accumulation of savings, and partly on their borrowing capacity from the central bank. The higher the volume of savings within the banking sector the greater the ability it has for lending. Therefore, this has a positive relationship. Similarly, as the real borrowing from the central bank enhances banks' lending capacity, the more it borrows the higher is its lending thus having a positive effect. Therefore, both coefficients should have positive signs. On the other hand, relationship between lending by the commercial banks and its cost to the borrowers has a negative correlation. Hence the expected signs for the coefficients on lending rates including refinancing rate are negative. This equation assumes that the quantity of investment, proxied by the total bank lending, is dependent on the quantity of time and saving deposits, real borrowing by the banking sector from the central bank, lending rate and the refinancing rate.

4.7.1 Bound Test for Cointegration

Almost same procedure that was applied in the case of interest and saving equation for bound testing for cointegration analysis should be applied to interest and investment equation.

**Table 4.11 Wald test on Bounds for F - statistic
Interest and Investment Model**

Test Statistic	Value	df	Probability
F-statistic	2.868526	(5, 34)	0.0289
Chi-square	14.34263	5	0.0136

Null Hypothesis: $C(11)=C(12)=C(13)=C(14)=C(15)=0$

The bound test table CI(iii) for unrestricted intercept and no trend in respect of $k = 4$ reveals that the lower and upper bounds for the F - test statistic at the 10%, 5% and 1% significance levels are [2.45, 3.52]; [2.86, 4.01] and [3.74 , 5.06] respectively. As the calculated F -statistic of 2.87 falls between the bounds at 10% critical value and, again barely falls between the bounds at 5% critical value, the test is inconclusive. However at 1% critical bound values it falls below the lower bound value. Therefore, the conclusion is that the result is inconclusive both at 5% and 10% level of critical bound values, but at 1% level bound values there is no long-run relationship between the variables.

It is therefore, irrelevant to pursue the same methodology as applied in the case of interest rate and saving model to the interest rate and investment model in evaluating a restricted ECM model. The reason is that the residual series to be

obtained from a long-run level model to be included in the restricted ECM model is invalid in the absence of cointegration thereby producing a misleading outcome. Hence, we perform a basic conventional ARDL model to obtain the estimates. The following is the interest and investment equation to be estimated;

$$\begin{aligned} \Delta LRTC_t = & \beta_0 + \beta_1 \Delta LRTC_{t-1} + \beta_2 \Delta LRTSD_t + \beta_3 \Delta LRTSD_{t-1} + \beta_4 DLENDRATE + \\ & \beta_5 \Delta LENDRATE_{t-1} + \beta_6 \Delta LRBCB_t + \beta_7 \Delta LRBCB_{t-1} + RFRD_t + \\ & RFRD_{t-1} + \varepsilon_t \end{aligned} \quad (4.12)$$

Accordingly, the estimated results are given in table 4.12 below. However, before interpreting the results, we need to look at the diagnostics in order to examine whether the model is adequate for our purpose. Let us now turn to perform a number of diagnostic tests in the next section.

4.7.2 Diagnostic Test on the Interest and Investment Model

The results of the interest and investment model in the 2nd equation where dependent variable is the real total credit supplied by the commercial banks as a proxy for investment are presented in the table 4.12. It can be observed from this table that other than the real refinance rate series (*RFRD*), all the other series were made stationary after first difference. The regression explains only 42% of the

variation in the real total credit supply. Only three parameters were found to be significant, among which the first difference of the log of Real Time and Saving

Table 4.12 The Result of the ARDL Model for Interest and Investment Model: Equation 2

Dependent Variable: L_RTC

Method: Least Squares

Sample (adjusted): 1962 2010

Included observations: 49 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.022	0.027	-0.800	0.428
L_RTC(-1)	0.119	0.163	0.730	0.470
DL_RTSD	0.402	0.165	2.438	0.019**
DL_RTSD(-1)	0.092	0.173	0.533	0.597
DLENDRATE	0.010	0.006	1.713	0.095*
DLEMDRATE(-1)	-0.007	0.006	-1.140	0.261
DL_RBCB	0.011	0.020	0.486	0.629
DL_RBCB(-1)	-0.004	0.021	-0.189	0.851
RRFRD	0.504	0.226	2.230	0.032**
RRFRD(-1)	-0.337	0.239	-1.407	0.167
R-squared	0.421	Mean dependent var		0.056
Adjusted R-squared	0.288	S.D. dependent		0.097
S.E. of regression	0.082	Akaike info criterion		-1.986
Sum of squared resid	0.262	Schwarz criterion		-1.599
Log likelihood	58.648	Hannan-Quinn criterion		-1.839
F-statistic	3.158	Durbin-Watson stat		2.125
Prob(F-statistic)	0.006			

Note: *At 10% level of significance; ** At 5% level of significance

Deposits (*AL_RTSD*) and the Real Refinancing Rate (*RRFRD*) have shown significance at 5% level. First differenced Lending Rate (*DLENRATE*) was found to be significant at 10% level. Contrary to the theory, the coefficients for *DLENRATE* and *RRFRD* show positive signs.

However, the overall significance of the model as shown from the *F*-statistic of 3.158 and its probability of .005 stands to reject the null hypothesis that none of the explanatory variables influence the dependent variable, in this case the *AL_RTC* (First differenced Log of Real Total Credit). This means that all the variables are jointly significant. This was also confirmed by the Wald test, the result of which is produced from the Eview output as shown below in table 4.13.

Table 4.13 Wald Test Result on the Interest and Investment Model

Test Statistic	Value	df	Probability
F-statistic	3.157750	(9, 39)	0.0059
Chi-square	28.41975	9	0.0008

Recalling from section 4.5 that the Durbin-Watson statistic can not be applied to test for serial correlation in the case of a regression where lagged dependent variable is included as an explanatory variable, we use residual correlograme and Lagrange-Multiplier test to examine the serial correlation.

A residual correlograme from the interest and investment model is reproduced from Eview output in the table 4.14 below. The objective of this test is to

examine whether the errors in the regression model are correlated. The table confirms that autocorrelations are not significantly different from zero as probabilities are much larger than 5%. This shows that the residuals are free from serial correlation.

Table 4.14 Residual Correlogram

Sample: 1962 2010

Included observations: 49

Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob	
. .	. .	1	-0.065	-0.065	0.2170	0.641
. .	. .	2	-0.004	-0.009	0.2180	0.897
** .	** .	3	-0.293	-0.295	4.8837	0.181
** .	** .	4	-0.211	-0.275	7.3591	0.118
. .	. .	5	0.047	-0.016	7.4867	0.187
.* .	** .	6	-0.094	-0.226	8.0015	0.238
.**	.* .	7	0.283	0.117	12.783	0.078
. .	. .	8	0.042	0.039	12.891	0.116
. .	. .	9	0.068	0.020	13.182	0.155
.* .	.* .	10	-0.152	-0.083	14.661	0.145
** .	.* .	11	-0.214	-0.142	17.674	0.089
. .	.* .	12	-0.031	-0.086	17.741	0.124
.* .	** .	13	-0.162	-0.252	19.570	0.106
.* .	. .	14	0.207	-0.051	22.621	0.067
. .	.* .	15	0.050	-0.086	22.801	0.088
.**	.* .	16	0.248	0.105	27.445	0.037
** .	** .	17	-0.232	-0.292	31.642	0.017
. .	. .	18	-0.039	0.024	31.766	0.023
. .	. .	19	-0.008	0.040	31.771	0.033
. .	.* .	20	0.033	0.076	31.863	0.045

Moreover, a second test was also considered for testing for autocorrelation.

That is the Lagrange multiplier test. The result of this test which is reproduced in table 4.15 also confirm that the residuals are free from autocorrelation as the shown by F -statistics of 1.38 and having a p -value of .26. As the p -value is much more

higher than 0.05, the LM test cannot reject the null hypothesis of no auto correlation at a 5% significant level.

Table 4.15 Langrage Multiplier Test Results

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.384817	Prob. F(2,37)	0.2630
Obs*R-squared	3.412455	Prob. Chi-Square(2)	0.1815

As shown in table 4.16 below, the Breusch-Pagan-Godfrey test for heteroskedasticity supports the null hypothesis that the model is homoskedastic.

Table 4.16 Heteroskedasticity Test: Breusch-Pagan-Godfrey

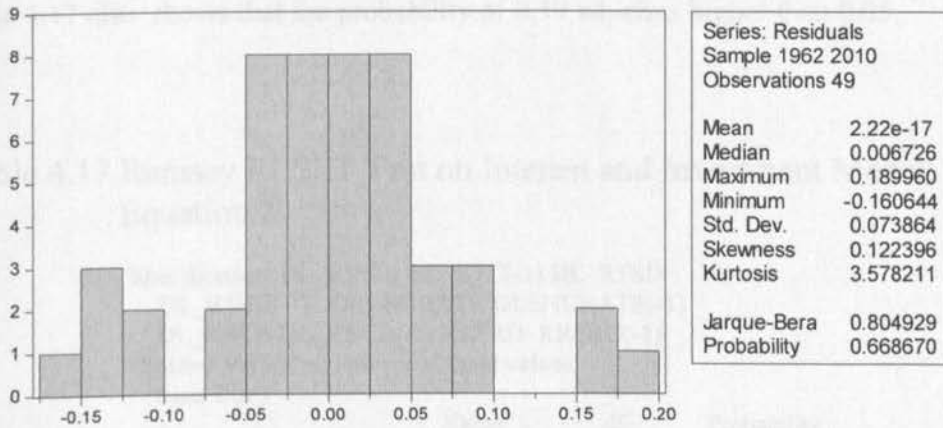
F-statistic	0.578126	Prob. F(9,39)	0.8066
Obs*R-squared	5.767771	Prob. Chi-Square(9)	0.7629
Scaled explained SS	4.710137	Prob. Chi-Square(9)	0.8588

Since our model relies on a small sample of data, it is desirable to have the model in which regression errors are normally distributed. Also it should be born in mind that hypothesis test and interval estimates for the coefficients rely on the assumption that the errors and hence the dependent variable are normally distributed. We performed the Jacque-Bera test for normality and obtained the following results.

$$JB = \frac{49}{6} \left((0.122396)^2 + \frac{(3.578211 - 3)^2}{4} \right) = 0.804929$$

The critical value from χ^2 -distribution with 9 degrees of freedom is 16.919, and as $0.804929 < 16.919$, we cannot reject the null that the residuals are normally distributed. The Eviews output is also reproduced below, which shows a p -value of 0.67 much higher than 0.05.

Figure 4.3 Jacque-Bera Normality Test on Interest and Investment Model



As one of the most used formal specification criteria apart from R^2 is the Ramsey's RESET test which we applied previously for the interest and saving model in section 4.5. This test generally determines the likelihood of an omitted variable or some other specification errors by measuring whether the fit of a given model can be significantly improved. We applied this test to the interest and investment model, and the test results obtained from the Eviews output is reproduced in table 4.19 below.

$$F = \frac{(0.261883 - 0.248825)/2}{0.248825/37} = 0.970855018$$

As shown from the critical F -statistic at 5% level of significance with degrees of freedom 2, 37 is 3.23, which is much larger than the calculated F -statistic, we cannot reject the null hypothesis that the coefficients of the variables are jointly zero. This follows that there are no specification errors in the model. The table 4.17 also shows that the probability of 0.39 which is higher than 0.05.

**Table 4.17 Ramsey RESET Test on Interest and Investment Model:
Equation 2**

Specification: DL_RTC C DL_RTC(-1) DL_RTSD
DL_RTSD(-1) DLENDRATE DLENDRATE(-1)
DL_RBCB DL_RBCB(-1) RRFRD RRFRD(-1)
Omitted Variables: Powers of fitted values
from 2 to 3

	Value	df	Probability
F-statistic	0.970900	(2, 37)	0.3882
Likelihood ratio	2.506365	2	0.2856

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.013059	2	0.006529
Restricted SSR	0.261883	39	0.006715
Unrestricted SSR	0.248825	37	0.006725
Unrestricted SSR	0.248825	37	0.006725

LR test summary:

	Value	df
Restricted LogL	58.64807	39
Unrestricted LogL	59.90126	37

4.7.3 Empirical Results of the Interest and Investment Model

Having completed a series of diagnostic test to examine the adequacy of the model, all the tests pointed to a very satisfactory outcome confirming with the supporting evidence of the adequacy of the model.

The most significant result produced by the model is that $\Delta LRTSD$ (the first differenced log of the real time and saving deposits), having a highly significant coefficient at 5% level, exhibits a positive impact on the supply of total credit position of the commercial banks in Sri Lanka. This indicates that 1% increase in the real time and saving deposits will help improve the credit supply by banks in the range of 0.4%, holding other variables constant.

This model, however, shows that the banks' lending rate and the refinancing rate in Sri Lanka do not have expected signs, though they were significant at 10% and 5% respectively. It is rather surprising that the coefficients for the lending rate and refinancing rate have signs contrary to expectations. It may be that the continuously declining reserve ratio and the improved lending after financial liberalization activated by the expansion in production activities may have been instrumental in increasing the overall level of bank lending. Presumably, the reserve ratio could have been the omitted variables in the model. Higher inflationary expectations particularly in view of rising real estate sector may also have influenced the borrowers to venture into bank borrowing disregarding the interest rate changes. We have not taken such factors in this analysis due to want of data.

Merely because of the presence of incorrect signs, we can not completely discard the model. Even with incorrect signs for these two coefficients, the model is still useful as a predictive model as long as we do not extrapolate beyond the data region. As long as the model has no misspecification, as evidenced from the RESET test, we could use the model.

4.8 Concluding Remarks

The empirical result of this study demonstrated that the real interest rate has a significant effect on saving. As increased saving has shown a positive association with the supply of lending, it is evident from this relationship that increased saving could magnify the investment, which supports the central point in the McKinnon and Shaw hypothesis in regard to the positive effect of financial liberalization on investment. This reflects that the real interest rate on savings can play a positive role in simultaneously enhancing saving and investment. These findings point to a considerable policy implication that it is vital to maintain a positive real interest rate that could sufficiently compensate for the prevailing inflation. The results confirm the findings of Ghatak (1997) and Hemachandra (2003).

The above results are in conformity with the macroeconomic indicators for Sri Lanka as shown in table 3.1. The data presented in that table contain five-year-average of national saving and investment as a percentage of GDP from 1960 to 2010. The first five-year period of 1960-64, the savings and investment, which respectively accounted for 15.3% and 14.8%, gradually rose to 16.5% and 27.4%

over the six-year period of 1981-85 and again to 22.4% and 27.2% over the six-year period of 2006-10.

However, one of the shortcomings in the present study is that the empirical results correspond only to the effects of one year as the shortest period. It is not possible to work out the very short-run effects, i.e., quarterly impact out of a sample of annual data series as annual data cannot capture any seasonal effects. Perhaps, better results could have been obtained if the data were drawn from quarterly series.

Moreover, the positive sign resulted in the case of lending rate in the interest and investment model is contradictory to the theoretical explanation as there should be a negative relationship between lending rate and borrowing as well as the refinancing rate and borrowing. It is shown that neither the lending rate nor does the refinancing rate influence the amount of borrowing. For any future research, it would be useful to examine the impact of reserve ratio and the inflationary expectations on the level of bank lending.

However, it can be concluded that the performance of the model was satisfactory and the outcome shows positive and significant effects of real interest rate on savings and investment.

Chapter 5

Effects of Financial Development and Capital Flows in Economic Growth

5.1 Introduction

We have demonstrated in the preceding chapter that financial liberalization in Sri Lanka has resulted in a positive and significant effect on the real interest rate, on savings and investment, as postulated in the McKinnon and Shaw hypothesis. Since the financial liberalization process has been introduced, the real interest rate had gradually moved from a negative rate to a positive rate. This process contributed towards enhanced savings, subsequent to which more funds were accumulated within the financial sector to divert towards lending. As the policy reforms introduced in Sri Lanka along with the financial liberalization also entailed the partial liberalization of capital account with the provisions for allowing inflows of FDI and portfolio investment, the latter process was facilitated as a result of domestic financial development. As such financial development became a major contributor in linking the process of capital inflows to accelerate economic growth.

With the emergence of a more liberal trading and financial regime in 1977, Sri Lanka gradually extended such liberal measures to give further impetus to attract foreign direct investment and portfolio investment. In chapter 3, we presented a detailed analysis on the various new measures periodically introduced in respect of the liberalization process. Among them, the abolishment of the Business Acquisition Act, the establishment of the Colombo share market and allowing a major share holding rights for foreign companies, were seen as some encouraging signs. Until

that time foreign companies were barred from acquiring more than 49% of the investment share in any investment project. Moreover, a considerably large share of the production and distribution in both goods and service sectors held by the government in the form of state-owned enterprises was gradually transferred to the private sector. Such continued privatization of public enterprises not only increased confidence among the private investors, but also largely attracted new investment in machinery and equipment into these enterprises, thereby benefiting from the state of the art technology and efficient management practices.

Although there are serious methodological challenges and disagreements about the strength of the evidence to establish the growth effects from liberalization, several studies have demonstrated that productivity gains associated with the developed financial systems, capital inflows and stock market development in a liberal environment have been key contributing factors for economic growth. Such growth impetus are fuelled by improved systems in the dissemination of information, transfer of technology and managerial know-how, introduction of new processes, diversification of industrial activities and employee training in the manufacturing sector, a few to mention, as evidenced from many countries.

The objective of this chapter is to investigate the impact of the overall liberalization policies that include trade, financial sector and foreign direct investment on economic growth in Sri Lanka. They were the three major areas of focus in the liberalization process. Based on our data, we test the hypothesis that these three areas in the liberalization process, namely trade openness, financial liberalization and foreign direct investment contribute to economic growth. In a

model developed in this chapter, we use two financial variables namely bank credit to private sector and foreign direct investment to examine their impact on per capita economic growth. Credit to private sector is used as a measure of the financial openness, and foreign direct investment is used as a measure of the impact of inflows of foreign capital. We established in the preceding chapter that financial liberalization contributed positively to increase savings and investment. Such positive incremental changes in investment would certainly affect economic growth. We have provided ample evidence in support of this argument in chapter 2.

This chapter is organized as follows; section 2 discusses the methodological framework and the data sources, section 3 presents an analysis of the cointegration, section 4 deals with the estimated results, section 5 focuses on the diagnostic tests on the model, an empirical analysis is given in section 6, and section 7 concludes.

5.2 Methodology and Data

This study employs a multiple linear regression model using an ordinary least squares approach to investigate the impact of the overall liberalization policies adopted in Sri Lanka on its economy. It tests the hypothesis that capital flows contribute positively to economic growth and that financial development plays a role in that process in the case of Sri Lanka. It further tests the relationship between trade openness and economic growth. Different methodologies can be used to analyze the impact of financial and capital market liberalization in an economy. Several studies

focussed on the impact of economic growth, the rate of growth is being used as the dependent variable investigating cross section or panel of countries. A major part of the data for this study was obtained from the annual reports of the central bank of Sri Lanka.

It was clearly demonstrated in chapter 2 that when interest rates rise upwards in response to financial liberalization then there is a strong tendency to move credit away from low productive sectors to high productive sectors, and this process invariably helps credit supply to spur economic growth. Similarly, inflows of foreign capital into productive sectors could provide growth impetus as FDI will also bring with each of the investment project, the required technology and managerial skills. Added to such progressive development is the benefits that come from the unhindered market access for the range of products in which the investment projects are involved, due to the well-established trade channels of the foreign investors. There is ample evidence to support this argument in the case of investment projects established with the FDI in Sri Lanka. As the amount of FDI inflows are used as an explanatory variable in the model, it can capture the intensity and the effectiveness of foreign investment inflows and their consequences on the growth. Since 1977, the long-term capital inflows to Sri Lanka, albeit intermittently slowed down in some years due to the civil war situation, in the long-run Sri Lanka has witnessed a somewhat steady inflow of foreign capital. This process was facilitated by a broad set of measures that opened up opportunities for foreign investment flows into Sri Lanka. This was largely influenced by trade and financial liberalization measures. It was demonstrated in chapter 2 that FDI inflows to any

developing country contributes to lower the cost of capital and raise the efficiency of labour, thereby intensifying the production efficiency and economic growth. In a study on trade orientation, distortions and growth in developing countries, Edwards (1993) demonstrated that more open economies absorb exogenously invented technology more effectively and efficiently. In a recent study, Alfaro (2003) finds that FDI inflows into different sectors of the economy (namely primary, manufacturing and services) exert different effects on economic growth, among which the manufacturing sector has shown the highest positive growth. Another notable positive aspect of long-term foreign capital flows is the foreign market openings that come with the entry of leading business investors to host countries.

We employ a multiple regression analysis using the least squares procedure to test the hypothesis that the liberal economic policies measured mainly by three indicators were responsible in contributing to the per capita GDP growth. The three main indicators we use are the trade openness, the bank credit to private sector, and inflows of capital measured by net FDI flow. We also use several other variables that are likely to influence the outcome as control variables. In this model, per capita growth of GDP (*DLPGDP*) is the dependent variable, and the explanatory variables are; the net FDI inflows (*FDI*), share of intermediate goods imports (*INTGOODS*), enrolment ratio in the secondary schooling (*SSCHOOL*) as a proxy for human capital development, trade openness (*TRADOPEN*), bank credit to private sector (*CREDIT*), government expenditure (*GOVEXP*), and inflation rate (*INF*). The bank credit to private sector was the total credit disbursed by the commercial banks to the private sector, both for investment and consumption purposes. As the size of government

expenditure and its implications on long-run economic growth might move in either direction¹, we include government expenditure as a percentage of GDP to take care of its effects. Inflation is among many other variables suggested by Levine (1997), and was hence included.

The reason for the inclusion of inflation is to take into account the cost of it on growth, as inflation makes a negative impact on growth. Although it is said that faster real growth may be associated with somewhat rapid inflation in the short-run due to the rise in aggregate demand, inflation has a negative effect on growth in the long-run. In the long-run, inflation affects aggregate supply rather than demand. The reasons for the negative impact of inflation on growth in the long-run has been well documented in the literature (Johnson, 1972 ; Barrow, 1995; Feldstein, 1996; Motley, 1998). Inflation presents extremely difficult challenges to economic agents in taking correct decisions in response to market signals. In the presence of a continuing inflationary trend, it is difficult to distinguish between the changes in overall price levels and relative prices. As such, when an inflationary trend develops, it disrupts the efficient operation of the market mechanism. Inflation also adds to various costs when stability in prices disappear. Often cited examples are the menu costs of frequently changing prices², search costs imposed on economic agents

¹ There has been a debate in the received literature on the real effects of government expenditure on economic growth. According to Keynesian school of thought government expenditure accelerates economic growth. It is the common belief that some level of government expenditure is a must to maintain and implement the rule of law, infrastructure investment, and to run some kind of fundamentally important essential services such as defence or health. However, there is an opposing view to say that there should be a limit to the size of the government as expansionary fiscal policies through public borrowing may lead to crowding out effect of private investment and also lead to inflationary pressure. See for a detailed investigation, by Daniel Mitchell (2005), "The Impact of Government Expenditure on Economic Growth", Backgrounder, no.81, published by the Heritage Foundation.

² Economists use it in a broader context more than its literally meaning of printing costs involved after upward price adjustments of restaurant menus to mean the costs of changing nominal prices in general. Such costs involve the adjustments to

and cost of economizing on holding of non-interest bearing cash. The most critical aspect of inflation is its implication on savings and investment. In the presence of high inflation, it is often difficult to foresee the real return on any investment project on the basis of available information and such conditions discourage both savers and investors from entering into long-term nominal contracts or projects. Therefore, we assume that as a regressor, the inflation to produce a negative sign.

Our dependent variable, the per capita GDP growth rate, was obtained by differencing the log of GDP per capita. The FDI was used in log form. In the case of intermediate goods imports, the evidence shows as demonstrated in chapter 3, that the share of intermediate goods in the composition of imports started to grow after trade and investment liberalization. This was mainly due to the high dependency on imported raw material for processing industries, both for the domestic use and for the manufacture of finished products for exports. In 1976, the share of intermediate goods imports out of the total value of imports was 36% and it rose to 56% in 1986³. In several studies, the secondary school enrolment ratio was used as a proxy for human capital development to measure the impact of human capital development in economic growth. We also took the ratio of secondary school enrolment as a percentage of population aged five years and above to measure the contribution of human capital in economic growth. The longer the duration of schooling, it is likely that the capacity of the contribution of the labour to productivity would be greater.

data and programming in computer systems, re-tagging of price tags, hiring costs of consultants to search for alternatives including new pricing strategies.

³ Sri Lanka's largest exports earner, the clothing sector, which contribute about 40% of export revenues acquires over 80% of its raw material from imports.

After completing their education, an individual works for several decades, the impact of investment in human capital on economic growth would carry over to a much longer period. An equally important factor that contributes to growth is the level of trade openness. Several theoretical and empirical studies have focussed on the contribution of trade openness to economic growth. They support the view that trade liberalization leads to an increase in welfare gains resulting from an improvement in resource allocation. A restrictive import regime creates anti-export biases as it makes the cost of importable goods much higher than exportable goods. Lifting of such bias through trade liberalization policies would divert resources hitherto employed in import substitution industries to the export sector as well. This process would lead to a new economic status in line with the country's comparative advantage and in turn create growth (McCulloch, Winters and Cirera, 2001). The accepted way of measuring trade openness is the ratio of import plus export to GDP. The greater the openness the higher the welfare gains to the nation. As such trade openness is also used as an explanatory variable. The data coverage is for 51 years from 1960 to 2010 and on an annual basis. This period represents post and pre-liberalization eras. The data is secondary and obtained from the Central Bank of Sri Lanka annual reports. As the study is based on time series data, the price effects have been removed by GDP deflator based on 1996 as the base year. The specifications of our model which is to be estimated is given below;

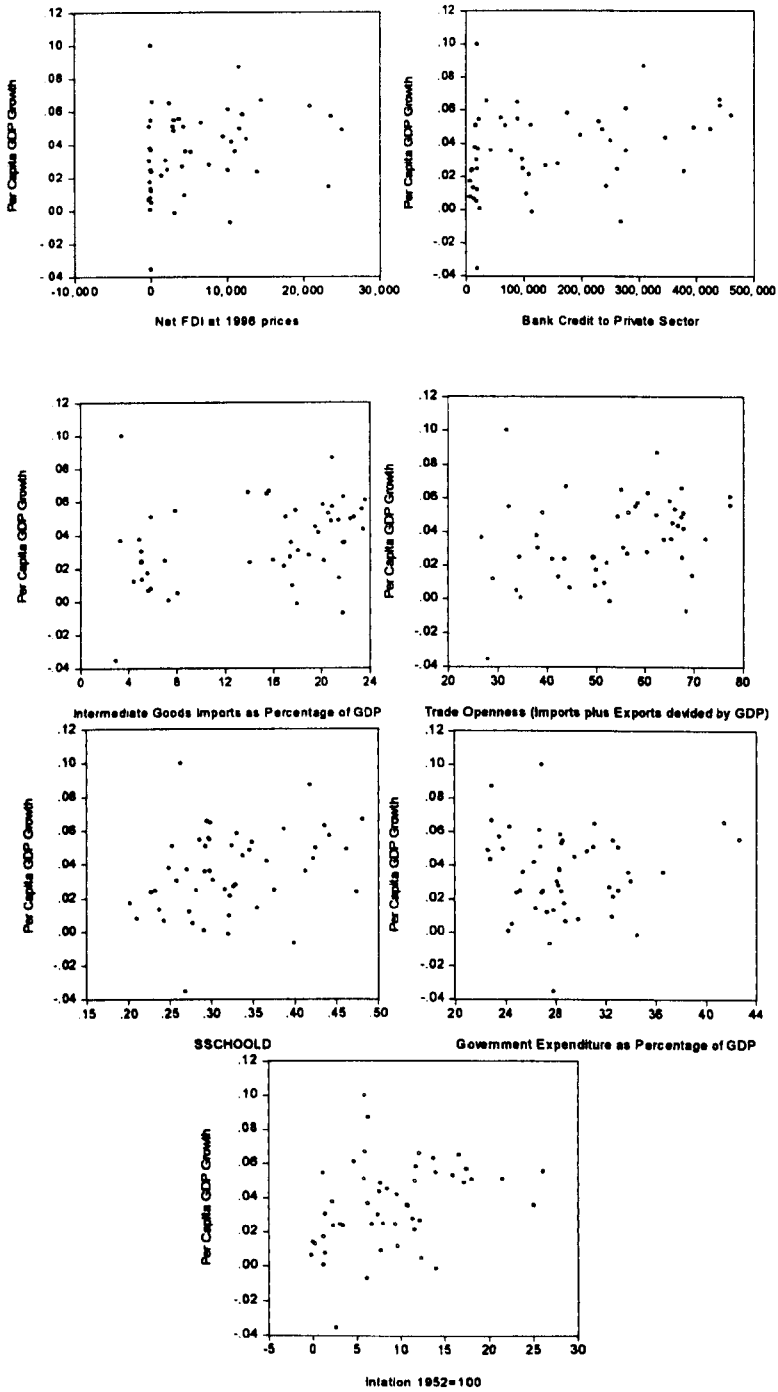
Model:

$$\begin{aligned} \Delta LPGDP = & \alpha + \beta_1 \log FDI + \beta_2 \Delta INTGOODS + \beta_3 \Delta SSCHOOLD + \beta_4 \Delta TRADOPEN \\ & (+) \quad (+) \quad (+) \quad (+) \\ & \beta_5 \Delta \log CREDIT + \beta_6 \Delta GOVEXP + \beta_7 INF \quad (5.1) \\ & (+) \quad (+) \quad (-) \end{aligned}$$

where $\Delta LPGDP$ is the first difference of the log of per capita GDP, FDI is the foreign direct investment, $INTGOODS$ is the intermediate goods imports as a percentage of GDP, $SSCHOOLD$ is the secondary school enrolment in decimal, $TRADOPEN$ is the trade openness as measured by imports plus exports as a ratio of GDP, $CREDIT$ is the total credit granted to private sector by commercial banks, $GOVEXP$ is the government expenditure both recurrent and capital, and INF is the inflation measured by the consumer price index. As a priori, the expected signs of coefficients have been given in parentheses below the coefficient. Scatter plots drawn in the Figure 5.1 exhibit the relationship of each of the independent variables to the dependent variable. However, by mere observation of the scatter plots, it is difficult to draw any direct relationship between the response variable and any of the predictive variables.

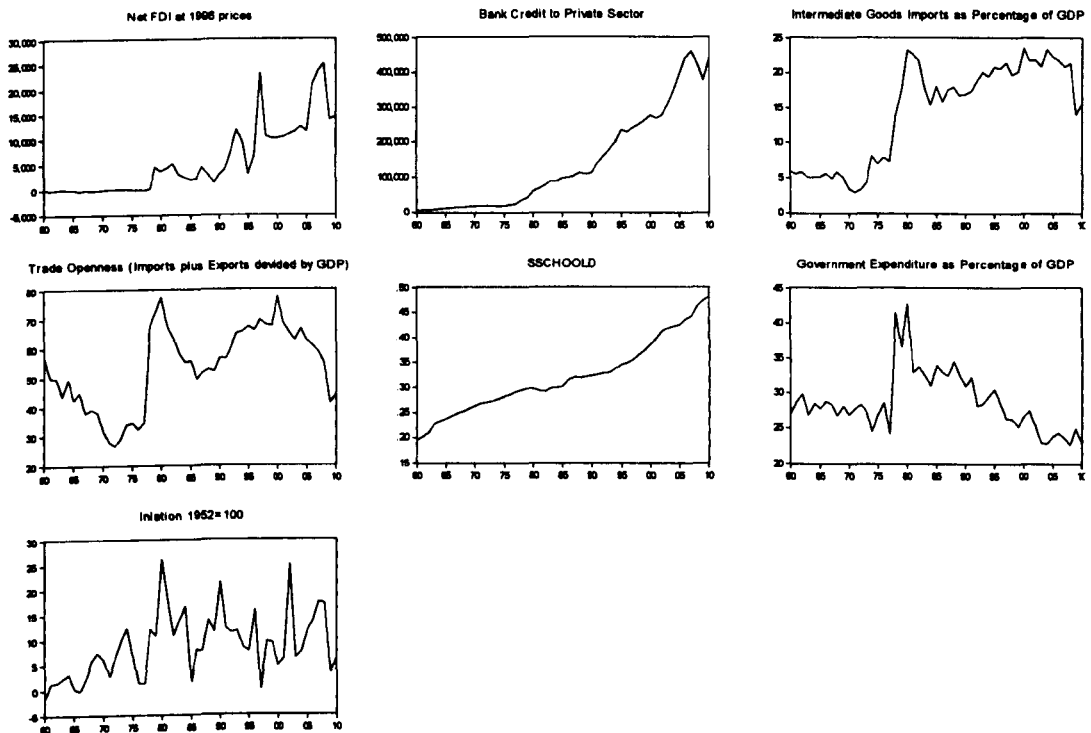
As all the data are time series data, it is required to establish whether the series are stationary. Running a regression at levels when data are non-stationary will lead to spurious regression results unless they are cointegrated. When we examined the stationarity of the data series, we found that other than the inflation

Figure 5.1 Scatter Diagrams showing the relationship between per capita income growth and all predictor variables (at levels)



series (*INF*), the rest of all the other series of the variables were non-stationary at level and therefore, provided that there is no common trend or that the series do not have a cointegrating relationship, we will have to take the first difference to make them stationary. A closer look at figure 5.2 shows how some of the series are wandering while some others are steadily trending. The series on bank credit to

Figure 5.2 Time series of predictor variables



private sector and secondary schooling have shown a positive trending pattern, a wandering behaviour can be observed from the series on intermediate goods imports and trade openness. Although nonstationary time series data cannot be used in

regression, there is an exception to the rule. If two series or more share a similar stochastic trend then their residuals will be stationary confirming that they are cointegrated. We will now examine whether the data series show a cointegrated relationship. To do this, the data series should be at level. We will turn to the next section for a discussion on the results.

5.3 Cointegration Analysis

We will focus in this section on the procedure that we applied in examining whether our nonstationary variables have a long-run relationship among them or not. There are different procedures to examine the cointegration such as Cointegration Regression DW statistic, the Engel-Granger two-step procedure, Johansen test for cointegration and Phillips-Ouliaris cointegration test. For the Engel-Granger two-step procedure, as followed in this test, as the first step, it is required to regress the dependent variable on each of the independent variables at levels separately. The second step is to check the stationarity of the resulting residuals from the first step in order to test for cointegration. If the residuals are found to be stationary, the null hypothesis which says that the series are cointegrated cannot be rejected. We performed the augmented Dickey-Fuller unit root test as it is the most popular test. We used the one with a constant, among the three cases. Our null and the alternative hypothesis for the cointegration test are as follows;

H_0 : The series are not cointegrated \leftrightarrow residuals are nonstationary

H_1 : The series are cointegrated \leftrightarrow residuals are stationary

The result of the second step is given in table 5.1 below. The result shows, that other than for the two explanatory variables, namely *FDI* and *CREDIT* the residuals for the rest of the variables are nonstationary as shown by the ADF test statistics which are larger than the critical values, in absolute terms, given in the parenthesis. As we can see from table 5.1,

**Table 5.1 Augmented Dickey-Filler Unit Root Tests
on the Residuals of Explanatory Variables
(with an intercept but no time trend)**

Dependent Variable: PGDP

Explanatory Variable	ADF test statistics	Prob.
<i>FDI</i>	-4.304103 (-2.922449)*	0.0012
<i>INTGOODS</i>	1.613118 (-2.921175)*	0.9994
<i>SSCHOLD</i>	-2.739436 (-2.921175)*	0.0746
<i>TRADOPEN</i>	1.825362 (-2.921175)*	0.9997
<i>CREDIT</i>	-4.286781 (-2.922449)*	0.0013
<i>GOVEXP</i>	-0.048474 (-2.922449)*	0.9490
<i>INF</i>	2.6020495 (-2.931404)*	1.0000

* In parenthesis are the test critical values at 5% level of significance

the t -statistic in the case of *FDI* is -4.304 which far exceeds the critical value of -2.922 at the 5% level of significance in absolute terms, we reject the null hypothesis that the least squares residuals of the regression has a unit root. Similarly, we can reject the null hypothesis with respect to the explanatory variable *CREDIT* at 5% level of significance. However, as far as all the other explanatory variables are concerned, we cannot reject the null hypothesis as the respective t -statistics are smaller than the critical values in absolute terms. Therefore, we conclude that almost five of the explanatory variables do not seem to have a cointegrating relationship with the dependent variable. We find that among the seven explanatory variables, almost five are not having cointegrating relationship as such we are required to convert all the nonstationary series to stationary series by differencing.

5.4 Estimation Results

The least squared estimation results are shown in table 5.2 below. It can be seen that the results produced a somewhat robust outcome with five estimated coefficients being significantly different from zero. Whilst the coefficients for the net foreign direct investment (*LFDI*), the trade openness (*TRADOPEN*) and the credit to the private sector (*DLCREDIT*) were found to be significant at 5% level, the intermediate good imports (*INTGOODS*) and inflation (*INF*) were significant at 10% level. None of the other coefficients were found to be significant. Most importantly, the results show that the coefficients of the foreign direct investment (*LFDI*), the credit to the private sector (*DLCREDIT*) and trade openness

Table 5.2 Least Squares Estimation for Per Capita GDP Growth Model

Dependent variable: DLPGDP
 Method: Least Squares
 Sample (adjusted): 1963 2010
 Included observations: 38 after adjustments

Variable	Coefficient	Std. Errors	t-statistics	Prob.
Constant	-0.0208	0.0152	-1.3673	0.182
Log FDI	0.0046	0.0019	2.4765	0.019**
Δ INTGOODS	-0.0045	0.0025	-1.8341	0.077*
Δ SSCHOOL	0.3901	0.6911	0.5644	0.577
Δ TRADOPEN	0.0020	0.0011	2.0712	0.047**
Δ LogCREDIT	0.0921	0.0395	2.3295	0.027**
Δ GOVEXP	-0.0015	0.0012	-1.2197	0.232
INF	0.0011	0.0011	1.8694	0.071*

Diagnostic test statistics:

R-squared	0.4592	Mean dependent variable	0.0371
Adjusted R-squared	0.3330	S.D. dependent variable	0.0242
SE of regression	0.0198	Akaike Inf Criteria	-4.8223
Sum of squared resid	0.0117	Schwarz Criteria	-4.4775
Log likelihood	99.62355	Hannan-Quinn Criteria	-4.6996
F-statistic	3.6386	Durbin-Watson static	1.9786
Prob (F-statistic)	0.0059		

Number of significant coefficients = 5 (two at 10% and the others at 5%)

Serial correlation
 LM test = Prob F(2, 28) = 0.91
 Q-statistics = All $p > 5\%$

Normality χ^2 = Prob 0.98
 Heteroskedasticity = F(7,30) = 4.64 (0.75)
 Wald test = F-Statistics: 19.83; $p = 0$

Note: probability values; * at 10% of significance; ** at 5% of significance.

(TRADOPEN) are significantly different from zero at 5% level with respective values of 0.005, 0.09 and 0.002. However, it is necessary to examine to what extent we can rely on these estimates in terms of their reliability, accuracy and adequacy in estimating the parameter values. We will venture into this topic in the next section in much detail on examining the diagnostics of the estimated model.

5.5 Diagnostic Tests on the Model

Before making any inference on the basis of the outcome of the above regression results, we need to examine the strengths and weaknesses of the model. We have pointed out in the previous chapter that the linear regression model is susceptible to a number of possible errors. While the inclusion of irrelevant variables can cause increased variance of the estimated coefficients of the included variables, the omission of relevant ones can result in causing specification bias. Moreover, serial correlation and heteroskedasticity can lead to producing inefficient estimates. It is also important to test whether the model is specified adequately or in a correct functional form. Additionally, it should be examined whether the model could be further improved. If the model has been designed in a manner that violates the assumptions of the multiple regression model, it has to be corrected. Therefore, this section will review the adequacy of the models and their predictive power.

A summary of the diagnostic statistics appears in table 5.2. First, looking at R^2 , we conclude that 46% of the variation in the GDP per capita growth rate

(*DLPGDP*) is explained by the regression model, which uses several variables as detailed in the previous section. While R^2 provides information about relative magnitude of the different sources of variation, the question whether the value of 46% is a good indicator is not helpful. As macroeconomic behaviour is somewhat difficult to explain fully, one should not rely entirely on how well it predicts the sample data used to produce the estimates. To evaluate the model, it is essential to consider such factors as the signs and the magnitude of estimates, statistical and economic significance, accuracy of their estimation and the predictive power of the model.

It could be observed from the results of the model that five coefficients are significant out of seven explanatory variables. Furthermore, all the coefficients are jointly significant as shown by the probability for F -statistic which is almost zero. On the presumption that intermediate goods imports (*AINTEGOODS*) will have a positive contribution to economic growth, we assumed that this coefficient should have a positive sign, but contrast to such expectations, this coefficient turned negative. However, it could be true that as shown by the negative sign, this explanatory variable did not contribute positively to the growth. The rest of the other significant coefficients have the correct signs as we predicted.

The model is free from serial correlation as evidenced from Durbin-Watson statistics⁴ with a value of almost closer to 2. As our model does not contain a lagged

⁴ There are three procedures for testing for serial correlation also known as autocorrelation. Among these tests, the sample correlogram and a Lagrange multiplier test are applied for large samples tests. A test that does not rely on large sample approximation is the Durbin-Watson test statistic, which was developed by J. Durbin and G. Watson in 1950. It has been the standard test for a long period. It assumes that the v_t are independent random errors with distribution $N(0, \sigma_v^2)$, and

dependent variable on the right side, we could apply the Durbin-Watson statistic to test the autocorrelation. In addition to this test, we could also test for autocorrelation

Table 5.3 Correlogram of Residuals of the Growth Model

Sample: 1963 2010
Included observations: 38

Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob	
. .	. .	1	0.007	0.007	0.0021	0.964
.* .	.* .	2	-0.074	-0.075	0.2362	0.889
. .	. .	3	0.065	0.066	0.4197	0.936
. .	. .	4	0.013	0.006	0.4268	0.980
. .	. .	5	0.062	0.072	0.6029	0.988
** .	** .	6	-0.223	-0.231	2.9668	0.813
. .	. .	7	-0.047	-0.031	3.0739	0.878
. .	.* .	8	-0.058	-0.108	3.2421	0.918
. .	.* .	9	0.053	0.092	3.3906	0.947
.* .	.* .	10	0.204	0.207	5.6520	0.844
. .	. .	11	-0.007	0.052	5.6544	0.895
. .	. .	12	0.014	-0.014	5.6665	0.932
. .	.* .	13	-0.027	-0.088	5.7106	0.956
. .	.* .	14	-0.043	-0.118	5.8263	0.971
.* .	.* .	15	-0.159	-0.201	7.4986	0.942
.* .	.* .	16	-0.201	-0.135	10.288	0.851

by examining the sample correlogram and a Lagrange Multiplier test as well. We used both tests and the results are given below. Table 5.3 indicates that residual correlations are well within the two standard deviation bounds and none of the Q-statistics up to 16 lags have a probability value less than 0.1. This confirms that the

that the alternative hypothesis is one of positive autocorrelation, i.e., $H_0 : \rho = 0$; $H_a : \rho > 0$. The test statistic is

derived from the following formula;
$$d = \frac{\sum_{i=2}^T (\hat{e}_i - \hat{e}_{i-1})^2}{\sum_{i=1}^T \hat{e}_i^2} ; d \approx 2(1 - r_1)$$

residuals are nearly white noise and hence the model is free from autocorrelation. When we performed the Lagrange Multiplier test, the result of which appears in table 5.4 , the same result was confirmed having given a probability value of 99% for four lags.

Table 5.4 Breusch-Godfrey Serial Correlation Lagrange Multiplier Test on the Growth Model

F-statistic	0.075364	Prob. F(4,26)	0.9891
Obs*R-squared	0.435542	Prob. Chi-Square(4)	0.9795

As shown in table 5.5, the Breusch-Pagan-Godfrey test for heteroskedasticity for the model which we performed indicates that it is also free from heteroskedasticity, having recorded a probability value of larger than 5%.

Table 5.5 Heteroskedasticity Test on the Growth Model

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.595688	Prob. F(7,30)	0.7543
Obs*R-squared	4.637222	Prob. Chi-Square(7)	0.7041
Scaled explained SS	2.762258	Prob. Chi-Square(7)	0.9061

The next test performed was the normality for residual distribution using the Jarque-Bera test. As explained in the previous chapter, this test is based on two

measures, skewness and kurtosis.⁵ While the skewness refers to how symmetric the residuals are around zero, the kurtosis refers to the peakedness of the distribution. If the residuals are perfectly symmetric, its skewness is zero. For a normal distribution, the kurtosis is 3. The skewness as shown in figure 5.3 is 0.01155 and the kurtosis is 2.91141. This show that both values are close to the values of a normal distribution. What we have to verify is whether 0.01155 is sufficiently different from zero and 2.91141 is sufficiently different from 3, to reach the conclusion that residuals are not normally distributed. We reject the null hypothesis of normally distributed errors if a calculated value of the statistic exceeds a critical value selected from the chi-squared distribution with 5 degrees of freedom. The 5% critical value from a χ^2 -squared distribution with five degrees of freedom is 11.07. The JB statistic appearing in the figure 5.3 below is derived by applying the following;

$$JB = \frac{38}{6} \left((0.01155)^2 + \frac{(2.911441 - 3)^2}{4} \right) = 0.0132625$$

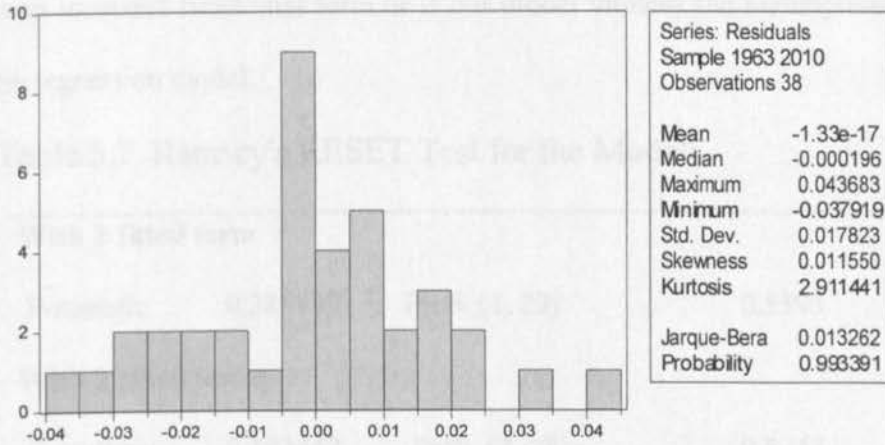
Since $0.0132625 < 11.07$, there is insufficient evidence from residuals to conclude that the normal distribution assumption is unreasonable at 5% level of significance. Therefore, we cannot reject the null hypothesis that the residuals come from a normal distribution, which is a good sign to establish the normal distribution. The p -

⁵ We have presented the formula for the Jarque-Bera test in the previous chapter. The Jarque-Bera statistic is given by

$$JB = \frac{N}{6} \left(S^2 + \frac{(K - 3)^2}{4} \right) \text{ where } N \text{ is the sample size, } S \text{ is skewness, and } K \text{ is kurtosis.}$$

value that appears in the same figure also fails to reject the null hypothesis on the ground that $0.9934 > 0.05$.

Figure 5.3 Jarque-Bera Test for Normality on the Growth Model



We also performed the Wald test to look at the joint significance of the explanatory variables. As the p -value for the F -statistic given in the table 5.6 below is 0.000, which is very much below 0.05, the test rejects the null that there is no joint significance.

Table 5.6 Wald Test for Joint Significance on the Growth Model

Wald Test:
Equation: EQ34

Test Statistic	Value	df	Probability
F-statistic	19.83370	(8, 30)	0.0000

Null Hypothesis: $C(1)=C(2)=C(3)=C(4)=C(5)=C(6)=C(7)=C(8)=0$

Finally, we have applied the Ramsey's RESET test (Regression Specification Error Test) to examine whether there is any scope for further improving the model by adding any new explanatory variables, dropping some of them or for any other specification errors. This test can also tell us whether we have chosen an incorrect functional form or if our model violates the assumptions of the multiple regression model.

Table 5.7 Ramsey's RESET Test for the Model

With 1 fitted term			
F-statistic	0.385499	Prob. (1, 29)	0.5395
With 2 fitted terms			
F- statistic	0.193442	Prob. (2, 28)	0.8252

Table 5.7 gives the result of the RESET test. 'With 1 fitted term' refers to the result for the squared term included, and 'with 2 fitted terms' refer to both the squared plus cubic terms included. In both cases the null hypothesis of no specification error cannot be rejected at 5% level of significance as the probability values are much larger. This confirms that our model satisfies all the required tests for model adequacy and hence the model is found to be unbiased.

5.6 Empirical Analysis

As all the diagnostic statistics confirm that the model is reasonably unbiased, we conclude that the estimated model produced robust results. Therefore, we will now be in a position to evaluate the results in table 5.2 with respect to its economic meaning, overall fit and the signs and significance of individual coefficients. We find that of the seven coefficients, only five are found to be significant, two of which are at 10% level of significance, the remaining three are at 5% level. The coefficients at 10% level of significance are the intermediate goods imports as a ratio of the GDP (*DINTGOODS*), which was significant at the level of 8% and the inflation (*INF*) which was significant at the level of 7%. However, rather contrary to our expectation, *INTGOODS* had a negative sign indicating that imports of intermediates goods will have no positive contribution to economic growth. In regard to inflation, it is shown that inflation contributes positively but marginally to economic growth. Nevertheless, the key finding in our result is that all three critically important coefficients such as foreign direct investment (*LFDI*), trade openness (*TRADOPEN*) and the credit to private sector (*DLCREDIT*) demonstrate proof of evidence in meeting our expectation in terms of sign, size and significance. All these three coefficients, having taken the positive sign as expected, are significantly different from zero as shown by the respective probability values which are less than 5%. Our major hypothesis was to test whether trade openness, financial liberalization and inflows of foreign direct investment contributed to economic growth. From table 5.2, we can read off the estimated effects of changes in the

explanatory variables on the dependent variable. The positive coefficient of foreign direct investment (*LFDI*) which takes the value of 0.0046 suggests that 1% increase in FDI is associated with 0.0046% increase in the per capita growth rate holding all other dependent variables constant. Similarly, the impact of the coefficients of trade openness (*TRADOPEN*) and credit to private sector (*DLCREDIT*) on per capital income growth can also be evaluated. The coefficient on trade openness suggests that one unit increase in trade openness to GDP ratio will increase the per capital growth by 0.2% holding all other dependent variables constant. In regard to the impact of credit to private sector, it indicates that 1% increase in credit supply to the private sector will contribute in enhancing the per capital growth by 0.09% holding other independent variables constant.

The point estimators for the five coefficients which we produced were found to be significant. A very practical way is to look at the interval estimation as it gives a range of values in which the true parameter is likely to fall in. That way it gives a meaningful indication as to what the parameter value might be and the precision with which we have estimated it. To calculate the degrees of freedom, we subtract the number of coefficients including the constant ($k+1$) from the number of observations $[N-(k+1)]$. In our estimated model, the number of observations used, $N=51$ and the degrees of freedom are $51-8=43$. For a 95% confidence interval $\alpha=0.05$, the critical value $t_c = t_{(1-\alpha/2, N-2)} = t_{(0.975, 43)} = 2.021$ is the 97.5 percentile from the t-distribution with 43 degrees of freedom. As shown in the model specifications in equation (5.1) in section 5.2, we can summarize the probability statements in

respect of $\beta_1 \log FDI$; $\beta_2 \Delta INTGOODS$; $\beta_4 \Delta TRADOPEN$; $\beta_5 \Delta \log CREDIT$ and $\beta_7 INF$.

$$P[b_1 - 2.021se(b_1) \leq \beta_1 \leq b_1 + 2.021se(b_1)] = 0.95 \quad (5.2)$$

Substituting the respective values from table 5.1 into the equation (5.2), we obtain a 95% confidence interval estimate for β_1 ($\log FDI$), which refers to the relationship between the per capita income growth and foreign direct investment inflows, as given in (5.3) below;

$$b_1 \pm t_c se(b_1) = 0.0046 \pm 2.021(0.0019) = (0.00076, 0.00844) \quad (5.3)$$

That is, we estimate "with 95% confidence" that a 1% additional sum of FDI inflows will contribute between 0.0008% and 0.008% on per capita economic growth, holding other variables constant. Similarly, we can substitute the respective values for b_2 ($\Delta INTGOODS$), b_4 ($\Delta TRADOPEN$), and b_5 ($\Delta \log CREDIT$), into equation (5.2) to derive the 95% confidence intervals in respect of these three coefficients. Accordingly, 95% confidence intervals estimates derived for these three coefficients appear below.

Although we observed that the coefficient for the intermediate goods imports ($\Delta INTGOODS$) had a negative sign indicating that its effects on per capita growth are negative, the interval estimates gave us a somewhat different outcome.

The confidence interval estimates for b_2 ($\Delta INTGOODS$) given in (5.4) says that an additional one unit increase in the index of intermediate goods imports will contribute between a (-) negative 0.05% and a positive 0.95% on per capita economic growth. This proves that rather than a point estimator, a confidence interval estimator conveys better information on the estimates since the sign of the interval estimate may vary from negative to positive.

$$b_2 \pm t_c se(b_2) = 0.0045 \pm 2.021(0.0025) = (-0.0005525, 0.00955) \quad (5.4)$$

As shown in equation 5.5, the confidence interval estimate for b_4 ($\Delta TRADOPEN$), which is the coefficient estimate for the trade openness says that a one unit increase in trade openness to GDP ratio will contribute between 0.02% and 0.42% on per capita income growth.

$$b_4 \pm t_c se(b_4) = 0.002 \pm 2.021(0.0011) = (0.000223, 0.004223) \quad (5.5)$$

The equation 5.6 gives the confidence interval estimate for b_5 ($\Delta \log CREDIT$), the bank credit to private sector. It is estimated that a 1 percent increase in bank credit to private sector will result in an increase between 0.016% and 0.19% on the per capita income growth.

$$b_5 \pm t_c se(b_5) = 0.0921 \pm 2.021(0.0395) = (0.012271, 0.171930) \quad (5.6)$$

Finally, the confidence interval estimates for β_7 , *INF* is depicted in the formula at (5.7). This shows that one unit change in inflation rate is associated with a change between a negative (-) 2% and a positive 2% on economic growth rate.

$$b_7 \pm t_c se(b_7) = 0.0011 \pm 2.021(0.011) = (-0.02113, 0.02333) \quad (5.7)$$

The usefulness of the interval estimates is that it gives a sense of reliability more than a point estimate, as the interval estimates incorporate both the point estimate and the standard error of the estimate which is a measure of the variability of the least squares estimator. Additionally, the interval estimate includes an allowance for the sample size since the *t*-distribution critical value t_c is larger for lower degrees of freedom.

5.7 Concluding Remarks

In this chapter, we examined the growth impact resulting from the economic liberalization policies adopted in Sri Lanka since 1977. It examined several channels through which international economic integration can promote growth. These growth channels included a selected few areas such as the inflows of FDI (*LFDI*), the share of import of intermediate goods (*INTGOODS*), human capital development measured by secondary school enrolment (*SSCHOOLD*), trade openness (*TRADOPEN*), bank credit to private sector as a proxy for private

investment (*CREDIT*), government expenditure (*GOVEXP*) and inflation (*INF*), to examine the contribution of economic openness to growth in Sri Lanka. The channels such as human capital development, government expenditure and inflation were employed as control variables, and data used were from 1960 to 2010. Using a traditional OLS technique, it was shown that the inflows of FDI, bank credit to private sector, and trade openness have a direct and robust positive impact on economic growth in Sri Lanka. This supports our hypothesis that economic liberalization policies would have a positive contribution on economic growth.

Our results have shown that only two explanatory variables, human capital development measured by secondary schooling ratio (*SSCHOOLD*) and government expenditure (*GOVEXP*), are statistically insignificant. As they were included as control variables, we cannot leave them out in spite of their levels of insignificance. Given the structure of Sri Lanka's economy, which is largely labour intensive, and also considering the negligible share of the knowledge-intensive sector in the economy including in the manufacturing sector, it can be argued that despite the continued growth in the human capital development, it has not made a significant contribution to economic growth. It is true that Sri Lanka's achievements in the human capital development have been marvellous over the years as reflected by the highest literacy ratio in the South Asian region and the very high growth in secondary schooling. Such encouraging achievements are the result of the persistent following up of the free education policy from kindergarten to university level. The government spending on education had been considerably large ever since it gained independence. Following our examination on the causal relationship between the

human capital development and economic growth testing for Granger causality, we found that the causality runs from economic growth to human capital development and not the other way around. This supports the conclusion of our findings that human capital development does not contribute towards economic growth in a largely labour intensive and lower level of technology-based production structure that characterizes the Sri Lankan economy.

In respect of the government expenditure (*GOVEXP*), the Granger causality test failed to confirm causality in both directions. The result of the insignificant coefficients for the series may be attributable to this reason. Moreover, among the significant explanatory variables, two had wrong signs, with the intermediate goods imports (*INTGOODS*) having a negative sign, and the inflation (*INF*) having a positive sign. However, we have observed that both of these coefficients take the correct signs at the lower boundary of the interval estimates.

The growing inefficiency of the public sector is a widely accepted phenomena and as such this can be attributable to the negative relationship between government expenditure and economic growth in the case of Sri Lanka. This explanatory variable is highly insignificant and negative. As we have pointed out in chapter 3, compared to private investment, public investment is by and large directed to least return or loss-making projects including a large number of welfare schemes. The government finances are also supporting a considerably high level of national defence budget resulting from a long-driven internal conflict and

expenditure on unfeasible and politically motivated projects. It is often criticised that there is a very high redundancy ratio of public sector employment. As a considerably large share of the financial resources within the banking sector, insurance funds and pension funds were destined towards the direction of the government to meet the budget deficits, such funds were diverted away from investing in productive economic activities. On an average, the total domestic public debt as a percentage of GDP over the last forty years stood more than 45%. Over the last twenty years, on an average, the overall budget deficits stood at almost 50% of the total government revenues in each year. One half of the budget deficits were met by domestic borrowings and most of the government borrowing was harnessed through the investment in government bonds and securities by the banking and insurance market and pension funds system. As half of the banking sector's assets are held by the government-owned three main banks, they have become captive sources of government funding.

From the above analysis, we can observe that it is the role played by the private capital rather than the government investment that contributes positively to economic growth in Sri Lanka. Therefore, a key conclusion that can be derived from this observation is that there is a fundamental need to revisit the present policy framework on public spending in order to rationalize it in favour of projects that would contribute towards more beneficial results. This process should also emphasise the need for downsizing the government's role in spending, where necessary. We will reopen this debate in our final chapter.

Chapter 6

Towards Greater External Liberalization: Some Policy Perspectives

6.1 Introduction

We have provided sufficient empirical evidence in the two preceding chapters in support of the assertion that liberal economic policies implemented since 1977 have made a positive contribution to economic growth. It was thanks to this policy strategy that Sri Lanka transformed from a sluggish and somewhat isolated economy into a dynamic and outward-looking growth centre. It was also noted that such progress was achieved amid widening fiscal imbalances, soaring public debt, inflationary pressure and exogenous shocks.

The aim of this chapter is to assess the further prospects for greater external liberalization in Sri Lanka, leading to an open capital account regime in order to speed up the growth process from the present level. As we have already seen, such a strategy requires to take remedial action to prevent macroeconomic imbalances through the vigorous implementation of fiscal disciplines with the objective of relieving the public debt burden and inflationary pressure on the part of the government. In this context, we will examine in this chapter, the financial health and stability of Sri Lanka's economy from the balance sheet perspective. In doing so, it will make an attempt to review the evolving pattern of balance sheet conditions both in the public and the private sectors and their resilient to prevent possible future financial crises in Sri Lanka. Since recently, a wider focus has been given to balance sheet dynamics on account of insufficiency of the traditional approaches in explaining some of the dynamics underlying

modern day capital account crises. The objective of this chapter is to provide a systematic explanation on how balance sheet weaknesses could point to detecting financial crises as revealed by recent financial episodes. This chapter also reviews the usefulness of stress testing scenarios in the context of Sri Lanka. However, it does not undertake any stress testing, but only a comparison is made on the financial strength for broadly defined sectors' ability to honour payment in two different years. The analysis does not constitute hypothesis tests.

It has been revealed by several studies¹ that a number of recent financial crises in emerging market economies were originated in weaknesses in sectoral balance sheets. Drawing a distinction between old-style financial crises and new style financial crises, Dornbusch (2002) states that the old style crises were the results of current account imbalances fuelled by overspending, which moved in slow motion and new style of crises were caused by the doubts about the creditworthiness of balance sheet of the significant part of the economy.² In 2002, the International Monetary Fund took a serious interest in focussing on the balance sheet approach as part of its bilateral surveillance activities.

The absence of a mechanism to foresee or to detect a financial or currency crisis before it happens makes the situation worse, until its effects spread to all the apparatus of the economy engulfing the entire system. The most recent experiences of financial crises come from both the East Asian financial crisis of 1997, and about ten years later, the US sub-prime mortgage crisis that

¹ A comprehensive review on the issue of balance sheet approach to financial crisis, see IMF Working Paper (WP/02/210) by Mark Allen., Christoph Rosenberg, Christian Keller, Brad Setser and Nouriel Roubini.

² Rudiger Dornbusch (2002), "A Primer on Emerging Market Crises", in *Preventing Currency Crises In Emerging Markets* edited by Sebastian Edards and Jeffrey A. Frankel, p743-754

began in August 2007. A forensic analysis on both crises would help understand how a crisis originates from weaknesses in balance sheets of key sectors.

This chapter is organized as follows: section 2 gives an outline on the Southeast Asian economic crisis of 1997 and the US sub-prime crisis in 2007 in an attempt to analyse the events from balance sheet perspective, section 3 provides a detailed exposition of the balance sheet approach and its evolution, and briefly reviews how this approach could be helpful as a surveillance tool for financial system sustainability, section 4 investigates Sri Lanka's financial system stability using the balance sheet approach, section 5 presents an analysis on the capital market developments in Sri Lanka, section 6 discusses the usefulness of stress testing as a possible risk assessment mechanism and presents a few likely scenarios to broaden the understanding of possible signs of a crisis for evaluation, section 7 summarizes the findings and concludes.

6.2 Lessons from Recent Financial Crises: Southeast Asia and the US Sub-prime crises.

In the case of the Southeast Asian financial crisis that began in July 1997, the root cause of which has been attributed to increased leverage of enterprises, the catastrophic losses were such that several large financial institutions including banks and private corporations went insolvent. It triggered a wider spread exchange rate depreciations leading to self-fulfilling financial crisis³ with panic capital outflows in several East Asian countries.⁴ Although

³ Self-fulfilling financial crisis refers to a situation where a financial crisis is caused by the pessimistic expectations rather than unhealthy economic fundamental conditions or improper government policies such as exceedingly high spending through government borrowing and printing money.

most of the countries followed seemingly sound fiscal policies, the level of foreign debt to GDP rose to as large as 180% at the time of the worse of the crisis, particularly in the largest four South East Asian Association (ASEAN) countries.⁵ Coupled with such large credit booms fuelled by hot money inflows and fixed exchange rates, both the corporate and the financial sectors of these countries became excessively exposed to foreign exchange risk. Until mid 1990s, the Southeast Asia attracted the highest amount of capital inflows both FDI and short-term funds and this region exhibited considerably higher economic growth rates than any other region. The external shocks were also partly responsible for the crisis. By mid 1990s, the devaluation of Chinese renminbi and Japanese yen and the rising interest rates in the US to curtail inflationary pressure helped gain the strength of the US dollar. Adverse effects of a sharp contraction in semiconductor market in importing countries were also felt in the export industries. Following the strong dollar, the US became a more attractive destination for investment compared to Southeast Asia. As most of the currencies of Southeast Asian countries were pegged to the US dollar, the higher US dollar made their exports expensive and thus less competitive in international markets. As such exports started to fall sharply deteriorating the current account balances. Many economists are of the opinion that the crisis was a result of the policies generally followed by these countries that distorted free market

⁴ The trouble began in Thailand, which affected most and spread into several other East Asian countries, among which most affected were Indonesia and South Korea. Also, Hong Kong, Malaysia, Laos and the Philippines were hurt by the slump. China, Taiwan, Singapore, Brunei and Vietnam were less affected, although all suffered from a loss of demand and confidence throughout the region.

⁵ These four largest countries were, Indonesia, South Korea, Thailand and the Philippines.

fundamentals thereby affecting the creditor-borrower relationship⁶. This created an excessive credit supply thus creating the most of the enterprises highly leveraged driven by inflated assets prices. Eventual collapse of the asset prices forced individuals and corporate sector to default on their debt obligations, thus creating panic among lenders as well as investors who started to withdraw large sum of their credit and investment funds . This caused a severe credit crunch and made pressure on the exchange rate. The respective governments in affected countries responded by raising the interest rates to exceedingly high levels and intervened in the exchange market in selling large sum of foreign exchange to support the fixed exchange rate systems. When the governments realised that precipitation of capital could not be reversed, they immediately moved from fixed exchange rate mechanism to floating with the consequent result of foreign currency dominated liabilities to grow substantially in terms of domestic currency ultimately causing further bankruptcies. As demonstrated above, the Asian financial crisis provides ample evidence to show that it was the corporate sector rather than the government fiscal imbalances triggered the crisis. The crisis also pointed to the fact that currency crises are often associated with the banking crises and that the sharp and sudden movement of the capital account rather than current account imbalances were the main drivers.

The immediate cause of the sub-prime crisis of 2007-09 in the United States was the bursting of the housing bubble which resulted in borrowers' failure to refinance the mortgages leading to defaults and foreclosures. A bubble

⁶ Ronald I. McKinnon, and H. Pill. 1996. "Credible liberalizations and international capital flows: The overborrowing syndrome". In *Financial deregulation and integration in East Asia*, ed. T. Ito and A. O. Krueger. Chicago: University of Chicago Press; Paul Krugman (2000), *Fire-sale FDI in Capital Flows and the Emerging Economies: Theory, Evidence, and Controversies*, ed. Sebastian Edwards, University of Chicago Press

in the housing market was fuelled by high expectation that contributed to the continued escalation of housing prices. As sub-prime mortgages were characterized by their lower credit quality, they were subjected to higher interest rates. Nevertheless, the proportion of sub-prime lending as a percentage of total mortgages increased from the historical 8% in 2004 close upon to 20% in 2006, with more than 90% of sub-prime mortgages being on adjustable rates. The high interest rates did not prevent the borrowers from buying houses on mortgage as they anticipated the house prices to further rise. Home prices tripled between mid 1990s and 2006. As shown from the long-term trend in the rising housing prices, the borrowers expected that they could seek easy refinance or dispose the real property at a profit at a future date. This contributed the mortgage related debt to continuously expand. As such, the indebtedness of the US household sector has increased to an unhealthy level with a ratio of debt to disposable income rising from 77% in 1990 to 127% by the end of 2007. These mortgages were packaged together to form Residential Mortgage-Backed Securities (RMBSs) and Collateralized Debt Obligations (CDOs), which became more attractive to investors as they offer higher returns. These mortgage-backed securities were then sold to financial institutions around the world. As once explained by the Governor of the Bank of England⁷ which is quoted below, there was a strong demand for high yielding assets, these securities became globally attractive.

"Interest rates... were considerably below the levels to which most investors had become accustomed in their working lives. Dissatisfaction with these rates gave birth to the 'search for yield'. This desire for higher

⁷ Speech by Mr. Mervyn King, the Governor of the Bank of England at the Northern Ireland Chamber of Commerce and Industry, Belfast, October 2007, pp 2-3.

yields could not be met by traditional investment opportunities. So it led to a demand for innovative, and inevitably riskier, financial instruments and for greater leverage. And the financial sector responded to the challenge by providing ever more sophisticated ways of increasing yields by taking more risk."

When house prices started to decline sharply, borrowers faced greater difficulties to refinance their mortgages. As a considerable share of these mortgages were on adjustable rates, they began to reset at higher rates which necessitated the borrowers to pay higher monthly instalments resulting a very high volume of delinquency of mortgages leading to several defaults and foreclosures. International investors who acquired the RMBSs and CDOs didn't have much knowledge about how the mortgage market works in the US and therefore they were unaware of the underlying risks of these assets. When the crisis triggered, the mortgage-backed securities started to lose its position among the investors throughout the world who drastically reduce purchases of such securities while those securities in the possession of investors became valueless effectively vanishing most of their investment spreading the crisis globally.

The consequences of the crisis were long lasting and felt severely throughout the US and European economies. The US entered a deep recession with slowing down the economic growth and rising levels of unemployment. It was estimated that around nine million individuals or 6% of the workforce became unemployed by 2008. On an average, the housing prices fell by 30%, the stock prices shrunk by 50% by end of the same year. Immediately after the

crisis, several countries resorted to adopting tight credit policies ultimately resulting in a global meltdown.

A thorough examination into the recent crises indicates that severe policy contradictions due to serious lack of focus on fundamental structure of the financial system appear to be the causes of the crises. In the case of Southeast Asian financial crisis, it points to number of major issues arising from policy failures. In the context of Mundell and Flemming hypothesis, a country intending to open up its capital market cannot pursue an independent monetary policy while maintaining a fixed exchange rate regime. However, it was seen that all the affected countries in the Southeast Asia had open capital markets, while they were following autonomous monetary policies together with fixed exchange rates with obvious inconsistency between capital account liberalization and fixed exchange rates. Apart from such fundamental policy errors, a several kind of government incentives and guarantees together with directed credit happened to be some of the driving forces of the speculative spending and investment bubble. As investments were largely funded by foreign borrowing, that posed a heavy risk in the balance sheets of the financial institutions and the corporate sector as well.

In light of the above scenario, there is an overriding importance to maintain continuous surveillance of the balance sheet position of each and every sector of the country in order to identify any signs of a potential crisis. That would help the authorities to take precautionary steps to better manage the financial aspects with the objective of avoiding such a crisis situation. Recent studies show that a systematic analysis on the composition and the size of the

liabilities and assets on financial balance sheet would indicate whether a country is vulnerable to a financial crisis. For instance, when a country is faced with a high level of short-term debt, it could convey an explicit message to both domestic and foreign investors to reassess the risks of investing. Moreover, a proper analysis of the balance sheet conditions would be helpful in understanding the required time path over which a country's macroeconomic policy framework could adjust itself in a manner to convincingly overcome the issues. Additionally, it would also facilitate in implementing suitable policies to safeguard the domestic economy from external volatile conditions.

6.3 Balance Sheet Approach to Financial System Sustainability

The balance sheet approach has been accepted as a useful tool for monitoring financial sustainability in individual countries. In recent years, attention has been focussed on the balance sheet mismatches as a source of financial crises. This was due to the fact that the origin of a number of recent financial crises in emerging market countries was attributable to weaknesses in the sectoral balance sheets. This approach of financial crises presents a framework for analysing how vulnerabilities in the balance sheets, after gradually building up, generate a crisis situation. Before proceeding to present a detailed analysis of the balance sheet approach, it is pertinent to deal with the evolution of this approach and to see how it has gained prominence in the academic literature in the recent past.

However, at the very outset it should be noted that the balance sheet approach used as a financial surveillance instrument by the IMF should not be

viewed as a conventional balance sheet. In the case of conventional balance sheet, it is a system of keeping an account of an economic entity on financial and non-financial balance sheet positions on the assets and liabilities for a business year. Contrast to above, the balance sheet approach reviews not on individual economic entities but the aggregate sectors covering the entire country. In this process, it compares the financial assets and liabilities excluding non-financial balance sheet positions as of a certain accounting date (Hofer, 2005).

Experiences have shown that unlike in the past, recent capital account crises have blown up suddenly on an unparalleled level far exceeding the financial transactions carried out by sovereign states alone. In contrast to government transactions, more recent crises involved the wholly private entities such as banking and financial sector agencies and large private corporations resulting in unprecedented level of capital outflows and considerable exchange rate adjustments aftermath. Until 1990s, the financial crises were seen as currency crises fuelled by the sudden loss of foreign reserves due to continued fiscal deficits. These fiscal deficits were the result of ever-expanding public borrowing. The models developed to explain such crises fall under first generation models⁸ and the pioneers in this line of thoughts were Krugman (1979) and Flood and Garber (1984). Krugman explains how the government would fail to maintain the value of its currency under peg exchange rate system amid deteriorating conditions of its reserves while speculative attacks are at work in which investors are trying to build up foreign currency positions. In addition to above, the first generation models also explained how crises occur resulting from real exchange rate misalignments, imbalances in the current

⁸ It was Barry Eichengreen who first used the distinction between first generation and second generation crises models.

account, and difficulties in rising public debt service costs as well as the implications of continued borrowings to defend the fixed exchange rate system. The central point stressed by the first generation models is that when reserves are run off and the conditions of balance of payment could be at a critical level, a full blown up crisis may occur provoking a speculative attack.

Models developed by Obstfeld (1994), Drazen-Masson (1994), Cole and Kehoe (1996) particularly after the ERM crisis in 1992 and the Mexican crisis during 1994-95 demonstrate at least one element of balance sheet risk, in particular recognizing the characteristics of liquidity mismatch as a source of crisis. While the ERM crisis pointed to fundamental weaknesses arising from overvalued currency and an unsustainable current account deficit, the Mexican crisis gave the insight that some element of self-fulfilling panic can be at work since a large sum of short-term foreign currency debts was about to mature while the government was facing difficulties without sufficient reserves to meet its debt service obligations.

Particularly after the East Asian financial crisis, it was the third generation models that theorised an analysis based on the balance sheet approach to demonstrate the risks arising from the movements in the capital account in generating financial and currency crises. This approach finds that persistent unhealthy imbalances in the assets and liability structure in a country's financial balance sheet as the root cause of the origin of financial and currency crises.

It is very likely that in consideration of financial weaknesses arising from an increasing amount of foreign debts a country is experiencing, the foreign and local investors may be forced to review their positions. Capital account

crises usually occur when creditors suddenly lose confidence in the country forcing them to adjust their portfolio balances by withdrawing bank deposits in large amounts, withholding debt rollovers, and selling the securities which were denominated in local currency and acquiring foreign currency assets. Following the adjustments to exchange rate, interest rate and other assets prices, the situation will be further worsened with severe deterioration of the country's balance sheet. Some of the prominent authors whose contributions helped develop a third generation model which led to the emergence of the balance sheet approach to financial and currency crises include Sachs and Radelet (1998), Rodrik and Velasco (1999), Krugman (1999), Corsetti, Pesenti and Roubini (1999), Cespedes, Chang and Velasco (1999), Gilchrit, Gertler and Natalucci (2000), Dornbusch (2001) and Cavallo, Kisseleve, Perri and Roubini (2002).

For the first time, the International Monetary Fund (IMF) (2002) has laid down a systematic analytical framework to explain how financial crises occur due to underlying weaknesses in the balance sheet positions. The balance sheet approach differs from the traditional approach, which is based on the flow variable method such as examining the current account and fiscal balance. In contrast to the traditional approach, it focuses on the sectoral balance sheets and the aggregate balance sheet of the country based on stock variable method. In view of falling foreign exchange earnings, a country may experience difficulties in paying its foreign debts which will create the loss of the confidence of debtors. Any one or several of the sectors in the country may fail to meet its financial obligations such as the government's inability to service its foreign debt

payment or the banking sector's failure to meet the demand for cash withdrawals or the private business sector to oblige a repayment of bank loan and such a situation may ultimately result in a wider scale financial crisis. It has been shown that the balance sheet mismatches arise due to four types of risks, namely *maturity mismatch risks*, *currency mismatch risks*, *capital structure mismatch risks* and *solvency problem risks*.⁹ This analysis is carried out on the basis of sectoral analysis and as such the entire economy is divided into several sectors such as the government, or the central bank, commercial banks, business firms, household sector and thereafter the entire economy as a whole is assessed. In box 6.1, the risks that may arise in respect of each sector are presented. These risks, in some detail, are discussed below.

6.3.1 Maturity Mismatch Risks

The risks from *maturity mismatch* occur when an entity or agency holds long-term assets together with short-term liabilities. Such risks could occur either in foreign currency or domestic currency. In the case of short-term foreign currency debts, if the sum of such debts exceeds the liquid foreign currency reserves, then the agency would be in trouble if it cannot immediately build up its reserves to match the short-term debts. This may cause risks of defaults connected with problems of debt rollover and increase in short-term interest rates. The debt rollover risks occur when lenders are reluctant to refinance the maturing debts

⁹ For a detailed analysis, see Mark Allen, Christoph Rosenberg, Christian Keller, Brad Setser and Nouriel Roubini (2002)

Box 6.1 How Balance Sheet Risks Apply to Different Sectors

Risk Sector	Maturity Mismatch	Currency Mismatch	Capital Structure Mismatch	Solvency (Liability vs. Assets)
Government/Central Bank	Government's short-term hard currency debts (domestic and external) vs. government's liquid assets (reserves) Short-term domestic currency dominated debts vs. liquid domestic currency assets of the government	Government's debt dominated in foreign currency (domestic and external) vs. government's hard currency assets (reserves)	N/A	Liabilities of government and central bank vs. their assets. Assets includes discounted value of future primary surpluses (including seignorage revenue) and the financial assets of the government and central bank, including privatizable state owned enterprises. Liabilities may include implicit liabilities from pension plans as well as contingent liabilities stemming from government guarantees
Commercial Banks	Short-term hard currency debts (domestic and external) vs. banks' liquid hard currency assets (and liability to borrow from central bank) Short-term domestic currency debts (often deposits) vs. liquid assets	Difference between foreign currency assets (loans) vs. foreign currency liabilities (deposits/interbank lines)	Deposits to capital ratio (closely related to capital to assets ratio)	Bank liabilities vs. bank assets and capital
Firms	Short-term debts vs. liquid assets	Debts denominated in foreign currency (domestic and external) vs. hard currency generating assets	Debt to equity ratio	Firms' liabilities vs. present values of firms' assets
Households	Short-term debts vs. household assets	Difference between foreign currency assets (deposits) vs. foreign currency liabilities (often mortgages)	N/A	Liabilities vs. future earnings (on wage and assets)
Country as a whole	Short-term extended debts (residual maturity) vs. liquid hard currency reserves of the government and the private sector* <i>*Foreign exchange reserves of the central bank/government plus liquid foreign currency reserves of banks and firms</i>	Hard currency debts minus hard currency assets* <i>*External debt denominated in hard currency minus external assets denominated in hard currency</i>	Net external debt stock (external debt minus external assets) relative to net stock of FDI* <i>*Flow analogue: Heavy current dependence on debt rather than FDI to finance current account deficit</i>	Stock of external debts relative to both external financial assets held by residents and the discounted values of future surpluses (resources for future external debt service)* <i>*A more complex analysis would need to include remittances of profits on FDI as well. While such remittance are variable, they are another claim on the external earnings of the country as a whole</i>

Note that debts between residents should appear on the sectoral balance sheet. Debts between non-residents, particularly if the debts are denominated in a foreign currency, can be a source of financial difficulty. For example, if the banking system borrows foreign exchange from the household sector and lends foreign exchange to firms, this should appear as a foreign currency assets on the household balance sheet and an equal foreign currency liability on the balance sheet of firms.

Source: Adapted from *Balance Sheet Approach to Financial Crisis*, IMF Working Paper WP/01/210

forcing the debtor to pay the obligation in cash. Also associated with short-term borrowing are the risks arising from upwardly adjustable interest rates. In the case of the Southeast Asian crisis in 1997, prior to the crisis the commercial banks had acquired an enormous quantity of short-term foreign debts and used these debts to facilitate loans to local business sector on long-term basis. As the bubble came to a sudden end resulting a fall in demand for goods and services, the business sector faced with a severe revenue contraction, experienced difficulties to service their loans and defaulted repayments.

6.3.2 Currency Mismatch Risks

Currency mismatch risks are caused when assets and liabilities are denominated in different currencies. Suppose that liabilities are denominated in foreign currencies and assets are denominated in the local currency. On such an occasion, considerably large capital losses can be accrued as a result of a sharp change in the nominal and the real value of the local currency due to devaluation of exchange rate. Unlike advanced developed economies, developing countries are more vulnerable to currency mismatches as public and private sector agencies due to difficulties in borrowing locally often borrow from abroad. Such borrowing for investment often leads to currency mismatch risks. These risks can be passed on to another sector by hedging, yet the risks remain within the same internal environment. As an example, a private investor can be provided a loan in foreign currency by a bank after borrowing from abroad in the same currency. This would reduce the currency risks of the bank. However, this would increase the risks of the private investor if he cannot meet the financial liability in the same currency out of his own revenue flows. The situation will be further

endangered in the phase of a devaluation of the local currency. Most of the recent financial crises were characterised by the experiences in currency mismatches.

6.3.3 Capital Structure Mismatch Risks

Excessive reliance on debts rather than on equity for financing any enterprise or a financial institute may create risks associated with *capital structure mismatch*. As payment from equity is state contingent, profits and dividends fall in bad periods, but debt service payment remains unchanged regardless of market conditions. Therefore, during periods of economic downturn, as firms business profits falls, highly leveraged firms may face difficulties in meeting their debt obligations. Excessive reliance on debt financing including short-term debts is attributed to a weak policy in corporate governance or on account of tax benefits granted to debt-financed companies.¹⁰ After the Southeast Asian financial crisis, evidence emerged that in South Korea and Thailand, heavy reliance on debt financing led to increased capital structure mismatches. In several of the crises hit countries, most of the banks were found to be highly leveraged to the extent that the ratio of capital to risk-adjusted assets remained below the capital adequacy standards as stipulated by the Bank for International Settlements (BIS).¹¹ Whenever there is liquidity and currency shock strikes the balance sheets, the financial institutions should have adequate resources to rely on, but under highly leveraged situation it is not possible.

¹⁰ See Andy Mullineus (2000a)

¹¹ Giancarlo Corsetti, Paolo Pesenti and Nouriel Roubini (1999), "What caused the Asian currency and financial crisis?", *Japan and the World Economy*, 11, 305-373

The US sub-prime crisis provides ample evidence to show how a rising debt obligation could lead to a deeper financial crisis. In the recent debate on the financial crises, a criticism has been levelled on the pervasive misuse of the Modigliani-Miller financial structure irrelevance hypothesis as one of the consequences of the sub-prime mortgage associated debt crisis.¹² A number of authors have shown that over the past several years a numerous financial institutions and corporate firms typically considered debt-financing over equity-financing ignoring financial frictions "because many in the profession were willing to treat the Modigliani-Miller propositions as a reasonable approximation to reality".¹³ Modigliani and Miller developed that, subject to certain assumptions,¹⁴ firm's capital structure in financing its activities does not make any difference which states that a company can finance its activities either using equity or debt. This assertion made a significant impact on the structure of the corporate financing in particular the behaviour of financial institutions in the US. Several trillion dollars' worth of mortgages and other loans were pooled together through a massive securitization process with different durations and risks by simply repackaging existing securities for resale on the market (Coval, Jurek and Stafford, 2009). Such large securitization was made possible due to increasing volume of mortgages associated with the persistent housing demand which tripled the home prices between the mid 1990 and 2006 in the US. The housing bubble brought about a massive credit expansion in particular in the residential

¹² Andrei Shleifer and Robert W. Vishny (2010),

¹³ Anil K. Kashyap and Luigi Zingales (2010), "The 2007-8 financial crisis: Lessons from corporate finance", *Journal of Financial Economics*, 97, 303-305; Tomasz Piskorski, Amit Seru and Vikrat Vig (2010), "Securitization and distressed loan renegotiation: Evidence from the subprime mortgage crisis", *Journal of Financial Economics*, 97, 369-397; Andrei Shleifer and Robert W. Vishny (2010), "Unstable Banking", *Journal of Financial Economics*, 97, 306-318

¹⁴ These assumptions included perfect and frictionless markets, no transaction costs, no default risks, no taxation and both firms and investors can borrow at the same interest rate.

mortgage sector. Credit expansion was also extended to cover the corporate loans, commercial mortgages, and credit card finance. When housing bubble came to an end, mortgages began to default thus declining the prices of mortgage related securities, which included AAA-rated bonds often used as collateral against short-term loans. Since most of the banks maintained a large share of exposure to mortgage-related debt, real lending started to shrink in almost every category. The crisis proved the invalidity of the key important assumption that the value of the underlying cash flows is invariant to their repackaging. Piscorsky, Seru and Vig (2010) demonstrated how securitization affects the probability of foreclosure in turn impacting on the stream of cash flows from the underlying securities. In view of the massive debt obligations arose from mortgage backed securities resulted from complete disregard of the capital structure on account of high leverage, several economists have suggested for regulating procyclical capital requirements and direct regulation of short-term borrowing by banks in order to control systemic risks.¹⁵

6.3.4 Solvency Risks

Solvency risks are created when an entity's total amount of liabilities far exceed its total amount of assets. Under such a scenario, the entity is not in a position to pay fully its total debts even after selling its total assets and hence it has a negative net worth. In regard to the private entity's balance sheets, the concept of solvency can be defined in a most simple manner to reflect its meaning - the total sum of a private entity's assets, valued in an appropriate criterion, must exceed its liabilities. However, in the case of government sector

¹⁵ Andrei Shleifer and Robert Vishny (2010)

and as well as for the country, defining the solvency is a somewhat complex issue. The government's most valuable net asset is its ability to create a fiscal surplus out of its tax collection. The government is solvent when its present discounted value of all future fiscal balances exceed the current stock of net government debt. Based on the same measure, a country as a whole can be considered solvent when its present discounted value of all future balances in the non-interest current account exceeds the current stock of net external debts.

6.4 The Balance Sheet Position of Sri Lanka

On the basis of the foregoing analysis, a stylized facts of Sri Lanka's sectoral balance sheet position is examined in an attempt to evaluate the overall conditions while comparing the changing scenarios between 2003 and 2010. These two periods were randomly selected. The data for sectoral assets and liabilities were obtained after a thorough analysis of the information furnished in the annual reports of the Central Bank of Sri Lanka. These details are presented in summary form in table 6.1 and 6.2. The sector breakdowns were undertaken based on the categories according to which data were classified and furnished in the annual reports of the Central Bank of Sri Lanka. On this basis, the Government, Central Bank, Commercial Banks, and Others, (representing the rest of the economy including business sector and household sector as a combined group) were identified as the main sectors of the economy. The rows in the tables contain the liabilities of each sector while the columns contain the assets. This method provides some indication of the existing stock positions to

Table 6.1

Matrix of Intersectoral Assets and Liabilities of Sri Lanka
(End December 2003)

Values in Rs.mn

Debtor ↓	Creditor →	<i>Government.</i>	<i>Central Bank</i>	<i>Commercial Banks</i>	<i>Others*</i>	<i>Rest of the world</i>	<i>Total</i>
<i>Government.</i>	Total liabilities		44,587	183,824	791,558	843,882	1,863,851
	Short-term		44,587	88,118	366,126	-	498,831
	Local currency		44,587	88,118	366,126	-	498,831
	Foreign currency		-	-	-	-	-
	Medium & long term		-	95,706	425,432	843,882	1,365,020
	Local currency		-	95,706	425,432	-	521,138
	Foreign currency		-	-	-	843,882	843,882
<i>Central Bank</i>	Domestic currency	.5		13,184	85,601	-	98,785.5
	Other total liabilities	569		42,642	-	-	43,211.0
	Short-term	569		42,642	-	-	43,211.0
	Local currency	569		42,642	-	-	43,211.0
	Foreign currency	-		-	-	-	-
	Medium & long term	-		-	-	-	-
	Local currency	-		-	-	-	-
Foreign currency	-		-	-	-	-	
<i>Commercial Banks</i>	Total liabilities	16,410	-		495,125	139,037	650,572
	Short-term	14,806	-		76,014	2,651	93,471
	Local currency	14,806	-		76,014	-	90,820
	Foreign currency	-	-		-	2,651	2,651
	Medium & long term	1,604	-		419,111	136,386	557,102
	Local currency	1,604	-		419,111	-	420,716
	Foreign currency	-	-		-	136,386	136,386
Equity (Capital)	-	-		-	-	75,197	
<i>Others* (business sector and households)</i>	Total liabilities	-	-	556,231		150,225	706,456
	Short-term	-	-	294,802		59,848	354,650
	Local currency	-	-	294,802		-	294,802
	Foreign currency	-	-	-		59,848	59,848
	Medium & long term	-	-	261,429		90,377	351,806
	Local currency	-	-	261,429		-	261,429
	Foreign currency	-	-	-		90,377	90,377
Equity (Capital)	-	-	-		-	-	
<i>Rest of the world</i>	Total liabilities	-	219,000	100,181			319,181
	Currency & short-term	-	84,738	100,181			184,919
	Medium & long term	-	134,262				134,262
	Equity	-	59,426				59,426

*Business firms, savings institutions and individuals, National Savings Bank (NSB), Employment Provident Fund (EPF), insurance institutions, finance companies and others

Source: Central Bank of Sri Lanka

Table 6.2

Matrix of Intersectoral Assets and Liabilities of Sri Lanka
(End December 2010)

Values in Rs.mn

Debtor ↓	Creditor →	Government.	Central Bank	Commercial Banks	Others*	Rest of the world	Total
Government.	Total liabilities		78,376	613,341	1,873,945	2,024,583	4,590,245
	Short-term		78,376	237,973	303,200	240,856	860,405
	Local currency		78,376	237,973	303,200	-	619,549
	Foreign currency		-	-	-	240,856	240,856
	Medium & long term		-	375,368	1,570,745	1,783,727	3,729,840
	Local currency		-	375,368	1,570,745	-	1,946,113
	Foreign currency		-	-	-	1,783,727	1,783,727
Central Bank	Domestic currency	-		39,104	216,549	-	255,652
	Other total liabilities	3,083		104,853	-	382,391	490,327
	Short-term	3,083		104,853	-	357,069	465,005
	Local currency	3,083		104,853	-	-	107,936
	Foreign currency	-		-	-	357,069	357,069
	Medium & long term	-		-	-	25,322	25,322
	Local currency	-		-	-	-	-
	Foreign currency	-		-	-	25,322	25,322
Commercial Banks	Total liabilities	49,458	-		1,596,445	315,505	1,961,408
	Short-term	34,607	-		190,637	17,168	242,412
	Local currency	34,607	-		190,637	3,817	229,061
	Foreign currency	-	-		-	13,351	13,351
	Medium & long term	14,451	-		1,405,808	298,337	1,718,996
	Local currency	14,451	-		1,405,808	-	1,420,659
	Foreign currency	-	-		-	298,337	298,337
	Equity (Capital)	-	-		-	-	237,814
Others* (business sector and households)	Total liabilities	-	-	1,635,676		208,605	1,844,281
	Short-term	-	-	865,273		49,294	914,567
	Local currency	-	-	865,273		-	865,273
	Foreign currency	-	-	-		49,294	49,294
	Medium & long term	-	-	770,403		159,311	929,714
	Local currency	-	-	770,403		-	770,403
	Foreign currency	-	-	-		159,311	159,311
	Equity (Capital)	-	-	-		-	-
Rest of the world	Total liabilities	-	791,565	191,240			982,805
	Currency & short-term	-	243,974	191,240			435,214
	Medium & long term	-	547,591				547,591
	Equity	-	70,920		86,898		157,824

*Business firms, savings institutions and individuals, National Savings Bank (NSB), Employment Provident Fund (EPF), insurance institutions, finance companies and others

Source: Central Bank of Sri Lanka

help understand the sector-specific strengths and vulnerabilities by the end of 2003 and 2010. It is pertinent to give an outline on how the figures in table 1 and 2 were derived. The figures in the first row reflect the government liabilities. For instance, the government debt held by the Central Bank in the form of treasury bills and provisional advances are classified under short-term liabilities of the government in local currency and included as assets of the Central Bank. The next item in the first row gives the total liabilities of the government held by the commercial banks as their assets. This figure stands as SLRs.183.8bn. for 2003 and SLRs.613.3bn. for 2010¹⁶ and includes both short-term and medium-term to long-term held in local currency. It does not appear from the details provided in the Central Bank Annual Reports that the government has any liabilities to the domestic banking sector in foreign currency. The next item in the same row represents government borrowings from individuals, saving institutions, the National Savings Bank, Pension Funds, Insurance Institutions and finance companies. Borrowing from all of these institutions is in local currency.

As for the year 2003, the government's total liabilities (debts) were recorded at SLRs.1,863.8bn. Of this total sum, SLRs.843.8bn or 45% was accounted as long-term foreign liabilities. With regard to the currency denomination of long-term foreign liabilities, it is assumed all these were in foreign currency. There were no short-term liabilities in foreign currency held by the government during that year. As considerably a large portion of the long-term foreign liabilities has a very long grace period, in some cases running for over 30

¹⁶ A detailed picture on the government debt held by institution and term structure can be obtained from the table titled "Outstanding Central Government Debt" in the statistical appendix of the Central Bank Annual Reports.

years with concessionary interest rates, it is assumed that Sri Lanka could well manage the repayment of interest plus amortisation. In 2003, only 2.75% of the long-term liabilities accounted for government's non-concessionary stock.¹⁷ In the same year, the total debt service payment was recorded for SLRs.72.7bn. which represented about 17.5% of that year's government revenues. In terms of receipts from merchandise exports and services, the debt service payment represented 11.6% showing a decline from 13.2% in the previous year. Moreover, the Central Bank held SLRs.85bn short-term foreign reserve assets (as shown in the last row/second column), which was more than sufficient to meet any contingency. In the case of government sector, there was no maturity mismatch.

In the case of commercial banks, this sector's total assets in 2003 stood at SLRs.896.0bn against the liability of SLRs.650.6bn. The sector's short-term assets were recorded at SLRs.538.9bn against the short-term liability value of SLRs.93.5bn. The foreign liabilities were accounted for SLRs.2.6bn in 2003 while the sector held a sufficient amount of short-term assets for the value of SLRs.100bn in foreign currency as can be seen from the last row/third column. It is assumed that all foreign liabilities were denominated in foreign currency. In addition, the sector held sufficient amount of liquidity as its equity capital.

The sector classified as 'others' which represents the household and the business sectors including saving institutions, pension funds, insurance and finance companies accounted for short-term assets valued at SLRs.442.1bn and

¹⁷ According to the Central bank Annual Report for 2003 (page 204), the government's non-concessional stock is relatively small representing 2.75% of the total debt. However, the Central Bank insists in the report that there is a continuing need to limit non-concessional external debt to maintain the external debt sustainability of the country.

long-term assets valued at SLRs.844.5bn.¹⁸ while the sector's short-term liabilities were valued at SLRs.354.6bn., and long-term liabilities stood at SLRs.351.8bn. As the sector's both short-term and long-term assets were in excess of its liabilities, there was no financing gap existed. However, the sector held a short-term liability for a sum of SLRs.59.8bn and a long-term liability for a sum of SLRs.90.4bn both denominated in foreign currency. While the total amount of short-term liability consisted of acceptance credit and other trade credit of a state owned corporation, almost 64% of the total sum of long-term liability enjoyed a government guarantee.

As for the year 2010, the government's total liability (debt) was recorded as SLRs.4, 590bn or 82% of the GDP. Liabilities in foreign currency was recorded SLRs.2, 024.6bn or 43% of the GDP. Of this sum, the short-term liability in foreign currency was accounted for SLRs.240.8bn. In addition to the short-term foreign currency liabilities held by the government, the Central Bank too held liabilities for a sum of SLRs.357.1bn in foreign currency and therefore the overall total short-term foreign currency liabilities stood at SLRs.597.9bn. As the Central Bank held assets in foreign currency for a value of SLRs.791.6bn., both the government and the Central Bank had a net foreign currency position. Moreover, out of the total government external debt outstanding, the concessionary debt accounted for 71% in 2010. The total government foreign debt service payment, consisting of amortization and interest payments in 2010 was recorded at SLRs.104.2bn. This shows a decline as a percentage of earnings from export of goods and services, from 13% in 2009 to 8.6% in 2010. The debt

¹⁸ It is the same method as explained in footnote 10. However, this figure did not include domestic currency of Rs.85.6bn as this sum is largely in mass circulation.

burden on the tax payers had also been reduced as evidence from the debt service payment as a ratio of public revenues. In 2010, this ratio has declined to 12.7% from 17.5% in 2003, however, still higher than 7.1% which was the corresponding figure in 2005.

Although in absolute terms, the quantum of public debt has substantially increased from 2003 to 2010, it has declined as a percentage to GDP from 102% in 2003 to 82% in 2010. In a similar fashion, the total foreign debt has also declined as a percentage to GDP from 46.3% in 2003 to 36.1% in 2010. The reserve adequacy as measured by the ratio of gross official reserves to short-term liabilities increased from 81% in 2009 to 95.2% by end of 2010. This was a result of the increased reserve levels, supported by the financial inflows into the country, surpassing the increase in short-term debt.

In the meantime, international rating agencies raised their rating of the country in 2010. The Standard & Poor's (S&P) raised the long-term foreign currency rating to 'B+' from 'B' and the local-currency rating to 'BB-' from 'B+'. The Fitch Rating Agency has affirmed long-term foreign and local currency Issuer Default Rate at 'B+' and revised the outlook to 'Positive' from 'Stable', while Moody's Investor Services, covering Sri Lanka for the first time, assigned "B1" sovereign rating with a 'Stable' outlook. The above shows that the public debt management has been improved over the past seven years to a credible level.

Table 6.3 gives a summary on the public debt position of Sri Lanka. The total sum of debt in 2010 was almost doubled compared to its level in 2005. The

total sum of foreign debt was more than doubled from Rs.957bn to 2,025bn. over the same period. While the quantum of concessionary long-term loans has

Table 6.3 Structure of the Public Debt (in SLRs.mn): 2003 - 2010

Debt details	2003	2005	2009	2010
Total public debt (in Rs.mn)	1,863,851	2,222,341	4,161,422	4,590,245
Total public debt as a % of GDP	102.3	93.9	86.1	81.9
Total foreign debt	843,882	956,620	1,760,467	2,024,583
Total foreign debt as a % of GDP	46.3	40.4	36.4	36.1
Concessionary long-term foreign debt as a % of total foreign debt	85	96	81	71
Short-term foreign debt as a % of total foreign debt	none	none	10.5	11.9
Public debt service payment (in Rs.mn)	48,452	26,927	134,019	104,240
Public debt service payment as a % of total export earnings	7.7	3.4	13.0	8.6
Public debt service payment as a % of total public revenues	17.5	7.1	19.2	12.7

Source: Central Bank Annual Reports, 2003, 2005, 2009 and 2010

declined from 96% of total foreign debt in 2005 to 71% in 2010, the quantum of short term debt has expanded to 12% from a negligible level over the same period. The danger of this is obvious from the quadrupling of debt service payment from Rs.27bn in 2005 to Rs.104bn in 2010. Moreover, the public debt service payment as a percentage of export earnings has also increased from 3.4% in 2005 to 8.6% in 2010. This scenario shows that Sri Lanka's public debt is alarmingly rising and if not checked well in advance in order to bring it to a manageable level, that may lead to a chaotic situation.

6.5 Capital Market Developments

A major constraint related to the local private sector in Sri Lanka is the underdevelopment of the local capital market resulting in insufficient supply of long-term capital and relatively high interest rates.¹⁹ The narrow investor base and captive sources of large funds pose significant challenges to debt market development. A large share of government securities are held by the Employment Provident Fund (EPF) and the National Savings Bank (NSB), both are government controlled entities. These two institutions hold collectively 43% of the government securities. Some of the positive steps taken for the promotion of government securities include the introduction of Real Time Gross Settlement (RTSG), the Scripless Security Settlement Scheme (SSSS) and the Central Depository System for government securities. Beginning from 2006, it was also allowed foreign investors to invest in a maximum of five percent of the total value of T-bonds outstanding. This has helped to increase in the proportion of marketable government securities to total domestic government debt to a substantial degree.

The narrow investor base and captive sources of large funds such as EPF and National Savings Bank are the main reason for the underdevelopment of the capital market in Sri Lanka. Moreover, as investor and issuer base is also limited this pose an impediment to the development of the capital market through private securities. One of the main characteristics in developing

¹⁹ A report by the European Round Table of Industrialists covering 28 developing countries on the New Opening and Challenges for European Industry published in 1997, ERT, Avenue Henri Jaspar 113, B-1060, Brussels, Belgium

countries as recognized by Fry, which we have referred to in chapter 2 is the insignificant degree of capital market development within the financial sector.²⁰

Though not fully liberalized, from time to time certain transactions in the capital account of Sri Lanka has been opened up.²¹ This section provides a brief synthesis on the modalities and the type of transactions in order to give a better understanding on the degree of openness.

As already explained in chapter 3, Sri Lanka has fully liberalized its inwards investment regime. Foreign residents and companies incorporated abroad can freely invest in most of the areas other than money lending, prawn broking, retail trade with a capital less than US\$1mn and coastal fishing.

Other than these restrictions, there are 10 areas in which only up to 40% of total share capital is permitted to foreign participants.²² These areas have been demarcated for such restrictions on the basis of social, economic and environmental considerations. For instance, a large areas under tea, rubber and coconuts plantations are under the ownership of small-holders having less than 3 acres of lands and therefore there is a legitimate requirement to protect their livelihood, while the gem mining, mining of non-renewable natural resources and domestic timber are subject to various environment issues. Moreover, in the case of air transportation, coastal shipping, arms and ammunition and military hardware, large scale mechanized mining of gems and lotteries are subject to

²⁰ See section 2.2 under the sub-section 2 , "An Overview of Financial System in Developing Countries and its Evolution" pages 19-20

²¹ See annexure II for a chronology of major economic and financial reforms in Sri Lanka from 1977 to 2010.

²² These areas include (a) goods which are subject to internationally determined quotas, (b) growing and primary processing of tea, rubber, coconuts, cocoa, rice, sugar and spices, (c) mining and primary processing of non-renewable natural resources, (d) timber based industries using local timber (e) deep sea fishing (f) mass communication (g) education (h) freight forwarding (i) travel agencies and, (j) shipping agencies

limitations under government regulations. All other sectors are free for foreign investment without any limit on the share of ownership.

There is no restriction on the repatriation of dividends, profits and commission as well as all proceeds upon sale or transfer or liquidation of the foreign investment projects. There are 14 foreign investment zones at present in operation in Sri Lanka. However, there is no barrier to locate investment project any part of the island as the whole country is considered a free trade zone under the BOI law.

In the case of local nationals including companies in Sri Lanka, they are permitted to invest abroad in projects to establish joint ventures, subsidiaries, marketing or branch/liaison offices subject to the commercial viability and approval of the central bank. However, dividends, profit or commissions can not be retained abroad, and they should be repatriated to the island. In the event of liquidation, such proceeds should also be remitted to Sri Lanka.

As overseas subsidiaries of parent companies situated in Sri Lanka provide share options to their employees which involves remittances of foreign currency, the government permits such remittances to facilitate this.

Companies and banks in Sri Lanka are also allowed to borrow from abroad. However, in the case of companies, they are not permitted to borrow short-term, and only medium to long-term loans exceeding 5 years are permitted. Notwithstanding this limitation, however, the Sri Lankan companies engaged in export business can borrow short-term foreign currency loans from local commercial banks in Sri Lanka. This has only a limitation that stipulates that the borrower should have adequate foreign currency earnings to meet their working

and fixed capital requirements. These loans are granted to meet the working and fixed capital requirement of the exporters without restrictions on the duration of the loan period. Repayment of these loans and the interest should be in foreign currency. In the event of default of such loans, the bank can take action to acquire the loan amount by disposing the assets mortgaged as security to recover the funds. If such action cannot satisfactorily meet the entire loan amount, the borrower can pay in foreign currency converting rupee proceeds.

The foreign investment laws also provide provisions for the payment for acquisition of patent rights, copy rights, trade marks and franchises from any entities abroad. This is to encourage the local companies to manufacture locally any product under such arrangements.

Service sector providers involved in construction, consultancy and the like are allowed to take out initial capital upon entering into contracts with foreign parties.

There exist a several type of foreign currency accounts in commercial banks in Sri Lanka to accommodate the right of holding free access to convertible currency. Transactions from these accounts are freely carried out without any limitations. Under this scheme, non-resident locals, residents locals and resident non-nationals are allowed to operate such accounts. Exporters can also maintain such accounts to keep their export earnings once such proceeds are received in Sri Lanka.

Since 1978, the GCEC, the predecessor to the present body of BOI has been in operation for the approval of foreign investment projects. It had the authority to establish and operate Export Processing Zones (EPZ) in the island.

All FDI projects go through this body for evaluation and subsequent approval. During 1967 to 1977, there were only 82 foreign manufacturing firms established in Sri Lanka. Of these, only 13 were engaged in export operations. The total number of foreign firms established after 1978 increased to 2041 by the year 2002.²³ Among them there were 1,341 engaged in export operations. This development shows how FDI activities were heavily focused on export oriented activities. As Sri Lanka offered an attractive incentive package including a ten-year long tax holiday period and developed EPZ structure coupled with guaranteed protection for foreign investment under the constitution, Sri Lanka was able to attract a considerable amount of investment into the island despite the continued civil war situation. Inflows of FDI which averaged less than half a million a year during 1970 to 1977 period, rapidly increased to US\$47mn in 1979. It further rose to US\$100mn in 1991 and since then remained each year above that threshold. Table 6.4 below shows the annual average net flows of FDI, the cumulative totals and the net flows of FDI as a percentage of Domestic Capital Formation for 1970-2010.

As we have pointed out in chapter 2, several authors have demonstrated the existence of a positive relationship between FDI inflows and economic growth. In the case of Sri Lanka, Balamurali and Bogahawatte (2004) using FDI and GDP data from 1977 to 2003 show that FDI is a key determinant of Sri Lanka's economic growth after the 1997 period.

²³ For a concise account on the FDI inflows into Sri Lanka, see Athukorala and Jayasuriya (2004)

Table 6.4 Annual Average Net FDI Inflows, Cumulative Totals and Net FDI as a percentage of Domestic Capital Formation (1970-2010)

(Value in US\$m)

Period	Annual average net FDI Inflows	Cumulative total	Net FDI as a % of domestic capital formation
1970-77	0.47	3.8	0.2
1978-87	38.8	391.9	6.3
1988-97	90.0	1,291.5	4.9
1998-07	248.4	3,776.0	5.4
2008	690.5	4,466.5	6.4
2009	384.0	4,850.5	3.7
2010	435.1	5,285.6	3.1

* Cumulative totals are based from 1970

Source: Annual Reports of the Central Bank of Sri Lanka for 1970 to 2010

6.6 Stress Testing and Scenario Analysis

In order to assess the possible risks that are likely to arise from various shocks, a widely used mechanism is the stress testing exercise. Financial institutions and large business corporations apply this approach to assess the exposure to credit and other risks associated with their portfolios. A clearly defined such model would provide a rational and dependable framework enabling to identify which risks might pose a greatest threat to balance sheets thereby to focus close attention. The outcome of models for stress testing is also useful to assess and to set aside the amount of financial resources required to pay off the damages to cover costs.

Let us now look at the order in which to proceed for stress testing. The first element in this design is to identify the initial shock or a set of combination of several shocks. They have to be chosen from the real world happenings. Bunn, Cunningham and Drehmann (2005) show that shocks can be calibrated from four different ways such as historical, probabilistic, hypothetical and reverse engineering. When a shock is calibrated based on past experience, it is a historical one. A few examples to suggest are events similar to the international financial crisis of 2007-2009; severe drought condition in Sri Lanka in 1987; and the Tsunami in Sri Lanka in 2004. A key advantage of a shock based on historical events is that the extent of the shock could be easily understood as such events already happened. Probabilistic shocks are referred to a distribution of series of past shocks against which one is calibrated. When past experience does not provide a standard example to draw, a stress scenario can be modelled on hypothetical basis too. However, they should be calibrated in such way to resemble real world events. One example to suggest for this type of shock is the falling of an asteroid into a highly populated city centre in a country or an accidental nuclear incident like the Chernobyl disaster. A shock that falls under another alternative category is known as 'reverse engineer shock' where it creates losses that exceeds a particular threshold in order to assess how big the shock is. Once the shock has been introduced, its implications on the macroeconomic environment will be analysed as the second step. We assume, at the first stage of the stress testing that on the basis of past experience, there could be either an exchange rate shock or severe drought condition lasting for a period of over six months or combined both events taking place simultaneously in Sri Lanka.

Further assume that the exchange rate shock is in the form of a depreciation of the currency by 25%. At the second stage, this will have an impact on GDP and also on the price level driving it upward. As currency depreciation will push up all the imported good in price and also public and private foreign debt to rise in domestic currency, such macroeconomic impact will affect the borrowers' balance sheets. Similarly, a sever drought condition would affect agriculture output in particular, rice, tea, rubber, coconuts and vegetable crops, there will be a food deficit for domestic consumption and shortage of crops for export, which have an adverse impact on the trade balance. The changing macroeconomic environment will affect the balance sheets of the farming communities and the entities engaged in export business, a process likely to create defaults in the third stage. Such adverse supply shocks might push interest rates to rise at least in the short-run, which in turn will cause to rising income gearing of some households and business entities. The worse scenario would be the rising arrears and defaults on account of difficulties arising from servicing the debts in the presence of increased income gearing.

At the fourth stage, financial institutions will adjust their loan portfolios taking the defaults into losses after recovering certain part of loans through the acquisition of collateral as security against the mortgage debts. However, it should also be taken into account that the impact of the shock on the macroeconomic environment is such that the value of collateral held has also been negatively affected. Moreover, slowing down in lending by financial institutions will reduce their earnings (stage five). Such a comprehensive account

of events would guide us to finally look at the balance sheets of all the agencies at the final stage.

6.7 Concluding Remarks

Sri Lanka is not required to implement a review mechanism in the form of the balance sheet approach for financial surveillance as it does not fall under the IMF category of emerging market economies. IMF has introduced the balance sheet approach as a self-monitoring mechanism for emerging market economies and also to help the Fund for its work on crises prevention since 2002. These countries were subjected to capital account crises almost two decades back. Moreover, they are also reported to be predominantly vulnerable to sudden capital outflows and sharp changes in investor-confidence, interest rates and exchange rates. Such vulnerabilities arise from the fact that these countries' finances are diversified to a lesser degree than in developed economies. Their domestic currencies are not acceptable for the settlement of external debt and are forced to borrow at short maturities (Allen, 2004)

The central bank of Sri Lanka does not compile the data required for a comprehensive balance sheet monitoring system. "The data requirement for balance sheet approach depends on its specification of sectors and financial instruments, as well as the vulnerabilities being analysed" (Matheieson and Pellechio, 2006). Due to lack of data and information as per the sectors identified in the above model, it is not possible to make a proper and complete analysis on the risks and vulnerabilities arising from balance sheet mismatches. However, based on the information available from the annual reports of the central bank of

Sri Lanka, we have undertaken a somewhat balanced review on the balance sheet position of Sri Lanka.

Our review reveals that Sri Lanka does not face any risks at present as its financial system remains stable while its resilience strengthened during the year 2010, with the resurgence of growth in the economy. A credit growth picked up in 2010 from a contraction in the previous year leading to a revival in financial intermediation. The decline in inflation helped the interest rates to decrease easing the monetary policy. With adequate capital and liquidity buffers and improvements in assets quality and earnings of the financial sector contributed to maintain its soundness. On the other hand, although the commercial banks and the other business sector including the household sector seem to be in sound financial setting, the continuation of irrational investment in loss making public enterprises and certain other wasteful expenditure policies of the government are the driving force behind the enormous accumulation of public debts. Reforms are also needed to rationalize the public service in order to ensure that it delivers an efficient service rather than keeping the sector to deal with joblessness as an employer of last resort. In view of such unhealthy trends, the issues of widening budget deficits, rising public debt, inflationary pressure, instability of the exchange rate, dwindling tax revenue collection and widespread corruption among politicians and business sector should be addressed in a coherent manner to avoid any potential crisis in future. Thus, it is only after making sound progress on macroeconomic environment based on purely rational economic decision making process, Sri Lanka would be in a position to consider greater external openness gradually leading to full capital account convertibility.

Chapter 7

Summary and Conclusion

7.1 Summary of the Thesis

This research has twin objectives; firstly, it focussed on an assessment of the impact of domestic financial development and external financial openness in Sri Lanka and concluded that the liberalization process has made a positive contribution to economic growth. Secondly, it made an attempt to investigate the prospects and impediments for further openness of the external sector leading to the liberalization of capital account. It concluded that Sri Lanka would be able to embark upon a process for further external liberalization only after reaching a healthy and stable economic condition upon adapting sound macroeconomic policies. Sound macroeconomic policies should be such that they need to be designed effectively targeting a steady state growth together with full employment, price stability, stability in government finance, a viable external balance and overall policy transparency. It means Sri Lanka must introduce a set of reforms that include, among other things, curtailment of growing budget deficits, substantial reduction of public debt and also building up an adequate liquid asset buffer.

As can be observed from the literature review in chapter 2, there appears to be a broad difference in opinion on the implication of capital account liberalization on economic growth. One school of thought which supports the capital account liberalization finds strong evidence to show that financial

openness extending to international capital integration has a positive impact on economic growth. Entry of foreign capital to capital-poor developing countries results in greater efficiency in the domestic financial system following the introduction of international norms and standards prevailing in advanced nations. The potential threat emanating from 'flight to quality' presents a compelling need for the adjustments of host nations' environments. Most importantly, capital will not enter all alone. It will accompany superior technologies and skills that benefit the host country production. However, such positive effects of free capital movement are limited to countries which have well developed financial markets in place, strict fiscal disciplines, advanced legal systems and proper accounting practices. The opposing school does not agree that free capital flows would bring all salubrious results. It is argued that the entry of free capital movement will also come with the potentially disruptive effect of capital flight putting the country into recession. There is a wide belief that foreign capital not only leads to volatility in the financial markets, but also more heavily affects the real economy which is undesirable. However, it is a widely acknowledged view that less mature economies with underdeveloped financial markets are highly vulnerable to external shocks after opening up their capital account and are likely to face severe crises arising from volatile capital outflows. In this context, the literature also points to the fact that it is not the FDI flows that show volatility but the short-term flows that can rush into a country and in the same manner abruptly precipitate.

The literature also emphasises on the importance of proper sequencing of the process of capital account liberalization in order to avoid abrupt interruptions from immature reforms. In other words, it is mentioned that putting the macro

house in good order is a precondition for successful financial reform and that a cautious strategy should begin with liberalizing trade and stabilizing the economy, prior to full currency convertibility. Moreover, the lack of improved prudential regulations to monitor banks, inadequate internal supervision and lack of institutional requirement have been identified as some of the key reasons for economic and currency crises and bank failures in certain countries in South America and East Asia in a series of crises in the 1990s.

In that respect, it is obvious from chapter 3 that Sri Lanka's liberalization strategy was carried out with proper sequencing. Until that time, Sri Lanka followed a so-called import substitution policy strategy with severe restrictions on trade, finance and foreign investment. In 1977, adopting an export-led development strategy, the government introduced wide-ranging trade liberalization policies, together with which financial reforms and promoting inward investment also took place. Thereafter, reforms were introduced to rehabilitate the public enterprises, subsequently launching a privatization programme. By 1994, Sri Lanka had fully liberalized its current account. We have demonstrated in chapter 3 how Sri Lanka has been transformed from a largely agricultural product exporting country into a manufactured product exporter. For a long period of time Sri Lanka remained an agricultural product exporting economy dominated by tea, rubber and coconut, earning over 98% of its export revenues. In 1977, its exports of these three crop based products brought in almost 80% of the total export revenues. And the manufacturing sector contributed a mere 14%. Today, its share of agriculture in export earnings has reduced to 24% while the share of earnings from the manufacturing sector has risen to 75%.

Measured in US dollar terms, the export earnings have witnessed a twelve-fold increase from US\$767mn in 1977 to US\$8307mn in 2010. On the basis of the six digit level of HS code¹, the range of Sri Lanka's export base of manufacturing products has expanded from less than 200 products in 1977 to over 2,000 products at present. Such an enormous transformation was the result of trade, financial and investment liberalization which attracted foreign capital and also paved the way for the local entrepreneurs to adapt to a new business environment and competition. The liberalization policies also gave a tremendous boost to emerge and foster a new entrepreneurial class.

Over the past thirty years, there has been a considerable expansion in investment into productive sectors mainly due to the dynamic role played by the private capital. Overall, the investment rose from 15% of the GDP in mid 1970s to 28% of the GDP in 2010. This process has also been facilitated by the growth in domestic savings. National savings in Sri Lanka rose from a level that stood below 12% of GDP in mid 1970s to about 25% of the GDP in 2010. Over the last five years, the Sri Lanka economy grew at a healthy growth rate of 6.4%. Its per capita income which was recorded at US\$142 in 1960 rose to US\$294 over the next seventeen years and again to US\$718 over the next seventeen years in 1997. Over the last thirteen years, it more than trebled from that figure to reach US\$2,368 in 2010. Another positive achievement is the continued fall in the rate of unemployment, which shrank to 4.9% in the same year. Achieving such a low

¹ HS Code refers to the Harmonized System of tariff nomenclature which is also known as the Harmonized Commodity Description and Coding System. This classification system is an internationally standardized system of names and numbers of traded products across countries. It came into effect in 1988 and has since been developed and maintained by the World Customs Organization (WCO) (formerly the Customs Co-operation Council), an independent intergovernmental organization based in Brussels, Belgium, with over 200 member countries.

level of unemployment is a miracle when one compares it to the rate that prevailed in 1976 just prior to liberalization, which was 20%.

Despite the encouraging achievements in the export sector as described above, there are some key issues still remaining to be resolved. One of them arises from the slower phase and insufficient level of export diversification. Another setback in the manufacturing sector is the general absence of vertical integration in the technological ladder. As of present, over 59% of export revenue is accounted for by two product sectors, resulting in an unhealthy scenario. They are the textile and clothing which accounts for over 42% of export earnings, and tea which accounts for 17% of the export earnings. The textile and clothing sector, the largest segment in manufacturing, is heavily dependant on imported inputs. From an economic perspective, a country's exposure to external shocks generally depends on its exports, as export revenue finances its imports and also contributes to investment and growth. Sri Lanka's heavy reliance on two product ranges for a significant share of export earnings makes Sri Lanka highly vulnerable to external shocks.

7.2 Key Contribution and Limitations of the Study

Let us now turn our attention to the key contribution of the study and also examine the limitations we have encountered in our analysis. Turning to the results of the empirical examination that appears in chapters 4 through 6, this research has been carried out to assess the impact of financial liberalization and the role of FDI on the economy from three different perspectives. Firstly, in chapter 4, it focussed on the impact of the financial sector liberalization policies

on savings and investment as hypothesised by McKinnon and Shaw. Secondly, in order to evaluate the broader implications of the partial liberalization of the capital account measured in terms of FDI flows, an empirical examination was carried out by regressing the per capita economic growth on FDI inflows, domestic private investment proxied by bank lending to the private sector, trade openness, and also including a few other variables as control variables. The result was analysed in chapter 5. Finally, an attempt was made in chapter 6 to evaluate the strengths and weaknesses of the economy for greater external liberalization of its capital account in a sustainable manner using the balance sheet approach.

As regards to the implication of financial liberalization on savings and investment, this question was addressed in chapter 4 by a two-front approach with two different models. The first model was developed to analyse the implications of financial liberalization on savings. This was carried out by regressing the time and saving deposits on the GDP as a proxy for income, and the interest rates on deposits. The model applied is an Autoregressive Distributed Lag model (ARDL), a very complex process. The complexity arises as it was a long process with an Unrestricted Error Correction Model (UECM) which includes additionally all the three variables at level with one-period-lagged-form, and thereafter to perform a test for the coefficients of these three variables to examine whether they were co-integrated or not using a bound test method as developed by Pesaran, Shin and Smith (2001). In the case of the interest and savings model, we found that the variables were co-integrated. After examining the impact of the long-run multiplier between income and interest rates and also between savings and interest rates on the basis of the respective coefficients, we went a further step in

performing a so-called Restricted Error Correction Model (RECM) with the inclusion of 'error correction term'. The error correction term is the Ordinary Least Squares (OLS) residual series obtained from the long-run co-integrating regression. Highly satisfactory results were obtained as confirmed by a series of diagnostic tests and highly significant coefficients in respect of both the long-run level model and short-run restricted ECM model. The results confirmed that there was a positive association between the interest rate and the savings, as well as between the income measured by GDP and the savings. The second model was built on regressing the investments as proxied by the total credit extended by the banking sector to the private business sector on its own past values as a regressor, total time and saving deposits, lending rate, and bank borrowing from the central bank and refinancing rate. As the result of the bound test failed to support the long-run association among the variables, we performed a long-run differenced ARDL model to evaluate the coefficients. It shows that while three explanatory variables were significantly different from zero, two (i.e., lending rate and refinancing rate) had incorrect signs (positive sign). This shows that lending is insensitive to the interest rates. According to the conventional economic theory, when the interest rate on lending rises, the amount of borrowing would fall and vice versa, thus pointing to a negative relationship between the lending rate and the quantity of borrowing. The positive relationship as indicated by the positive sign contrary to this phenomenon, may perhaps lead us to suspect the presence of multicollinearity. However, when we performed Ramsey's RESET test, it did not give any indication about specification errors and as such we suspect that this result would have been due to some reason other than multicollinearity. One main

reason for the positive sign for these two coefficients could be explained from the greater amount of relief now enjoyed by the borrowers of credit who were previously subjected to severe constraints by direct controls. The widening banking activities with a broad branch network and lower restrictions on lending contributed in gradually clearing out the vacuum in the credit demand. Another reason could be that the banking sector is experiencing a shift in their credit portfolios from low-risk borrowers to high-risk borrowers. When credit is diverted to high-risk borrowers, naturally the interest rate moves upwards in order to cover the high risks. An increasing trend in the composition of credit being granted to long-term and high-risk economic sectors which are subject to higher levels of interest can also be observed as evidenced from the type of securities against which commercial bank provides advances.² One could also assume that as the central bank continuously reduced the Statutory Reserve Ratio (SRR), this helped banks to expand their credit supply position. The SRR which was recorded to be 12% in 2006, had fallen down to 7.75% by December 2008. Moreover, the banking sector's liquidity level always remained above the statutory minimum liquid level of 20%. For instance, the liquidity level of the banking sector widened from 26.3% in 2004 to 35.2% in 2009. Thus they were forced to charge high interest rates on the lending in order to earn a reasonable level of profits. Therefore, the unexpected positive sign that resulted for the coefficient of the lending rate from the interest and investment model in chapter 4 shows that the borrowings were not responding to the high lending rate. However, there is another reason for the positive sign which can be explained by the so called

² The data on the commercial bank advances by type of security confirm that there has been an increase in the high risk loan component of the banks within their credit portfolios.

'Simpson's Paradox', which refers to "the reversal of the direction of a comparison or an association when data from several groups are combined to form a single group".³ This may have arisen due to the fact that as the lending rates are tabulated by the central bank weekly, based on commercial banks' lending rates offered to their prime customers during the week and thereafter taking the averages for monthly values. When this process has been followed, the significance of each rate with respect to each cache of loan is lost as all loans are added together and expressed in relation to one uniform rate. However, a key contribution of this model is that it provides strong evidence in support of the role of the increased level of saving to raise the bank credit levels.

The empirical results in chapter 5 on the determinants of per capita GDP growth using annual data from 1960 to 2010 support the main prediction derived from our analysis. In a model developed to assess the impact of economic liberalization, we regressed the per capita income growth on seven explanatory variables. Our regressors were net inflows of foreign direct investment, the share of intermediate goods imports, secondary schooling ratio as a proxy for human capital development, trade openness, credit to private sector as a proxy for private capital investment, government expenditure, and inflation. We used annual time series data for the period from 1960 to 2010. The result confirmed that the coefficients of foreign direct investment (*FDI*), trade openness (*TRADOPEN*) and credit to private sector (*CREDIT*) were positive and highly significant at 5%. As

³ Named after Edward Simpson, this paradox says that when data of different groups are combined together, and examined in aggregate form, the correlation that we noticed before may reverse itself. This is most often due to lurking variables that have not been considered, but sometimes it is due to the numerical values of the data. Simpson first described this paradox in a paper, "The Interpretation of Interaction in Contingency Tables" in 1951. However, a half a century before Simpson, Pearson and Yule each observed a similar paradox so Simpson's paradox is sometimes also referred to as the Simpson-Yule effect. Also see Judea Pearl, "Comment: Understanding Simpson's paradox", *The American Statistician*, vol. 68, February 2014, pp. 8-13

the most practical way is to examine the interval estimation, we found that even at the lower end of the interval, the estimates of all these three coefficients remained positive. The coefficients of the intermediate goods imports (*INTGOODS*) and of the inflation (*INF*) were found to be significant at 10%. Yet, in contrast to our anticipations, both of these two coefficients produced opposite signs. While the coefficients of intermediate goods imports (*INTGOODS*) produced a negative sign, the coefficient of the inflation (*INF*) produced a positive sign. When we examined the result of the interval estimates, however, we found that the lower end of the confidence limit produced the correct signs for both coefficients. Therefore, this outcome supports, with 95% confidence that the results at the lower end satisfy the expected signs of both coefficients.

We concluded in chapter 5 that inflows of foreign direct investment (*FDI*), trade openness (*TRADOPEN*) and bank credit to private sector (*CREDIT*) have robust positive impact on economic growth in Sri Lanka. This model was free from heteroskedasticity and serial correlation and had a R^2 of 47% also giving us robust results from all the diagnostic tests.

The final approach we employed was to look at the country's potential vulnerability to external shocks examining the conditions from the balance sheet perspective. This was examined in an attempt to evaluate the prospects for further opening up of the external sector. One major problem we encountered was the data inadequacy as Sri Lanka does not tabulate the required data for a thorough analysis on the basis of balance sheet approach. Under the IMF system, Sri Lanka is not required to strictly follow that approach as Sri Lanka does not fall under the

IMF category of emerging market economies. As such, in the case of our data tabulations, we used the data as far as possible from the annual reports of the central bank of Sri Lanka after a careful investigation. As the data on interest rates payable for the public debt were not available in respect of each cache of foreign and domestic borrowings both short-term, and medium to long-term, we could not perform a risk analysis, which would have been the ideal case in such an analysis. Hence, after separating the whole economy into five major sectors, we carefully examined the assets and liabilities position of each of the sectors in order to scrutinize where risks may lay. Our review was based on 2003 and 2010 data and found that all of the sectors seemed to be healthy and resilient to shocks. However, the continuously rising public debt both domestic and external is a somewhat concerning issue for the future, and if this issue is not dealt with before it reaches a worse scenario, Sri Lanka will be forced to realign its currency with a large devaluation and to curtail its imports and capital outflows from the present level.

7.3 The Policy Implications of the Research

We have demonstrated in chapters 4 and 5 that the policy shift from a more closed economic environment to an open liberal regime in 1977 has turned a new chapter in Sri Lanka's economy. As shown in chapter 4, the empirical results confirmed a strong positive association between real interest rates and savings as well as savings and overall lending by banks, thus supporting the McKinnon-Shaw hypothesis in regard to the positive effect of financial openness on the growth of savings and investment. The empirical evidence from the model in

chapter 5 revealed that mainly three channels such as FDI inflows (*FDI*), trade openness (*TRADOPEN*) and private domestic investment proxied by bank credit (*CREDIT*) played an important positive role in contributing to economic growth, while the parameters for the human capital development (*SSCHOOL*) and government expenditure (*GOVEXP*) were not significant. Since they were key control variables, we left them in as they were found to be important in some other studies as well. The role of the intermediate goods imports (*INTGOODS*) and inflation (*INF*) were not conclusive.

In chapter 6, we have shown that although Sri Lanka's economy is unlikely to face an imminent financial crisis as demonstrated from the balance sheet analysis on the basis of data respectively for two years, 2004 and 2010, there are several areas that need careful consideration before any attempt is made to further liberalize its external sector. The policy implications from the above findings are many and are briefly summarized below.

It is true that since 1977 Sri Lanka's economy grew at a considerably faster rate in response to the liberalization of trade, financial sector reforms and opening up for foreign investment. However, we have observed that the public expenditure did not contribute to economic growth as shown by the highly insignificant coefficient. This could be attributable to the diversion of a considerable share of financial resources towards government debts as a result of the large captive domestic financial sector. As long as the two largest commercial banks, the largest savings bank and the entire pension fund schemes remain under government control coupled with an ever-increasing amount of public debt, this

situation cannot be corrected. The government should therefore take serious note of unhealthy macroeconomic consequences of widening public debt. In this respect, it is recommended that action should be taken in reducing the current level of borrowings to a reasonable level. Moreover, it is essential to focus on adopting a policy strategy with the objective of reducing its heavy reliance on the financial sources through government controlled financial institutions and pension funds that provide captive funds.

As public debt at present accounts for over 80% of the GDP, it crowds out potential private investments that should otherwise be invested in high productive sectors, a process that slows down the economic growth prospects. Moreover, as a considerable share of government spending is directed towards a number of low yielding or highly unproductive sectors, the public expenditure on projects do not generate sufficient revenues to pay off debts. Reducing the level of public debt would pave the way for the private sector to harness a larger share of investment funds for investment in productive enterprises at a reasonable cost.

Moreover, it is also noted that Sri Lanka's persistent trade deficits in the current account is causing concern and putting pressure on the exchange rate. This is partly due to its failure for further diversifying its export sector and making qualitative improvements in the current range of export products. Sri Lanka at present heavily relies on two major product ranges for more than 60% of its export earnings, which is not a healthy scenario. Given the risks and vulnerabilities stemming from external imbalance, it is imperative that Sri Lanka follow a policy directed at reducing the continuously persisting imbalances in the

current account. Such adjustment can be pursued through several policies such as maintaining a viable exchange rate, controlling inflationary pressure, systematic reduction of public borrowings, building up the competitiveness of the domestic industry and agriculture, and encouragement of and assistance to research and development.

Sri Lanka is also required to build up a sizable amount of foreign reserves through its central bank and financial institutions and also rationalize public expenditure policies to accommodate the building up of external resources as a countercyclical capital buffer for any emergency situation. The government should also review the present inadequacies in the revenue collection mechanisms and procedure, both at the customs and inland revenue departments.

There have been several positive steps to promote the market for government securities by way of introducing Real Time Gross Settlement (RTGS), the Scripless Security Settlement System (SSSS), the Central Depository System (CDS) for government securities and the approval for foreign investor participation in treasury bonds (not exceeding a value of 5% of the total). However, these steps are not sufficient as long as there is a narrow investor base and captive sources of large funds. At present, the government controlled National Savings Bank (NSB), Bank of Ceylon, People's Bank, and Employment Provident Fund (EPF) hold a massive share of government securities and as such the investor base for the private securities market is limited. On the other hand, the lack of keenness on the part of corporate sector to use private security portfolios to harness capital is holding up the development of the private debt market. The

limited issuer and investor base in Sri Lanka is an impediment to the development of the private debt market. However, if the corporate debt market can be developed it can diffuse the stresses on the banking sector to a certain extent, as it diversifies the credit risks across the economy. In view of these it is suggested that the relevant authorities take appropriate initiatives to encourage the corporate sector to venture into security portfolios.

Let us briefly sum up the policy implications that can be drawn from our empirical investigation. We have concluded that the economic liberalization programmes have had a positive impact on economic growth. In order to further build up and strengthen the beneficial results from the liberalization programme, as we already discussed above, there are several measures to be introduced. The most critical among them are (a) adopting policy reforms towards financial discipline to prevent ever increasing government expenditure, (b) curtailing the public debt with the objective of reducing its share to the GDP from present level to a more manageable level, (c) measures to narrowing down the widening trade deficits, (d) taking away the downward pressure on the exchange rate and thereby injecting a new life to stabilize the exchange rate, (e) measures to reduce the inflation from current level, (f) maintaining an efficient real interest rate and (g) reforming the public sector enterprises including commercial banks to ensure commercial viability. If the above recommendations could be put into effect over a reasonable time path, with an improved macroeconomic environment, Sri Lanka will be able to acquire more foreign direct investment.

7.4 Suggestions for Future Research

We observed a few shortcomings in the present study due to the lack of readily available data. One such shortcoming is that the empirical results, both in chapters 4 and 5 correspond only to the effects of one year as the shortest period. We have elaborated on this issue in our concluding remarks in chapter 4. It is not possible to work out the very short-run effects, i.e., quarterly impact out of a sample of annual data series as annual data cannot capture any seasonal effects. Perhaps, better results could have been obtained if the data were drawn from quarterly series.

Moreover, the positive sign resulted in the case of lending rate in equation 2 in chapter 4 contradictory to the fundamental tenant of the theoretical explanation that there should be a negative relationship between lending rate and borrowing seems to be a conundrum at once. The interpretation of such a sign is that borrowing is invariant to the lending rate. Yet, it may be construed to the fact that unresponsiveness to changes in the interest rate were due to the continuously declining statutory reserve ratio, allowing the banks to expand their lending, or that the phasing out of financial restrictions after a prolonged period of repressive regime had increased the entrepreneurial enthusiasm, or as a result of the combination of the two. In support of our conclusion, we find similar evidence from a recent study by Sharp and Sharez (2013) among the US companies. They conducted a study through the Global Business Outlook Survey in 2012 to ascertain the sensitivity of 550 firms to interest rates in investment decision making. They analysed the responses by the Chief Financial Officers (CFOs) from

these companies and found that most claim to be quite insensitive to decreases in interest rates and only mildly more responsive to interest rate increases.⁴ Although there is no direct relevance of this outcome to the situation in Sri Lanka, the lesson we could learn from this is that in some cases, insensitivity of the interest rate to investment could be accepted as an argument.

Moreover, it may also be argued that it was not due to insensitivity to changes of interest rate, but due to shifting in the total lending composition between low yielding activities to high yielding activities in response to changes in interest rates or inflationary expectations at different time periods over the 50-year long span of time. Future research may be directed to examine the exact causes for the insensitivity of the borrowing to interest rate, implications of the declining reserve ratio and the inflationary expectations on the level of bank lending, and to establish in detail the causes of the interest rate behaviour.

The empirical results in chapter 5 have yielded strong evidence in support of growth impact of economic liberalization. Among the seven explanatory variables, which included the control variables, the coefficients of three of them in our regression produced highly significant results showing positive association with per capita growth.

In chapter 6, we have examined the sectoral balance sheet risks arising from the existence of possible mismatches between assets and liabilities using the balance sheet approach and concluded that none of the economic sectors in Sri

⁴ This survey known as the Duke CFO Magazine Global Business Outlook Survey is a regularly conducted every quarter of each year since 1996 collecting response from financial executives of firms with sales ranging from less than US\$25mn to more than 10bn in the United States.

Lanka face payment risks in the immediate future. However, due to the lack of data, we could not examine the potential risks in the event of an exchange rate adjustment, domestic credit risk, interest rate rise or a considerable decline in export earnings due to sudden changes in market environment. We made certain observations and suggestions that included, among other things, the need for limiting the public debt and bringing it down to a manageable level, controlling inflationary pressure and maintaining exchange rate stability in order to further stabilize the economy. It is also recommended that these need further examinations by the application of a stress testing exercise.

Annexure I. Summaries of Selected Studies on Financial Liberalization and Economic Growth

Author, year and publication	Countries studied and the period covered	Methodology employed	Analysis in brief	Key findings
<p>Alfaro, Laura and Eliza Hammel (2007), "Capital flows and capital goods". <i>Journal of International Economics</i>, 72, 128 - 150</p>	<p>Data on both imports of machinery mainly, non-electrical equipments, electrical equipments and instruments industries and stock market liberalization in the period between 1980 and 1997 for a broad sample of 79 countries were used. The samples excluded 12 major machine exporting countries (namely, the USA, the UK, Japan, Germany, France, Sweden, Italy, the Netherlands, Switzerland, Canada, South Korea and Singapore) as they contribute over 72% of world's machine exports.</p>	<p>Panel regression</p>	<p>The objective of the study is to examine the contribution of international financial liberalization on economic growth focusing on one channel – the impact on imports of capital goods. Authors focus on the particular relation between stock market liberalization which eases access to external capital more cheaply, and the import of capital goods which helps contribute to the transfer of advanced foreign technology. The increase in the share of capital goods imports augment the efficiency of the liberalizing countries surpassing the effect of increased investment, a key contributor to economic growth. Authors were convinced that data on machinery and equipments investments provides a better proxy for true productive investment than national accounts investment statistics, which includes residential construction.</p>	<p>After controlling trade liberalization, other reforms, and fundamentals, authors find evidence that stock market liberalizations are associated with a significant increase in imports of capital goods. The evidence further suggests that financial integration contributes to easing the access to foreign funds and bring down the cost of capital. The low level of import of machinery and equipment in poor countries was due to credit constraints or high cost of capital. Now due to lower cost of capital after stock market liberalization, some projects which were not feasible before liberalization become profitable, which encourage firms to invest in new machinery. Therefore it is shown that potential growth benefits are realized through the acquisition of imported machinery.</p>
<p>Alfaro, Laura, Sebnem Kalemli Ozcan and Vadym Volosovych (2008), "Why doesn't capital flow from rich to poor countries? An Empirical investigation." <i>The Review of Economic and Statistics</i>, 90, 2, 347-368</p>	<p>Using descriptive statistics on 81 countries during 1970 - 2000 from the IMF data; 58 countries between 1970 - 1997 and 56 countries between 1970 - 1998 from two different sources These countries constitute the base samples for each data set.</p>	<p>Cross-country OLS</p>	<p>Authors review the empirics of various explanations on the sluggish capital flows from rich to poor nations during 1970 to 2000, a tendency that has gone against the standard neoclassical theory predicting uninterrupted such flows. According to the general assumption that in countries employing labour and capital as factors of production producing same goods with same constant return to scale technology, differences in income per capita reflect from differences in capital per capita. Under such a scenario, if capital flows is</p>	<p>The empirical evidence indicates that for the period 1970 - 2000, institutional quality is the leading causal variable explaining the "Lucas Paradox." The findings also generate implications for the patterns of international flows during the last century. They maintain that it is the differences in institutional quality among the poor and rich countries that affects the capital flows. The "Lucas Paradox" has received a lot of attention as the different explanations behind the puzzle have different and sometimes opposite policy</p>

allowed freely new investments would take place only in poorer countries until such time return to capital equalizes in all countries. On a comparison of the US and India, Lucas found that under this assumption marginal product of capital in India should have been 58 times higher than the US and therefore all capital would flow from the US to India. Following extensive studies it was shown that the "Lucas Paradox" would disappear with the specific modification of the standard neoclassical theory in production. Authors categorize the theoretical explanations of Lucas Paradox in to two groups, the first one being the differences in fundamentals such as technological differences, missing factors of production, government policies and institutional structure and the other focusing on international capital market imperfections mainly sovereign risks and asymmetric information. Authors say that the objective of the paper is to investigate the role of different theoretical explanations for the lack of flows of capital from rich to poor countries in a systematic empirical framework.

responses. Their results suggest that policies aimed at strengthening the protection of property rights, reducing corruption, increasing government stability, bureaucratic quality and law and order should be on the top of the list of policy makers seeking to increase capital inflows to poor countries. Authors also state that though recent studies emphasize the role of institutions in achieving higher levels of income, they are silent on the specific mechanisms that contribute towards this objective and suggest that on the basis of their results that foreign investment might be a channel through which institutions affect long-run development.

Ang, James .B. (2009),
 "Financial development and the
 FDI–growth nexus: the
 Malaysian Experience".
Applied Economics, 41, 1595 -
 1601

Annual data for Malaysia
 from 1965 to 2004

Time Series using
 VECM, Johansen
 cointegration,
 Granger causality
 and
 PCA

By controlling for the level of financial development, this study makes an examination on the FDI-growth nexus and financial development indicators in Malaysia to examine the growth impact. specified as below;

$$G = f(F, I, I \times F)$$

where G denotes per capita real GDP,
 I denotes FDI and $I \times F$ the
 interaction among the two of these

The results indicate that there is a positive association of FDI and financial development with output in the long run. Moreover, the impact of FDI on output is augmented through financial development. However, they find evidence to support that causality results suggests that even though FDI increased over years, policy changes do not appear to have led to higher economic growth. Instead, a reverse causality from output growth to FDI

Ang, James B. (2009),
"Foreign direct investments and
its impact on the Thai economy:
The role of financial
development".
*Journal of Economics and
Finance*, 33, 316 - 323

Annual time series data for
Thailand from 1970 to 2004

Time Series data -
Unrestricted ECM
estimator.

variables. Financial development is measured by a composite index, using a principle component analysis which is a summary measure of four financial development indicators, viz., banking density, ratio of M3-M1 to nominal GDP, ratio of commercial bank assets to the sum of central bank plus commercial bank assets and the ratio of banks claims on private sector to nominal GDP.

growth is observed.

The purpose of the study is to examine the role of foreign direct investment (FDI) and financial development in Thailand as a case study to understand the effects of foreign direct investment on output through financial development. The author reminds that according to existing literature on FDI, inflows of FDI can exert a positive influence on economic growth through transfer of new technology and spillover efficiency. However, without absorption capacity of the recipient country, such positive impact does not take place. Therefore, the presence of developed financial markets is supportive of FDI inflows.

The results show that financial development stimulates economic development whereas foreign direct investment impacts negatively on output expansion in the long run. However, an increased level of financial development enable Thailand to gain more from foreign direct investment, suggesting that the impact of foreign direct investment on output growth can be enhanced through financial development.

Ang, James B. and Warwick J.
McKibbin (2007),
"Financial liberalization,
financial sector development
and growth: Evidence from
Malaysia", *Journal of
Development Economics*, 84,
215-233

Annual data for Malaysia
from 1960 to 2001

Time Series using
VECM, Johansen
cointegration,
Granger causality
and
PCA

The purpose of the study is to examine whether financial development leads to economic growth or other way around in an open economy like Malaysia. Author says that following the development of new theories of the endogenous economic growth, there has been a growing enthusiasm in focusing on the role played by financial development in the process of economic development. A fundamental question in the literature is that whether it is finance to growth or vice versa, in the long-run. Although the positive role the finance plays in

The findings suggest that both financial repressionist policies and real interest rates affect financial deepening negatively. As reflected from the causality results, the findings hold the view that growth of output leads to financial development in the long run. However, it does not support the hypothesis that a bank-based financial system brings into motion the long-term growth in the real sector. Finance and output are positively related in the long run. Therefore, the results support for the demand-following hypothesis that

Aoki, Kosuke, Gianluca Benigno and Nobuhiro Kiyotaki (2010)
“Adjusting to Capital Account Liberalization”
CEPR Discussion Paper No. DP8087

Small open economy theoretical model

A complex statistical approach

economic development has been dealt adequately in the literature, not much attention has been given to how financial repression impacts on the financial development and its implications on finance growth nexus. Author finds evidence in support of Robinson's view that “where enterprise leads finance follows” and attempts to provides some reasoning for the absence of causality running from finance to growth in the context of Malaysian economy.

economic growth leads to higher financial development but not vice versa.

They come up with a theoretical explanation as to how an economy adjusts to the liberalization of international financial transaction or better known as capital account liberalization. Authors say that it is almost accepted among the economics profession that the trade liberalization brings about greater efficiency in resource allocation, yet they have differences of opinion on the costs and benefits of capital account liberalization. Standard microeconomic theory says that international financial transaction is another form of international trade in goods but which takes place on different dates and therefore capital account liberalization should have benefits similar to trade liberalization. Disagreement to this explanation arises from the fact that there is a fundamental difference between the inter-temporal exchange of present goods and claims to future goods *and* intra-temporal exchange of different goods at least in one respect. Unlike intra-temporal exchange, inter-temporal exchange requires the commitment that the agents will provide goods or their purchasing

Their conclusion is that financial integration would not give benefits to workers and entrepreneurs unless the domestic financial system is well developed. Reason for this is that within an under developed financial system there exist severe borrowing constraints both from domestic and international sources. If wages are suppressed with underdeveloped financial system, that would create an environment for the economy to experience deteriorating total factor productivity and long-run stagnation. Under suppressed interest rates, liberalization would lead to capital outflows and significant number of labour to be unemployed during the adjustment period. Within an underdeveloped financial system capital account liberalization will generate such costly adjustments as funds are used by unproductive firms and producers located outside the country and not by productive local enterprises.

Arestis, P. and P.O. Demetriades, (1997), "Financial development and economic growth: assessing the evidence". *Economic Journal* 107: 783–799.

Quarterly data for Germany and the USA for the period from first quarter of 1979 to fourth quarter of 1991

Time Series using Johansen cointegration, VECM and weak exogeneity tests

power in the future. When individuals' ability to hold their commitments has limitations, the authors say that then there cannot be equivalence of inter-temporal trade and intra-temporal trade. Moreover, due to the restrictive nature of the collateralizable assets for foreign credit there is a wider gap between collateralizable assets for international borrowing and domestic borrowing. As such the relative tightness of international borrowing affects how much the domestic economy is financially integrated into the international financial market. The authors say that considering the limitations of commitments, there is a need to investigate the effects of capital account liberalization.

The paper presents an analysis of the reexamination of empirical evidence on the relationship between financial development and economic growth in order to identify outstanding issues and to suggest how to overcome them. Their examination was carried out from two perspectives. Firstly they examined how and to what extent the financial system can contribute to the process of economic growth. Secondly, they examined whether financial liberalization can stimulate investment and growth. Their approach has focused on stock market capitalization and economic growth. They discuss about the sequencing and pre-conditions, which they consider as root of successful reforms. While there are two different econometric methodologies to examine the financial development and economic growth namely cross-country regression and time -series regression,

They state that oversimplified nature of results obtained from cross-country regressions do not accurately reflect individual country circumstances such as the institutional structure of financial system, the policy regime and the degree of effective governance. Hence they employ a time-series methodology on individual countries and the results reveal substantially varying outcomes across highlighting the constraints of cross-country analyses. In the case of Germany, causality runs from financial development to real GDP whereas for the case of the USA, a reverse causal pattern is revealed.

Arestis, P., P.O. Demetriades, and K.B. Luintel, (2001), "Financial development and economic growth: the role of stock markets". *Journal of Money, Credit, and Banking*, 33: 16–41.

Annual data for 5 developed countries viz., Germany, the USA, Japan, UK and France for the period from 1972 to 1999

Time Series using Johansen cointegration, VECM and weak exogeneity tests

they present evidence in support of the time-series approach as a fruitful analytical approach. They are of the view that as cross-country regression involves averaging out variables over long time periods (typically over three decades) and using them in cross-section regressions with the objective of explaining cross-country variations of growth rates, only the investigator is able to estimate the average influence of the determinants of economic growth. They share the views expressed by others that convergence tests obtained from cross-country regressions are likely to be misleading because the estimated coefficient on the convergence term is contaminated due to asymptotic bias. They extend the result of one of their previous studies by augmenting the relationship between economic growth and financial development by inclusion of indicators of stock market development and volatility.

The purpose of their study is to examine the relationship between stock market development and economic growth, controlling for the effects of banking system and stock market volatility. They observe a growing importance of stock markets around the world which provides new avenues of research into the relationship between financial development and economic growth. The authors state that though various stock market indicators have been found to explain part of variation in economic growth rates across countries, in some cases over and above the effects of banking system, these results have to be viewed with some caution due to skepticism over the robustness of

Positive result established in favour of bank based financial system The results indicate that overall both banks and stock markets promote economic growth. However, the contributions from stock markets are relatively small fraction of the banking system. The findings also suggest that stock market volatility has negative real effects in Japan and France while in the UK stock market volatility exerted negative effects on both financial development and output.

Arestis, P., Demetriades, P.O., Fattouh, B. and Mouratidis, K. (2002), "The impact of financial liberalization policies on financial development: evidence from developing economies". *International Journal of Finance and Economics*, 7: 109–121.

Annual data for six developing countries, i.e. South Korea, the Philippines, Thailand, Greece, India and Egypt for the period 1955–1997

Time Series using VECM, Johansen cointegration and PCA and a short-run VAR in error correction form to arrive at short-run behaviour.

econometric results obtained from cross-country growth regressions. The presence of endogeneity specifically in cross-country relationship between stock market development and growth considerably weaken the estimated effects of stock market indicators. Hence time series methods could provide useful insights into differences of this relationship across countries and may shed a light on important details that are concealed on averaged-out results.

They estimate the effects of financial restraint policies such as restrictions on deposits and lending interest rates and reserve and liquidity requirements on financial developments, controlling for the effects of economic development. In the regression they keep the policy variables to a minimum to prevent multicollinearity. Hence, controls on deposits and lending rates were merged into one summary measure. Likewise, due to high correlation between reserve and liquidity requirements, one summary measure is used. However, in the case of countries where there was no liquidity requirement, the reserve requirement is used as a separate variable. Financial development measured by the ratio of nominal liquidity to nominal GDP is another variable. Economic development is measured by the ratio of real GDP to population. The real rate of interest is constructed by subtracting the expected inflation rate, proxied by the current GDP deflator, from the nominal rate of interest.

The results show that there is a considerable variation in the magnitude of effects of financial liberalization across the six countries under investigation. It was also observed that in four out of the six countries examined, there is a positive and significant effect of real interest rate. The results also indicate that institutional factors such as quality of prudential supervision by legal rules and law enforcement which vary considerably across the sample countries may be playing a critical role in determining how financial policies affect the process of financial development

Atje, R. and B. Jovanovic, (1993), "Stock markets and development". *European Economic Review* 37: 632-640.

Annual observations for 94 countries during the period 1960-1985

Cross country regression using ordinary least squares (OLS). In the case of bank credit they use a sample of 80 countries for the period from 1970 to 1988 and in the case of stock market development, the sample is much narrower with 40 countries from 1980 to 1988

Their research question is to examine whether financial development affects the level and/or the growth rate of economic activity. Their search for growth effects is examined by applying Greenwood-Jovanovic (GJ) model (1990) and for the level effects is examined by the Mankiw-Romer-Weil (MRW) structure (1992). The GJ model contains two reasons for higher level of return on investment under financial development, first by investor insurance against idiosyncratic risk and second by more detailed information on projects raising the rate of return to economy-wide investment. For level effects, they maintain MRW assumptions that growth of population and technology take place exogenously and also taking the model's three form of capital, viz. financial, physical and human.

The study reveals that stock markets have a positive level impact and growth effects on the economy. Nevertheless, a comparable effect of bank lending is not seen. They say that although it is surprising to note the existence of such a differential effect if it is true it is even more surprising that more countries are not developing their stock markets as quickly as they can as a means of speeding up their economic development.

Azfar, Omar, Thornton Matheson and Mancur Olson (1999), "Market- Mobilized- Capital", Center for Institutional Reform and the Informal Sector, *Working Paper no. 233*, University of Maryland, College Park

Annual data for 39 countries during the period 1976 - 1997

Cross country regression using ordinary least squares (OLS), and Instrumental Variables (IV)

Authors are of the opinion that the level of capital mobilized by the market affects economic growth. The presence of market augmenting governments, which is measured by both statutory law and law enforcement, is essential to ensure that such an environment prevails. There is a positive correlation between stock market and banks with the future economic growth which is associated in turn with the presence of better enforceable corporate and collateral laws. The laws that protect lenders and the quality of law enforcement influence the size of the private lending in an economy and more particularly the quality of law enforcement affects the size of the debt market. They use a measure of market mobilized capital as the sum of debt and equity. The debt market measure is the

They demonstrate that a country's collateral and corporate laws designed to protect investors in debt and equity respectively contribute significantly towards economic growth. The findings suggest that if reforms of commercial laws are carried out sensibly, that will give a considerably large payoff. As an example, the coefficient suggests that Argentina could have had a per capita income US\$317 higher in 1995 if commercial laws were reformed in 1987. In the absence of such reforms, Argentina's foregone sum of the GDP is estimated to be US\$11bn in 1995. However, much larger foregone incomes are seen in the case of developed countries. A similar calculation drawn for the US gives a figure of US\$1,845 per capita shortfall or a loss of US\$424bn to the GDP in

Beck, Thorsten, Asli Demirkunt, Luc Laeve, Rose Levine (2005), 'Finance, Firm Size and Growth', *World Bank Policy Research Working Paper 3485*

A sample of 44 countries and 36 industries in the manufacturing sector

Ordinary Least Squares (OLS) regressions and Instrumental Variables (IV) regressions to address the issue of endogeneity of financial development

total credit by commercial and deposit taking banks to private sector divided by GDP, and the equity measure is the average value of listed domestic shares on domestic stock exchanges in a year divided by GDP. They are of the view that the distinction between capital that is allocated via market and non-market means is more important than the distinction between debt and equity. In support of their argument they suggest that Modigliani-Miller hypotheses which says that a firm's financial structure has no effect on its cost of capital.

The objective of the paper is to empirically test whether financial development enhances the growth of small firms more than the large firms. They find only a little focus in the literature on this. The paper also examines the scale of impact of financial liberalization - whether it is felt disproportionately or equaproportionately on small and large firms. They examine each industry's technological firm size rather than considering each industry's technological dependence on external finance to measure industry's technological composition of small firms relative to large firms. Their methodology is developed so as to ensure the interaction between each industry's technological small firm share with a country characteristic and the level of financial development.

1995 alone. Authors however, admit that despite the growing findings on the subject in their paper and previous papers, the state of knowledge about the links of commercial law to financial development and economic growth are still in a premature state.

The study reveals that financial development improves the growth of industries more dominated by small firms than large-firms by relieving growth constraints of small firms. It contributes to the literature on the mechanisms through which financial development boosts aggregate economic growth. Authors say that it is critically essential to identify the channels connecting finance and growth to better understand the finance-growth nexus and also to assess whether finance causes growth, or whether financial development is simply a characteristic of successful economies. The findings support that financial development disproportionately contribute to the growth of small firms relative to large firms that under-developed financial systems are particularly detrimental to the growth of firms with less than 100 employees.

Beck, T. and Ross Levine (2004),
"Stock markets, banks, and
growth: panel evidence".
Journal of Banking and Finance
28: 423–442.

A panel data set on 40
Countries averaged over five year
intervals from the period
1976–1998

Panel data OLS
and GMM

They have employed new panel
econometric techniques together with
new data in order to avoid shortcomings
in the existing growth studies to re-
examine the relationship between stock
market bank and economic growth.
They examine whether measures of
stock market and bank development
each have a positive relationship with
economic growth under certain
conditions namely,

- 1) controlling for simultaneous
bias, omitted variables bias
and routine inclusion of
lagged dependent variables in
growth regressions,
- 2) moving from quarterly or
annual data to data averaged
over five years to abstract
from business cycle
influences,
- 3) using a new system, a panel
estimator that eliminates the
biases associated with the
difference panel estimator,
- 4) assessing the robustness of the
results using several variants
of the system estimator

and finally,

- 5) controlling for many other
growth determinants.

The use the GMM estimators to assess
the relationship between stock market
development, bank development and
economic growth in a panel.

The results strongly reject the view that
overall financial development is
unimportant or harmful for economic
growth and also the data reject the
hypothesis that financial development is
unrelated to growth. Stock market
development and bank development
jointly enter all of the system panel
growth regressions extensively using
alternative conditioning information
sets and alternative panel estimators.
Therefore, after controlling for country
specific effects and potential
endogeneity, the data are consistent
with theories that stress an important
positive role for financial development
in the process of economic growth. In
regard to their assessment on the
independent impact of both stock
market development and bank
development on economic growth, they
find across different estimation
procedures and across different control
variables that both stock markets and
banks enter the growth regression
significantly.

Beck, T. and R. Levine (2002),
"Industry growth and capital
allocation: does having a market-
or bank-based system matter?"
Journal of Financial Economics,
64: 147–180.

Annual data on a panel of 42
countries and 36
manufacturing industries for
1980 to
1990

OLS and panel
data
techniques

The debate on the relative merits of bank
based and market based financial system
is a century old phenomenon. Several
authors stress the advantages of bank
based financial systems over market
based systems in financing existing

The results support the view that use of
external finance heavily grow faster in
countries with higher overall levels of
financial development and efficient
legal systems. Furthermore, the findings
confirm that the overall level of

Beck, T., Levine, R. and Loayza, N. (2000),
“Finance and the sources of growth”, *Journal of Financial Economics*
58: 261–300.

Annual data for 77 countries for the period 1960–1995

Panel data - IV and Generalized Method of Moments

businesses in their expansion, in promoting the creation of new business activities and the efficient manner in which capital is allocated. Their study examines bank-based, market-based, financial services and low and finance theories of financial structure in an attempt to determine a few specific questions such as 1) whether industries that depends heavily on external finance or are R&D intensives grow faster in bank-based or market-based systems 2) likelihood of creating new establishments in a bank-based or market based systems 3) what financial structure would allocate capital more efficiently. Alternatively, the question to be determined is whether it is the overall level of financial development or the legal system that explains industrial growth patterns, the emergence of new establishments and the capital across countries.

The authors make an empirical assessment on the relations between the level of financial intermediary development and (1) private saving rates (2) physical capital accumulation (3) total factor productivity growth and (4) overall economic growth. They maintain that beside human and physical capital, total factor productivity is a key contributor to GDP growth that explain the cross-country differences, which is again influenced by the differences in the level of financial intermediary development what they term the sources of growth. They employ two econometric techniques to avoid simultaneity bias, first technique is a pure cross-sectional instrumental variable estimator and the second

financial development along with effective contract enforcement mechanisms foster new establishment formation and more efficient capital allocation. One key revelation is that there is no support for either the bank-based or the market-based views. Scaling a country on the basis of bank-based or market-based does not help explain industrial growth patterns or the efficiency of capital allocation. Briefly, the results are broadly consistent with the view that distinguishing countries by overall financial development and legal system efficiency is more useful than distinguishing countries by whether they are relatively bank-based or market-based.

Study provides strong evidence in support of robust and positive correlation of the development of financial sector with both real per capita GDP growth and total factor productivity (TFP) growth which feeds through to overall GDP growth. Private credit is significantly correlated with long-run growth at the 5% significant level. Moreover, the study also provide some support for the positive role of financial development on both capital accumulation and private saving rate; nevertheless, these links are statistically weaker

Bekaert, Geert, Campbell Harvey and Christian Lundblad (2006), "Growth, volatility and financial liberalization" *Journal of International Money and Finance*, 25, 370-403

Macroeconomic and financial data for two different country samples, one with 95 countries and the other with 40 countries during the period from 1980 to 2000

Generalized Method of Moments (GMM) estimator

technique is a dynamic Generalized-Methods-of-Movements (GMM) panel estimator. Their instrumental variable is the four legal families such as the English common law countries, French, German and the Scandinavian civil law countries as the legal origin helps shape the financial development.

They examine the effects of the liberalization of equity market and capital account on real consumption growth variability. Authors say that if the liberalization provides better way of international risk sharing, then there will be reduced consumption growth volatility and, if the liberalization leads to financial fragility and crises, then there will be increased volatility. They test the proposition as to whether equity market liberalizations increase or decrease consumption growth volatility. They use two different samples. In the first sample, liberalizing countries are included. In the second sample, countries that are always open or closed to foreign investment are included. The authors are of the view that the second sample gives further insights on the cross-sectional determinants of macroeconomic volatility, including the degree of capital account openness. Since that liberalization may affect a country in terms of both the variability of the shocks and the country's ability to smooth shocks over time, authors state that they also examine the impact of liberalization on GDP growth volatility and on the ratio of consumption growth volatility to GDP growth volatility.

The evidence shows that the equity market liberalization did not significantly increase or decrease consumption growth volatility while in many cases consumption growth volatility decreased. The highest decline in consumption growth volatility was observed in countries that liberalize their equity markets at a time when their capital accounts are relatively open. Moreover evidence support the proposition that capital account openness is not associated with higher variability in consumption growth. When measured using a criteria for adjustments for the degree of openness of the capital account, the higher degree of openness indicate lower variability in consumption growth. Their research suggest that a fragile economy with low quality of institutions and poorly developed financial sector, equity market liberalization may not reduce real variability in consumption growth at all and may even worsen the situation.

Bell, C. and Rousseau, P.L. (2001), "Post-independence India: a case of finance-led industrialization?" *Journal of Development Economics* 65: 153–175.

Annual data for India from 1951 to 1995

Time Series using Johansen cointegration, Vector Auto-regression, Vector Error Correction Models, Granger causality and IRA

The study gives a brief sketch on the relevant features of India's financial and economic development since 1951 focusing on the economic strategy that has been followed and to the institutional environment in which the financial sector emerged to present day's form. It then examines whether financial intermediation have contributed in playing a key role in influencing India's economic performance. The study also asserts that for all the regulation and repression of the financial system at least some of the funds allocated by intermediaries to financing of projects promoted the long lived capital more effectively than did aggregate consumption. Since second half of 1980s when financial system was somewhat liberalized, contribution of financial system for growth may have increased.

The results indicate that (i) the financial sector was responsible not only in promoting aggregate investment and output, but also in the steady shift toward industry that has largely contributed to India's development; (ii) the channel through which it was achieved was the debt accumulation rather than improvements in total factor productivity; and (iii) contribution of the financial sector went beyond the passive support of fiscal policy. However, the study also maintains that financial sector has not contributed to increasing of total factor productivity in the manufacturing sector.

Benhabib, J. and Spiegel, M.M. (2000) "The role of financial development in growth and Investment", *Journal of Economic Growth* 5: 341–360.

Annual observations for Argentina, Chile, Indonesia and Korea from 1965 to 1985

Balanced Panel of five year period from 1965 to 1985 using two alternative specification for growth accounting. First type is the standard Solow neo-classical growth model and the other is a endogenous growth model GMM technique was used

This study decomposes the well-documented relationship between financial development and growth and examines whether financial development affects growth solely through its contribution to growth in "primitives," or factor accumulation rates, or whether it also has a positive impact on total factor productivity growth. In order to test the role of financial development in economic growth, they introduce a different set of specifications for base-growth equations. Thereafter they introduce the indicators of financial development into the base-growth specifications and examine whether these specifications contain any further explanatory power, with and without allowing for country-specific fixed

The study provides evidence in support of financial development positively affecting both investment rates and growth in total factor productivity growth (TFP). It was shown that in regard to the growth of total factor productivity, both the liquidity indicator and the ratio of financial assets of the private sector to GDP were found to positively affect growth after accounting for rates of factor accumulation. While only the ratio of financial assets of the private sector to GDP variable was robust to the inclusion of country fixed effects, in the case of the impact of financial development on physical-capital accumulation rates, all of the indicators entered significantly. However, the

Calderon, C. and L. Liu, (2003),
"The direction of causality
between financial development
and economic growth",
*Journal of Development
Economics*, 72: 321–334.

Panel data of 87 developing
And 22 industrial countries
from 1960 to 1994

Panel VAR,
Geweke
decomposition
and
Granger causality

effects. Assuming that if financial development directly affects total factor-productivity growth, it will then enter into the growth accounting equations even after accounting for disparities in factor accumulation rates. With and without accounting for country fixed effects, they directly examine the impact of financial development on the rates of investment in physical and human capital.

The paper examines the direction of causality between financial development and economic growth. They discuss the pioneering work by Patrick who termed the possible direction of causality between financial development and growth as supply leading and demand following hypothesis, while the former recognizes the causal relationship from finance to growth and the latter from growth to finance. They cite several researchers' work that supports both opinions. Pointing to Patrick's stage of development hypothesis where supply leading hypothesis predict that innovations and developments of new financial services open up new opportunities for investors and savers, authors state that process would create self-sustained economic growth. This character is manifested during the early stage of development. As financial and economic development proceeds, supply-leading characteristics of financial development diminish progressively after which the process as explained by demand-following hypothesis follows. In their study, they tests the hypothesis expounded by Patrick.

empirical results are sensitive to the inclusion of country fixed effects, which may indicate that the financial development indicators are proxying for broader country characteristics.

The results point to the fact that financial development generally leads to economic growth. However, a bi-directional causality between financial development and economic growth is confirmed by the Granger causality to both directions, i.e., financial development to economic growth and economic growth to financial development. The results also shows that financial deepening contributes more to the causal relationships in the developing countries than in the industrial countries and the larger the effect of financial development on economic growth over longer the sampling interval.

Caporale, Guglielmo Maria, Peter G. A. Howells and Alaa M. Soliman (2004), "Stock Market Development and Economic growth: The Causal Linkages", *Journal of Economic Development*, 29, 33-50

Annual data for 7 countries (Argentina, Chile, Greece, Korea, Malaysia, the Philippines and Portugal) quarterly data for the period 1977-1998

Time series approach using VAR

The authors state that by liberalizing capital markets and allowing the market to allocate capital is the most efficient way in which capital can be allocated. However, if the financial market is composed of banks only, the market will not achieve efficient allocation due to the fact that shortcoming of debt finance in the presence of symmetric information. Therefore, the development of stock market is a sine qua non in order to achieve better outcomes with greater efficiency in capital allocation, if the government is to liberalize the financial system. They examine the causal linkages between stock market development, financial development and economic growth, however, maintaining that any inference that financial liberalization causes growth drawn from bivariate causality test may be invalid.

Causality tests performed in a bivariate context using proxies for financial development (such as domestic credit and prevalence of bank deposits) and economic growth show little evidence of causality. Between domestic credit and economic growth, there is a causality in only two countries out of seven, while testing for causality between bank deposits and economic growth, causality was found for three countries. There is scarcely strong support for the hypothesis of causal relationship between finance and economic growth. However, when tested for causality in a trivariate context, taking into account the dynamic interactions between financial development, stock market development and economic growth, causality between financial development and economic growth was confirmed in five cases out of seven. However, the measure of financial development which produces this results is the stock market development. This confirms that stock markets can give a big boost to economic development.

Caporale, G.M., P. Howells, and A.M. Soliman, (2005), "Endogenous growth models and stock market development: evidence from four countries". *Review of Development Economics* 9: 166-176.

Quarterly data from 1979 to 1998 for Chile, Malaysia, Korea and the Philippines

Time Series using VARs and modified WALD (Toda-Yamamoto) tests

The study explicitly examines the causal impact of stock market developments on economic growth. In exploring the hypothesis of endogenous growth models, it examines how financial development causes higher economic growth via level of investment and its productivity. In the empirical analysis, it exploits a technique developed by Toda and Yamamoto (1995) to test for the causality linkage between stock markets, investment, and economic growth. The Toda and Yamamoto approach has the advantage of not requiring pre-testing for the cointegration properties of the system and of resulting in standard asymptotic and valid statistical inference.

. In line with the recent endogenous growth models for financial development, they find that investment productivity is the channel through which stock markets enhance the economic growth in the long run. They state that their findings are consistent with the results of Levine and Zervos (1995), and also with Leigh's (1997) argument that a well functioning stock market can perform its allocative function through the pricing of shares, an argument by Demircug-Kunt (1994), that stock markets can give a big boost to economic development. An efficient pricing process will reward the well-managed and profitable firms by valuing their shares more highly than those of unsuccessful and unprofitable firms.

Carkovic, Maria and Rose Levine (2002), "Does Foreign Direct Investment Accelerate Economic Growth?", *Department of Finance Working Paper*. Available at SSRN: <http://ssrn.com/abstract=314924> or <http://dx.doi.org/10.2139/ssrn.314924>

Data on 72 countries from 1960 to 1995

Generalized Method of Moments (GMM) panel estimator

The intention was to study the impact of FDI inflows on economic growth. Authors find unlike the findings from microeconomic level studies, macroeconomic studies using aggregate FDI flows for a broad cross section of countries generally suggest a positive contribution of FDI on economic growth. However, such macroeconomic findings should be viewed skeptically as these studies do not fully control for simultaneity bias, country specific effects and the routine use of lagged dependent variables in growth regressions. As these weaknesses can

The study reveals that FDI inflows do not exert an independent influence on economic growth. While sound economic policies may spur both growth and FDI, the results are inconsistent with the view that FDI exert a positive impact on growth that is independent of other growth determinants.

Choe, C. and Moosa, I.A. (1999), "Financial system and economic growth: the Korean Experience". *World Development*, 27: 1069-1082.

Annual data for Korea covering the period 1970-1992

Time Series using VARs and Granger causality

bias the coefficient estimates and also the coefficient standard errors, their study uses a new statistical technique and two new data bases to reassess the relationship between growth and FDI.

This paper examines the relationship between the development of financial systems and economic growth using Korea as a case study. The study focuses on the relative development of financial intermediaries and capital markets, and their impact on the portfolio behavior of the household and business sectors. . Authors were of the opinion that given the primary role of the financial system lies in the transfer of funds from surplus sectors to deficit sectors, which is not fundamentally different from other resource allocation problems, the emergence of financial intermediaries is also an answer to market failure and that any satisfactory analysis of financial development thus has to adopt a systemic approach, incorporating capital markets as well as financial intermediaries, explaining for instance why capital markets are more important in one economy than in another. Therefore, they had considered in their study both the credit markets and securities and stocks.

The main conclusions reached from the empirical results are that (a) financial development leads real growth, and (b) despite the measures of capital market liberalization, financial intermediaries are still more important than the capital markets in this cause and effect relationship. It is also conceivable that financial liberalization strengthened the role of the capital market, and this postulation is confirmed by the results of causality testing. According to them, the first conclusion is straightforward as it follows from a finding of causality from financial variables to real growth variables. The second conclusion is derived from non-nested model selection tests and criteria, a procedure that may be based on the argument that intermediaries represent a second-best alternative to market failure.

Choi, Woon Gyu, Sunil Sharma and Maria Stromqvist (2007), "Capital flows, Financial Integration, and International Reserve Holdings: The recent Experience of Emerging Markets and Advanced Economies", IMF Working Paper, WP/07/151, pages 36.

Annual data for 36 emerging markets and 24 advanced economies for the period 1980 - 2005

OLS and Instrumental Variables regressions

Authors observe that a dramatic increase in international reserve holdings in emerging economies in the recent past far exceeding the levels traditionally accepted. This has been attributed to the experiences these countries have undergone during the financial crises in late 1990s. With increased financial integration, countries are more vulnerable to

Authors find evidence to show that in spite of increasing financial integration and moves towards more flexible exchange rate systems, emerging economies have used capital inflows to accumulate considerably large reserve levels. This new trend is in contrast to the developed countries where the reserve accumulation has a negative

Christopoulos, D.K. and E.G. Tsionas, (2004), "Financial development and economic growth: evidence from panel unit root and cointegration tests". *Journal of Development Economics* 73: 55–74.

Annual data for 10 developing countries, i.e. Colombia, Paraguay, Peru, Mexico, Ecuador, Honduras, Kenya, Thailand, Dominican Republic and Jamaica from 1970 to 2000

Panel data
VECM, panel
cointegration,
threshold
cointegration and
fully modified
OLS

contagion as such reserves were built up to respond to extreme events. The objective of the paper is to examine the interaction between capital flows, financial integration and accumulation of reserve holdings by countries.

Authors say that cross-sectional and time series data combined together to examine the relationship between financial development and growth produce better results with strong predictive power. Moreover, they state that past studies have used either cross-sectional or time series data but both approaches have drawbacks. Use of cross-sectional data leaves open the question of spurious correlation arising from non-stationarity. This approach does not allow an examination of the direction of causality. They also consider a threshold effect on the relationship between financial development and economic activity. On this basis it is assumed that below a particular level of financial development there is no effect on economic growth but above that level there is a considerable growth element. To estimate cointegrating vectors, fully modified OLS estimations technique is applied as this methodology allows consistency of the long-run relations with the short-run adjustment and also deal with endogeneity problem. Authors also mention that they distinguish between long-run and short-run causality as this is a very important when one considers the fact that much of the benefits of higher levels of financial development could be felt in the short-run while in the long-run as the economy grows to maturity these effects

correlation with the capital inflows. The major reason for emerging market countries to build up such high level of reserves has been influenced by the need to maintain financial stability particularly after 1996 crisis.

This paper addresses the empirical relationship between financial development and economic growth. Having first established that the dependent variable is structurally related to the explanatory variables, and thus a long run equilibrium relationship exists among these variables, first they proceed to estimate a model by regressing the real output on financial depth, investment and inflation by applying a fully modified OLS. Authors say that sufficient evidence was found to conclude in favor of the hypothesis that long run causality runs from financial development to growth, that the relationship is significant, and that there is no evidence of bi-directional causality. The empirical evidence also confirms that there is no short run causality between financial deepening and output, so the effect is necessarily long run in nature. The important policy implication is that policies towards improving financial markets will have a significant, but delayed effect on growth.

gradually disappear.

Claessens, Stijn, Asli Demirgüç-Kunt & Harry Huizinga, (2001), "How does foreign entry affect domestic banking markets?", *Journal of Banking and Finance*, 25, 891-911

Bank-level accounting data on 7,900 banks and macroeconomic data in 80 countries over the period from 1988 to 1995

Cross country regressions

The authors state that in recent years there is a strong tendency for banks to become international by establishing foreign branches and subsidiaries. Following such trends, the study examines the extent and effects of the presence of foreign banks in domestic banking markets investigating how net interest margins, overheads, taxes paid and profitability differ between foreign banks and the domestic banks. In this case foreign ownership is considered for banks with at least 50% shares owned by foreign partners having the control.

A main finding of the study is that foreign banks tend to have higher interest margins, profitability and tax payments than domestic banks in developing countries while the opposite is true for developed countries. Empirical evidence shows that for most countries larger foreign ownership share of banks is associated with the reduction in profitability and margins of domestic owned banks. The results are consistent with the hypothesis that in the long run foreign banks entry may improve the functioning of national banking market with positive welfare implication for customers.

De Gregorio, J. and Guidotti, P.E. (1995), "Financial development and economic growth". *World Development* 23: 433-448.

Annual data for 99 countries during 1960-1985, and panel data for 12 Latin American countries during 1950-1985

Panel data - OLS and panel data random effects

This paper examines the empirical relationship between long-run growth and financial development, proxied by the ratio between bank credit to the private sector and GDP. The empirical investigation is carried out by using two different data sets. First, they extend Barro's (1991) cross country growth regressions for a sample of 98 countries during 1960-85, by including the proxy for financial development as an additional explanatory variable. Second, using De Gregorio's (1992) panel data set for 12 Latin American countries during 1950-85, they explore the relationship between financial intermediation and growth in Latin America.

The findings of the study prove that financial development contributes to enhanced economic activity. In the case of Latin American countries, however, it is revealed that there is a negative impact on growth emanating from the financial liberalization in the absence of a proper regulated framework and high anticipation of government bail out

Deidda, L. and Fattouh, B. (2002),
“Non-linearity between finance and growth.”
Economics Letters 74: 339–345.

Annual data for 80 countries over the period 1960–1989

Cross country regression using Threshold Ordinary Least Squares (TOLS) model

They present a simple model which establishes a non-linear and possibly non-monotonic relationship between financial development and economic growth. Applying a threshold regression model to King and Levine’s (1993) data set, they investigate the financial development and economic growth relationship in low income countries and high income countries. They split the sample into two groups using an initial income per capita threshold variable.

Results reveal that higher levels of financial development have a positive impact on higher level of growth rates. They used the initial per capita income as the threshold variable for comparison. When threshold effect is not considered in the model, the results apply only to high income countries and not to low income countries.

Demetriades, P.O. and Hussein, K.A. (1996),
“Does financial development cause economic growth? Time-series evidence from sixteen countries”.
Journal of Development Economics 51: 387–411.

Annual data for 16 countries (Costa Rica, El Salvador, Greece, Guatemala, Honduras, India, Korea, Mauritius, Pakistan, Portugal, South Africa, Spain, Sri Lanka, Thailand, Turkey and Venezuela) with at least 27 observations

Time Series using VARs, vector error-correction model (VECM), Engle–Granger cointegration, Johansen cointegration and Granger causality

The study conducts causality tests between financial development and real GDP using recently developed time series techniques. Authors say that they overcome the problems encountered by previous time series work on the issue by (a) using measures of financial development which are defined to reflect the requirement of the theory (b) examining the integration properties of the data and using appropriate techniques when the variables are non-stationary (c) excluding countries with less than 27 annual observations on the variables of interest.

Substantial evidence was not found in support of the idea that finance is a leading factor that contributes for economic development. This outcome has been established on the basis of causality results. In general, study finds evidence to show that financial development and economic growth are jointly determined

Demetriades, P.O. and Luintel, K.B. (1996),
“Financial development, economic growth and banking sector controls: evidence from India”.
Economic Journal 106: 359–374.

Annual observations for India from 1961 to 1991

Time Series using Error-correction model (ECM), exogeneity tests and principal component analysis (PCA)

They attempt to provide evidence in support of their hypothesis which states that interest rate restrictions and other banking sector controls may have effects on financial development independent of the orthodox interest rate effects as postulated by McKinnon and Shaw. They also argue that banks use non-interest methods in an attempt to influence the volume of deposits.

Authors reveal that controls on the banking sector appear to have negative consequences on the process of financial development. According to exogeneity tests, financial development and economic growth are jointly determined.

<p>Demetriades, P.O. and Luintel, K.B. (1997), “The direct costs of financial repression: evidence from India”. <i>Review of Economics and Statistics</i>, 79: 311–320.</p>	<p>Annual data for India from 1960 to 1991</p>	<p>Time Series using Engle–Granger cointegration, Stock–Watson cointegration, PCA and weak exogeneity tests</p>	<p>They measure the financial repression directly by collecting information on various types of interest rate controls, reserve and liquidity requirements and directed credit programmes. An index is constructed utilizing the method of principle component, which summarizes the joint influence of repressionist policies. This allows to quantify the direct effect of repressionist policies on financial depth independently of that of the real rate of interest. Second, they apply cointegration techniques to estimate long-run relationship between these policies and financial depth. This is followed by the estimation of error correction models which examines the dynamic behaviour of financial deepening. Thereafter they calculate short-run and long-run multipliers for each of the repressionist policies.</p>	<p>The study find that financial repression, measured using a summary of repressionist controls has extensive negative impact on the process of financial development. When the rate of real deposit is raised that would contribute to financial sector development. However, it is found that financial development and economic growth are jointly determined.</p>
<p>Demetriades, P.O. and Luintel, K.B. (2001), “Financial restraints in the South Korean miracle”. <i>Journal of Development Economics</i> 64: 459–479.</p>	<p>Annual data for South Korea from 1956 to 1994</p>	<p>Time Series using Error Correction Model and PCA</p>	<p>With investment rates averaging at 25% and per capita growth rates exceeding 6% per annum during 1960 to 95, South Korea transformed miraculously from a relatively underdeveloped country to a developed country within a shorter span of time. There are several explanations to this development, it is important to address the issue of the role and the effects of the government intervention in the financial system. Authors provide empirical evidence on the effects of financial restraint policies in South Korea which throws new evidence on the mechanism of financial deepening.</p>	<p>Positive and large effects of financial restraints on the financial development in South Korea were found. The model also predicts that in the presence of lending rate controls, upward changes in the level of the administered deposit rate are unlikely to influence financial deepening. Nevertheless, the effects of real interest rate on financial development were insignificant.</p>
<p>Demirguc-Kunt, A. and V. Maksimovic, (1998),</p>	<p>Annual data for 30 developing and</p>	<p>Cross country using Ordinary</p>	<p>The authors state that ability to fund projects through external finance is</p>	<p>Authors show that in countries with improved and more efficient legal</p>

“Law, finance, and firm growth”, *Journal of Finance* 53: 2107–2137.

developed countries for the period 1980–1991

Least Squares (OLS)

constrained by conflicts of interest and informational asymmetries between corporate insiders and investors. The degree to which these imperfections occur depends, to some extent, on the effectiveness of the legal and financial systems. As the legal and financial system differs across countries, it is assumed that there exist substantial differences on firms’ ability to acquire external capital to fund their projects. As such, they examine whether the underdevelopment of legal and financial systems does prevent firms in some countries from investing in potentially profitable growth opportunities. They focus on the use of long-term debt or external equity to fund growth and estimate a financial planning model to arrive at the reachable maximum growth rate for each firm in the sample with no access to long-term financing. Thereafter, they compare the predicted growth rates to growth rates realized by firms in countries having differences in the development of legal and financial systems. They state that this mechanism is helpful in identifying specific characteristics of the legal and financial systems that are associated with long-term financing of firm growth.

systems, there is an incentive for more firms to use long-term external finance. A larger banking sector, a more active stock market and a well-developed legal system would facilitate firms to obtain external funds more easily, which in turn contributes to firms’ growth. These firms typically report lower returns on capital and profits. Government subsidies do not appear to play a role in these economies

Demirguc-Kunt, A. and V. Maksimovic, (2002), “Funding growth in bank-based and market based financial systems: evidence from firm-level data”. *Journal of Financial Economics* 65: 337–363.

Firm-level data for the largest publicly traded manufacturing firms in 40 countries over the period 1989–1996

Cross country regression using Two Stage Least Squares (2SLS)

The authors investigate whether firms’ access to external financing, to fund growth differs between market-based, and bank-based financial systems. With the aid of firm-level data for forty countries, they compute the proportion of firms in each country that relies on external finance, and examine how that proportion differs across financial systems.

They find that the impact of the stock market and banking sector development on firms’ growth is closely associated with the level of development of the country’s legal environment. The development of securities markets is related more to the availability of long-term financing, whereas the development of the banking sector is related more to the availability of short-term financing. No evidence was found

Federici, Daniela and Francesco Caprioli (2009), "Financial development and growth: An empirical analysis", *Economic Modelling*, 26, 2, 285-294

Quarterly data for a set of 39 countries classified with respect to the level of financial development.

Time series using Vector- auto regression (VAR)

Currency crises as happened over the last three decades in a number of countries made sharp disruption to economic activity and the contagion further worsening the scenario. This financial crises took place at a time when international financial integration taking the shape of those countries. A great debate followed afterwards on the consequences of free capital movements. The objective of their study is to ascertain the existence and the strength of credit channel and balance sheet effects in countries characterized an intermediate level of financial development. In order to sufficiently capture and assess all relevant aspects of financial development, a detail set of measures as summarized below were used.

1. the ratio of the assets of deposit-money bank to the total assets of the central bank and deposit money banks,
2. the ratio of credit to private sector by deposit-money banks to GDP,
3. liquid liabilities to GDP,
4. market capitalization of shares of domestic companies to GDP
5. total market value of shares traded to GDP
6. turnover,
7. market value of bonds listed to GDP
8. total number of companies with shares traded both in absolute terms and for

to show that development of a market-based or bank-based financial system per se affects firms' access to financing.

The authors advocate that financial development is a crucial factor for the existence of a credit crunch effect. They found evidence that more financially developed countries are able to avoid currency crises while the developing countries with very low financial development are immunized by crises.

<p>Ghatak, Subrata (1997), “Financial Liberalization: The case of Sri Lanka”, <i>Empirical Economics</i>, 22, 117-129</p>	<p>Annual data for Sri Lanka from 1950 to 1987</p>	<p>Ordinary Least Squares method with error correction mechanism</p>	<p>millions of citizens Authors state that these indicators reflect the size, the efficiency, the financial openness, the technological advances and the soundness of financial institutions.</p>	<p>Satisfactory results were obtained to show a positive and significant effect on growth due to financial liberalization. The model is structurally invariant with regard to changes in expectations. Moreover, positive and significant effect of real balances on the growth rate of output in Sri Lanka seem to validate the direct relationship between investment - income ratio and real balances given the severity of credit restrictions. Not detected any significant structural break in the economy of Sri Lanka due to financial liberalization in 1977. Author says that the results of his study seem to confirm the McKinnon – Shaw hypothesis about the favourable effect of the accumulated real balances on the economic growth of Sri Lanka from 1950 to 1987.</p>
<p>Goldsmith, Raymond W. (1969), <i>Financial Structure and Development</i>, New Haven, CT: Yale University Press</p>	<p>Annual data for 35 countries over the period 1949–1963</p>	<p>Cross country regression using ordinary least squares (OLS) and graphical analysis</p>	<p>There were three broad goals in his analysis. First goal was to examine how financial structure changes as economies mature. For this purpose, he tried to outline the progression of the structure of the national financial systems as economies advance. Next goal was to evaluate the qualitative and quantitative development of the overall financial system such as financial instruments, markets and intermediaries, on the economic growth and thereby to examine whether the finance have a causal effect on economic growth. Final</p>	<p>The results point to an apparent relationship between financial development and economic growth. Nevertheless, as the correlation coefficients are low and negative for developed countries, there is a statistically weak relationship between financial development and economic growth.</p>

Gupta, K.L. (1984),
*Finance and Economic Growth
in Developing Countries.*
London: Croom Helm.

Quarterly time series data
from the first quarter of 1961 to
the fourth quarter of 1980 for 14
developing countries

Time Series using
VARs and
Granger
causality

goal was to analyze whether financial structure have an impact on economic development as he himself stated that "one of the most important problems in the field of finance, if not the single most important one, almost everyone would agree, is the effect that finance structure and development have on economic growth". He showed when countries develop, banks tend to become large compared to national income while non-bank financial intermediaries and stock market grow as well.

He attempts to identify testable hypothesis from the existing literature and conducts an extensive empirical exercise in the hope that the findings may provide some guidelines for policy. The study proceeds with two questions, firstly on the direction of causality between finance and real growth. Applying a methodology developed by Granger and Sims, he examines the question of causality. Secondly, it examines in considerable details the repressonists' assertion that real interest rates and their stability do matter in economies of developing countries including the claim that unlike the neo-classical theory, physical capital and real balances are compliments rather than substitutes so that real cash balances serve as a conduit through which physical capital tends to accumulate. He also attempt to incorporate the structuralists' view of a direct effect of financial development proceeding in two ways firstly with time series data and secondly with a simultaneous equation model.

The outcome of the study shows that causality runs from financial system to the economy, which indicates the role of finance as a vehicle to activating the economy. Also some evidence is present indicating reverse causality but lesser evidence for a two-way causality

Harris, R.D.F. (1997),
“Stock markets and
development: a
reassessment”.
European Economic Review 41:
139–146.

Annual data for 39
countries over the
period 1980–1988

Cross country
using Two Stage
Least Squares
(2SLS)

This paper re-examines the empirical relationship between stock markets and economic growth in contrast to how Atje and Jovanovic (1993) use a cross-section model. The author's aim is to demonstrate that the result obtained by Atje and Jovanovic may be misleading. He states that the use of lagged investment is inadequate as a solution to the endogeneity issue since it is not highly correlated with current investment and hence not a good proxy for this variable thus giving rise to omitted variable bias in the remaining variables. Particularly, the level of stock market activity is correlated with subsequent investment and therefore, its coefficient is biased upwards. Estimating the same model using current investment instead of lagged investment suggests that the stock market effect is much weaker than has been proposed.

Author says that compared to the results reported by Atje and Jovanovic (1993), the paper comes up with completely different results. It finds little support for the argument that stock market activity helps explain growth in per capita output. In the case of developing countries, the stock market effect is rather weak. However, in the case of developed countries, stock market activity is found to have some positive effect on growth.

Henry, P.B. (2000),
“Do stock market liberalizations
cause investment booms?”
Journal of Financial Economics
58: 301–334.

Annual data for 11 developing
countries (Argentina, Brazil,
Chile, Colombia, India, Korea,
Malaysia, Mexico, the
Philippines, Thailand and
Venezuela), spanning the 1970s
and 1990s

Panel data

The paper examines the effects of stock market liberalization on economic growth to assess how it in turn this process affects investment. The author says that stock market liberalization would not automatically reduce the cost of capital but probably change the cost of capital under certain assumptions by reducing the cost of equity capital. If stock market liberalization reduces a country's aggregate cost of equity capital, it will also cause a temporary increase in the growth rate of investment a rise in stock prices which would further attract investment into stock market.

The empirical evidence confirms that there is a strong link between stock market liberalization and increased private investment. This has been observed in 9 out of 11 countries studied. Three years after the liberalization, the average growth rate of private investment was 22 percentage points higher than the sample mean.

Jung, W.S. (1986),
"Financial development and
economic growth: international
evidence".
*Economic Development and
Cultural Change* 34: 333–346.

Annual data on 37 less
developed countries and 19
developed countries

Time Series using
VARs and
Granger
causality

This paper revisits the "finance–growth"
thesis from the perspective of the
determinants of financial sector growth
such as legal and institutional
developments and financial regulation in
the Indian context. With the help of
newly constructed indices of procedural
law, regulation and institutional
development, within a multivariate VAR
framework, Granger causality tests and
policy simulations are employed to
investigate the long run causal
relationships between the determinants
and the financial sector.

On the whole, the results indicate
certain degree of support for the supply-
leading hypothesis by H. Patrick (which
hypothesizes financial development
causes economic growth) in developing
countries. However, in the case of
developed countries, a reverse pattern
of demand pulling or economic growth
causes financial development was
observed.

Ketteni, E., T. Mamuncas, A.
Savvides, and T. Stengos,
(2007),
"Is the financial development
and economic growth
relationship nonlinear?"
Economic Bulletin, vol. 15. no.
14, 1-12
[http://economicsbulletin.vanderbi
lt.edu/2007/volume15/EB-
07010010A.pdf](http://economicsbulletin.vanderbilt.edu/2007/volume15/EB-07010010A.pdf)

Panel data of 74 countries for the
period 1961–1995

Panel data –
Semi-parametric
Partial
Linear Model

The authors examine whether and how
financial development influence
economic growth. Using both parametric
and nonparametric econometric
techniques, they attempt to ascertain
whether financial development is a
significant determinant of economic
growth and whether the relationship is
linear or nonlinear. Parametric and
nonparametric techniques are used to
investigate the consistency, under
different frameworks, of the result that a
significant positive relationship exists
between financial development and
growth, as well as to investigate the
linear/nonlinear nature of the finance-
growth relationship.

The authors find that the finance-
growth nexus is only linear when the
nonlinearities between economic
growth and initial per capita income, as
well as economic growth and human
capital, are taken into account. The
relationship appears to be nonlinear
when these nonlinearities are ignored.
Therefore, it appears that the alleged
nonlinear finance–growth relationship
is not robust.

Kim, Han E. and Vijay Singal
(2000), "The fear of globalizing
capital markets", *Emerging
Market Review*, 1, 183-198

Monthly or weekly data based on
the frequency that gives the
greatest number of observations
for a sample of 18 emerging
stock markets which had
undergone significant
liberalization during 1980s and
early 1990s for a total period of
ten years (five years each from

ARCH and
GARCH models

Analysis has been carried out to
examine the impact of stock market
opening on the level of stock returns,
inflation rates and exchange rates by
computing and comparing stock returns
before market opening with the stock
returns after market opening. The US
dollar was used as a single currency to
measure the return for each country and

Authors draw the conclusion that
globalizing stock markets significantly
increase stock prices without a
concurrent increase in stock return
volatility. They also reveal that
volatility in inflation rates and
exchange rates fall significantly after
market openings.

before and after market openings)

King, Robert G. and Rose Levine (1993a), "Finance and Growth: Schumpeter might be right" *Quarterly Journal of Economics*, 108, 717-737

Annual data for 80 countries over the period 1960–1989

Cross country regression using ordinary least squares (OLS)

the excess dollar returns were used to make comparisons across countries and different periods. An excess dollar return was computed by subtracting the monthly risk-less rate based on the three month Treasury Bill rate from the change in the market index expressed in US dollars as reported by the International Finance Corporation. Thereafter parametric and non-parametric tests were conducted to obtain an estimate of the size of average effect of market openings on changes in stock returns.

Using four indicators of financial development i.e., (1) to measure the financial depth ratio of liquid liabilities to GDP (2) to distinguish among financial institutions in intermediation examining the importance of deposit banks relative to the central bank in allocating domestic credit (3) to analyze whether financial system distribute assets, develop two more indicators namely, credit issued to non-financial private firms divided by total credit and credit issued to non-financial private firms divided by GDP

A range of indicators of financial development is found to be positively and strongly associated with the growth of real per capital GDP, the rate of physical capital accumulation and Total Factor Productivity. Two sets of findings have been reported. The first set involves the strength of the contemporaneous relationship between financial development and the growth indicators; average level of financial development with the average rate of real per capita GDP growth the rate of physical capital accumulation, and the rate of improvement in economic efficiency over 1960 to 1989 period. The second set of findings focuses on the relationship between the level of financial development and future rates of long-run growth, physical capital accumulation, and economic efficiency improvements. The empirical results provide some support for the Schumpeterian view that finance matters for growth.

Klein, Michael W. and Giovanni P. Olivei (2008), "Capital account Liberalization, Financial Depth, and Economic Growth", *Journal of International Money and Finance*, 27, 861 - 875

Data period covered from 1975 to 1995 for 21 OECD countries and 74 non-OECD countries

OLS Regression

The paper examines whether there is evidence of a link from capital liberalization to financial depth and through this channel, to overall economic growth. They point to the fact that there are number of channels through which capital account liberalization can contribute to the development of a country's financial system. Exposure to international competition may induce domestic institutions to improve efficiency by way of adopting international standards as well as potential threat of "flight to quality" posed by foreign institutions. Presence of foreign bank branches or subsidiaries may expand the absolute size of the national banking system, help to serve earlier neglected niche markets, and introduce financial innovation which directly broadens the scope of financial services.

Authors state that they found statistically significant and economically relevant effect of open capital account on financial depth and economic growth in a cross-section of developed and developing countries over the periods from 1986 to 1995 and 1976 to 1995. Countries having open capital accounts over some part or throughout the periods enjoyed a significantly greater increase in financial depth than countries that had continuing capital account restrictions.

la Porta, Rafael, Florencinao Lopez de-Silanes and Andre Shleifer (2002), "Government Ownership of Banks", *Journal of Finance*, vol. LV No.1, 265-301

Data on government ownership of banks in 96 countries around the world assembled for the study, covering the period from 1960 - 1995

In this paper, a broad discussion on the government ownership of banks (which is a neglected aspect of financial systems of many countries around the world, according to the authors) is presented. Authors show that ownership of banks is pervasive around the world and has had a significant consequence for economic and financial development. There exist two broad opinions on the government's participation in financial markets. Associated with Alexander Gerschenkron, the optimistic view focuses the necessity for financial development for economic growth, which emphasizes due to scarcity of capital and underdeveloped institutions, banks are unable to play a crucial role in economic development unless

Data reveal certain outcomes on four issues. First, government ownership of banks is large and pervasive around the world even in the 1990s. Second, there is a larger government ownership in countries where low levels of per capita income, underdeveloped financial systems, interventionist and inefficient governments, and poor protection of property rights are present. Third, government ownership of banks in 1970 is associated with slower subsequent financial development. Finally, government ownership of banks is associated with lower subsequent

Levine , Ross (1998),
“The legal environment, banks,
and long-run economic growth”,
*Journal of Money, Credit, and
Banking* 30: 596–613.

Annual data for 42
countries covering
the period
1976–1993

Cross country
using Ordinary
Least Squares
(OLS) and
generalized
method of
moments
(GMM)

government’s involvement. Russia was cited as a classic case. The alternative opinion, which takes somewhat a political dimension rather than social objectives, says the desire of politicians too control investment activities of firms. In this view, governments take control of business firms and banks in order to provide employment, subsidies, and other benefits to supporters, who return the favor in the form of votes, political contributions, and bribes. Countries with underdeveloped financial systems and poorly protected property rights have the highest degree of government control of banks and through that the government can gain extensive control over projects not necessarily having economic efficiency but political desirability.

This analysis examines the connection between the legal environment and banking development and then traces this link through to long-run economic development thereby contributing to research on the causal relationship between banking development and long-run economic growth. The basis on which the analysis is carried out is to inquire whether cross country differences in the legal rights of creditors, the efficiency of contract enforcements, and the origin of the legal system explain cross country differences in the level of banking development and also focusing as to whether better-developed banks cause faster economic development in which the banking development is defined by legal environment positively associated with long-run rates of economic growth, capital accumulation and productivity

growth of per capita income, slower financial development and in particular with lower productivity growth rather than slower factor accumulation and . These negative associations are not weaker in the less developed countries. These results do not provide conclusive evidence of causality.

Countries where legal codes emphasize the rights of creditors have better-developed banking systems, as measured by bank credit to the private sector divided by GDP, than countries where laws do not give a high priority to creditors in the case of corporate bankruptcy or reorganization. Moreover, enforcement is a key matter and countries having legal systems that ensures rigorous enforcement of laws and contracts have better developed banks than countries where enforcement is carried out lightly. It is therefore evident that more efficient legal systems tend to have better developed banking systems and the banking sector development contributes positively to per capita GDP growth

Levine, R. (2002),
"Bank-based or market-based
financial systems: which is
better?"
*Journal of Financial
Intermediation* 11: 398–428.

Annual data for 48
countries over the
period 1980–1995

Cross country
regression using
Ordinary Least
Squares (OLS)
and Instrumental
Variables (IV)

growth.

Author makes an empirical assessment on the competing views on bank based versus market based financial system for promoting long-run economic growth in an attempt to understand as to which view of financial structure is more consistent with data. Bank based view emphasizes the positive role of banks in mobilizing capital, selecting good projects, monitoring managers and managing risks while the supporters of market based view highlights that the markets will reduce the inherent weaknesses associated with the banks and enhance economic growth. However, looking at countries such as Japan and Germany which are banks based and the UK and the USA which are market based, it is not easy to arrive at a conclusion. In contrast to both views, the financial services view which stresses that financial arrangements improve market imperfections, provide services such as assessing potential investment opportunities, exerting corporate control and facilitating risk management and enhanced liquidity. According to this view the main issue is not whether it is bank or markets but creating an environment in which intermediaries and markets provide sound financial services. Another point of view, which is based on the role of the legal system in creating a growth promoting financial sector known as law and finance view. He incorporates all the four views into an analysis with data from a broad assortment of developing and developed countries for his investigation.

The data provide no evidence for either the bank-based or market-based view. Moreover, separating countries by financial structure does not help in explaining cross-country differences in long-run economic performance. It is the overall level of financial development that helps explain cross-country growth variations. The legal system in enforcing rights is an important factor which influences financial development, and this in turns influences long-run economic growth.

Levine, R., N. Loayza and T.Beck, (2000), "Financial intermediation and growth: causality and causes". *Journal of Monetary Economics* 46: 31–77.

Annual data for 74 countries spanning from 1960 to 1995

Panel data - IV and GMM Using both IV and dynamic panel techniques

This study is an evaluation to ascertain whether the exogenous component of financial intermediary development influence economic growth and whether cross-country differences in legal and accounting systems explains differences in the level of financial development. The paper says that while the past work shows that the level of financial development is a good predictor of economic growth, these results do not settle the issue of causality. The authors admit that their study does not fully resolve all concerns about causality, it uses new data and new econometric procedures that directly confront the potential biases induced by simultaneity, omitted variables, and unobserved country-specific effects that have plagued previous empirical work on the finance growth link.

The outcome of the study shows that development in financial intermediation has a positive effect on economic growth. The results of the study also suggest that improved legal systems and accounting standards play a key role in better functioning debt and equity markets and that is helpful in explaining differences in the level of financial development.

Levine, R. and Zervos, S. (1998), "Stock markets, banks, and economic growth", *American Economic Review* 88: 537–558.

Annual data for 49 Countries covering the period 1976–1993

Cross country using Ordinary Least Squares (OLS)

Although there were an expanding literature on the links between stock market and long term growth, as very little empirical studies were undertaken, the authors venture into an investigation to fill this gap by empirically analyzing whether measures of stock market liquidity, size, volatility and integration in world capital markets predicts future rates of economic growth, capital accumulation, improvements in productivity and private savings. They examines the relationship between several financial development indicators and long-run real per capita growth and also study two channels namely rate of physical capital accumulation per capita and productivity, through which banks and stock market may be linked to growth.

This study explores the empirical relationship between various measures of stock market development, banking development, and long-run economic growth and finds that, even after controlling for many factors associated with growth, stock market liquidity and banking development are both positively and robustly correlated with contemporaneous and future rates of economic growth, capital accumulation, and productivity growth. The authors state that this result is consistent with the view that a greater ability to trade ownership of an economy's productive technologies facilitates efficient resource allocation, physical capital formation, and faster economic growth. Furthermore, since measures of stock market liquidity and banking development both enter the growth

Levine, R. (1999),
"Law, finance, and economic
growth",
*Journal of Financial
Intermediation*
8: 8-35.

Annual data for 49
countries over the
period 1960-1989

Cross country
regression using
generalized
Method of
Moments (GMM)

The study examines a key important aspect of the relationship between the legal environment and how this affects the financial development and in turns its relationship to economic growth. The legal and regulatory systems that ensure (1) high priority to creditors receiving full present value of their claims on corporations, (2) effective enforcement of contracts and (3) contributing to comprehensive and accurate financial reporting by corporations are present in countries where financial systems are better developed.

regressions significantly, the authors say that their findings suggest that banks provided different financial services from those provided by stock markets. This study establishes that there is a strong, positive link between financial development and economic growth and that financial factors are an integral part of the growth process.

The results confirm that in countries with the presence of sound legal and regulatory mechanisms, financial systems are better developed and materially affect financial intermediary development. Furthermore, financial development is found to have positive effect on economic growth.

Loayza, Norman and Roman
Ranciere (2005), "Financial
Development, Financial Fragility
and Growth"
IMF Working Paper no.
WP/05/170

Annual data for 75 countries over
the period 1960 - 2000

Authors point to two broadly divergent opinions that emerge both in the literature as well as in the theoretical explanations on the effects of financial intermediation on per capita growth. On one hand, it is argued that financial deepening is growth enhancing on the other it is argued that excessive financial liberalization leads to financial crises. The authors highlight the contrasting effects of financial liberalization and credit expansion on economic activity and attempt to provide empirical explanation for these contrasting effects. They present how positive influence of financial liberalization carried on to investment and growth in the long-run and also identify the negative impact of

Authors demonstrate that over the long-run a positive relationship between financial intermediation and output growth can coexist with a negative short-run relationship. This was found as the case for average country in the sample. They find that in the case of financially fragile countries, identified with which had experienced banking crises or suffer higher financial volatility, tend to display significantly negative short-run effects of intermediation on growth. For more stable countries, this effect is absent on average.

Luintel, K.B. and Khan, M. (1999), "A quantitative reassessment of the finance-growth nexus: evidence from a multivariate VAR", *Journal of Development Economics* 60: 381-405.

Annual data for 10 developing countries namely, Costa Rica, Colombia, Greece, India, Korea, Malaysia, the Philippines, Sri Lanka, South Africa and Thailand with 36-41 observations

Time series using VARs, VECM, Johansen cointegration, weak exogeneity and Granger causality

financial volatility and crisis and the short-run effects of financial liberalization.

Authors first provide a synopsis of conflicting views to illustrate the controversy surrounding the causality of finance and growth. Then an empirical examination on the long-run causality between financial development and economic growth in a multivariate time series framework was undertaken. As there were certain difficulties surrounding the cross-country regression and bivariate time series studies, they prefer for a multivariate approach. The long-run financial development and output relationships are identified in a cointegrating framework through tests of over-identifying restrictions.

The authors find a bi-directional causality between financial development and economic growth in all the sample countries they investigated. Finance and output are also positively related in the long run. Distinct from those reported in bivariate time series studies, which produced mixed results on the direction of causality, they found little evidence of nonlinear effect of real interest rates.

McCaig, B. and T. Stengos, (2005), "Financial intermediation and growth: some robustness Results". *Economics Letters* 88: 306-312.

Annual data for 71 countries from 1960 to 1995

Cross country regression using Generalized Method of Moments (GMM)

The authors say that though the legal and accounting systems as an instrument to explain financial development are well documented in the literature, there are other possible instruments suggested in the literature on which much work is not carried out. Their intention in this study is to consider whether other instruments reach similar conclusions for the link between financial intermediary development and economic growth. Their research focuses on measures such as religious composition, the fraction of years of independence since 1776, absolute latitude, European settler mortality rates and ethnic fractionalization as alternative instruments to examine the robustness of the findings on the subject.

The results confirm the findings of an earlier study by Levine for a strong positive effect on growth when financial intermediation is measured by Liquid Liabilities and Private Credit as ratios to GDP as a measure of financial development. However, the results of the association between finance and growth found to be considerably weaker when financial intermediation is measured as the ratio of commercial to central bank assets as an indicator of financial development, which shows that the latter variable is not a very good proxy for financial development.

Ndikumana, L. (2005),
"Financial development, financial
structure, and domestic
investment: international
evidence".
*Journal of International Money
and Finance* 24: 651–673.

Annual data for 99 countries
Including both developed and
developing countries for the
period 1965–1997

OLS and panel
data
fixed effects

This paper examines whether bank-based or stock-market-based financial systems are better in promoting domestic investment. The effects of financial structure is examined by classifying countries into four categories; financial developed bank-based, financially developed stock-market based, financially under developed bank-based and financial underdeveloped stock-market-based systems. The analysis uses a dynamic investment equation including lagged investment, an indicator of financial intermediation, an interaction term between the lag of the growth rate of per capita GDP and dummy for the financial structure category and other determinants of investment. The paper tests whether financial structure has an independent effect on domestic investment by controlling for the level of financial development by applying conventional measures of intermediation.

The evidence confirm that different financial development indicators applied in the analysis are positively related to domestic investment, which confirm that as financial systems grow, availability of capital becomes more easier and cheaper, which is favourable to capital accumulation. On the other, the results find no indication in support of differentiating between a bank-based or market-based financial system based on performance and contribution to promoting investment. Therefore, financial structure is not an issue in investment and economic growth.

Neusser, K. and M. Kugler,
(1998),
"Manufacturing growth and
financial development: Evidence
from OECD countries".
*Review of Economics and
Statistics* 80: 638–646.

Annual data for 13 OECD
countries for the period
1970–1991

Time Series using
Johansen, Stock–
Watson, Horvath–
Watson, Phillips–
Ouliaris, Engle–
Granger
cointegration and
Granger causality

The authors analyzed the long-run relationship between manufacturing sector GDP and financial sector GDP by using both Johansen maximum likelihood and residual-based panel cointegration tests. The conclusion derived was that the causality directions are mixed in the countries under study, i.e., some countries provide evidence to support finance-led growth hypothesis, some support growth driven finance hypothesis and a feedback causality exists in the certain countries.

Authors reveal that cointegration between financial sector GDP and manufacturing sector GDP is found to exist in respect of half of the countries in the sample. In general, causality results exhibit that finance Granger-causes total factor productivity of manufacturing (TFP). Several feedback relationships are also obvious in some countries.

Odedokun, M.O. (1996), "Alternative econometric approaches for analysing the role of the financial sector in economic growth: time-series evidence from LDCs". *Journal of Development Economics* 50: 119–146.

Annual data for 71 less developed countries, that generally span the 1960s to 1980s

Panel data - Generalized least squares (GLS)

His study covers a wider geographical area that include countries in Asia, Sub-Saharan Africa and Latin America with different level of economic development to examine whether the effects of financial development on economic growth vary across various regional group of countries. As oppose to hitherto undertaken empirical studies where the estimation of regression equations take the form of

$$EconomicGrowth = f(Financic$$

Regression results for individual countries indicate that in the case of 85% of sample countries, financial intermediation promotes economic growth. Financial intermediation is practically at par with export expansion and capital formation ratio and superior to labour force growth. It is also observed that the growth-enhancing effects of finance are found to be more prominent in low-income developing countries than in high-income developing countries. The panel data estimation outcomes reveal that the results are invariant across regions and the levels of economic development

he proposes a framework based on the conventional neo-classical one sector aggregate production function in which financial development constitute an input as in the equation below;

$$y = f(L_t, K_t, F_t, Z_t)$$

where y is aggregate output or real GDP, L labour force, F measure of the level of financial development, K capital stock, Z vector of other factors that can be regarded as inputs in aggregate production process and t denotes the time period. By this way he deviates from the existing framework which he states are lacking theoretical underpinnings and thus incorporate several other factors into the model.

Prati, Alessandro, Martin Schindler, and Patricio Valenzuela (2009), "Who Benefits from Capital Account Liberalization? Evidence from Firm-Level Credit Ratings Data" *IMF Working Paper* WP/09/210

Accounting and market data for an unbalanced panel of 492 firms in 11 industrial and 15 emerging economies covering the period 1995 – 2004. sample are Argentina, Australia, Belgium, Brazil, Canada, Chile, China, Czech Republic, Denmark, Finland, Hungary, India,

OLS with clustering of the errors by country and year

Authors say that increasing integration of international financial markets has taken place over the past three decades as seen from the level of cross-border asset holdings, as well as in terms of the extent to which countries impose legal restrictions on capital account transactions. However, almost no country has completely eliminated all

Their findings established a strong positive effect of capital account liberalization on firm's ability to raise funds in international credit markets. This channel operates through firm's access to foreign currency, necessary for issuing foreign-currency dominated bonds. In order to test the importance of this channel, they exploited differences

Indonesia, Ireland, Israel, Italy, Japan, Malaysia, Mexico, New Zealand, Peru, Philippines, Portugal, Spain, Sweden, and Thailand.

capital controls. It appears from more recent data that a reversal of the previous trend towards freer capital markets taking place, with several countries imposing new controls on capital account transactions. Therefore, the application of capital account restrictions remains an important and actively used policy instrument for countries aiming to limit or control the extent to which their economies are integrated with world financial markets. However, despite several studies on the costs and benefits of such controls and the channels through which they may operate, the effectiveness of them, uncertainty prevails on the robustness of the answers. The authors see two reasons for the lack of stronger results, such as the use of aggregated data in many studies, and the lack of sufficiently refined de jure measures of capital account openness. Their study focuses on both shortcomings by studying a broad firm-level panel data set to explicitly address heterogeneities, and by using a new data set of capital controls which captures more subtle differences in capital control regimes across countries and time.

in the extent to which firms are actually constrained by capital account restrictions. They maintained that firms in the tradable sector have more access to foreign capital and therefore less constrained by capital account restrictions compared with non-tradable firms. They find that for firms without alternative access to foreign currency, capital account restrictions have significantly larger effects than for other firms, substantially increasing the cost. It restricts their access to credit as well.

Rajan, R.G. and Zingales, L. (1998), "Financial dependence and growth", *American Economic Review* 88: 559–586.

Annual industry level data for 41 countries over the period 1980 to 1990

Ordinary Least Squares (OLS) Regression and Panel data fixed effects

They present a methodology to investigate whether financial development has an influence on industrial growth by scrutinizing one rational for such a relationship – financial development reduces the cost of external finance to firms. The matter investigated was whether industrial sectors more in need of external finance prosper more faster in countries with more developed financial markets.

The results point to the fact that those industries which are more dependent on external finance prosper more in countries with better-developed financial intermediaries and financial markets, at least partly by reducing the cost of external finance. Financial development may play a beneficial and supportive role in firms' growth and the rise of new firms by easing the flow of external finance.

Ram, R. (1999),
“Financial development and
economic growth: additional
evidence”.
Journal of Development Studies
35: 164–174.

Annual data for 95
countries over the
period 1960–1989

Cross country
regression using
Ordinary Least
Squares (OLS)

Author says that several previous studies give uncertain and ambiguous results on the effect of the financial development and economic growth and the predominance of evidence indicate the lack of a significant positive association between financial development and economic growth. His investigation follows a four point based empirical exercise. First, he estimates the covariances between financial development and growth for 96 countries, secondly, the individual country correlational pattern for the same 96 countries, third, multiple regression estimates of simple growth equations from individual countries and finally, multiple regression estimates from the typical cross-country average data to investigate the impact of financial development and economic growth.

Author find that predominance of empirical evidence does not support the view that financial development is observed to have a positive effect on economic growth. On the basis of the outcome from the four point based investigation, he concludes that weakly negative or negligible correlation between financial development and economic growth. Similar patterns are observed when regression analyses are performed in respect of individual country, and on each sample grouped according to the level of growth rates.

Rioja, F. and N. Valev, (2004),
“Does one size fit all?: A re-
examination of the finance and
growth relationship”.
*Journal of Development
Economics*, 74: 429–447.

Panel data of 74 countries for the
period 1961–1995

Panel data - GMM

The objective of the study is to examine whether there is a systematic component in the variations in finance-growth relationship as observed by several authors. They develop a particular structure which allows the effects of finance on growth to differ according to scale and diminishing return effects in the development of financial sectors. They classify the level of financial development into three regions on the basis of a certain threshold. Financial development applies a strong positive effect on economic growth only after it has reached this threshold, which is classified as “middle region”. Below this threshold, which is the “low region”, the effect of financial development is uncertain as different empirical

By dividing all countries into three groups according to their levels of financial development, the evidence suggests that finance has a strong positive impact on economic growth mainly in countries with more developed financial systems. In financially less developed countries, the effect of finance on growth is ambiguous.

measures of bank based financial development indicate a zero or a positive effect. On reaching the “high region”, the growth effect of financial development declines with diminishing return. The authors show that economic growth of countries having low level of private credit experienced either negative level or low level of growth, while those countries with moderate levels of private credit grow somewhat higher. In the case of countries with higher level of private credit, the economic growth was moderate. Authors say these are the causal relationships and they give some encouragement to studying potential structural breaks in the relationship between finance development and growth.

Rousseau, P.L. and Wachtel, P. (2000), “Equity market and growth, cross country evidence on timing and outcomes 1980–95”.
Journal of Banking and Finance 24: 1933–1957.

Annual data for 47 countries for the period 1980–1995

Panel data - VARs

Authors recognize that rapid development of organized stock markets in both emerging and developed countries has prompted policymakers to raise important questions about their macroeconomic impact. However, the need to focus on recent data poses implementation difficulties for econometric studies of dynamic interactions between stock markets and economic performance in individual countries. According to the authors, their study helps overcome some of these difficulties by applying recent developments in the analysis of panels with a small time dimension to estimate vector autoregressions for a set of 47 countries with annual data for 1980–1995.

Authors find evidence in support of the role of stock markets in promoting economic performance by providing an exit mechanism for venture capitalists, offering liquidity to investors that encourage international diversification and portfolio flows, providing firms with access to permanent capital which can then be placed in large, indivisible projects and generating information about quality of potential investment projects. The analysis confirms that stock market liquidity and financial intermediation contribute to higher per capita output. However, there is a weak effect of stock market capitalization on output..

Rousseau, P.L. and D. Vuthipadadorn (2005), "Finance, investment, and growth: time series evidence from 10 Asian economies". *Journal of Macroeconomics* 27: 87–106.

Annual data for 10 Asian countries (India, Indonesia, Japan, Korea, Malaysia, Pakistan, Philippines, Singapore, Sri Lanka, and Thailand) over the period 1950–2000

Multivariate analysis with time series data and using Johansen cointegration, VECM, Granger causality tests, modified WALD (Toda–Yamamoto) tests and variance Decomposition analyses

The authors investigate the impact of financial development on economic growth focusing on financial intermediation on output and investment separately to avoid the problem of collinearity between the output and investment. They developed tri-variate models incorporating a series of time series data such as a measure for financial development taking the difference between M2 and M1, credit allocated to private sector (CPV) as an alternative to (M2-M1), gross domestic product and gross domestic fixed investment as a measure of economic performance. To measure the interaction, as baseline specifications, they use either investment or output as a real sector measure and one out of M2-M1 or CPV as the measure of financial development. They also included the narrow money (M1) as in the case of developing countries, they say that currency serves as an important store of value and thereby complimenting the intermediation of finance in facilitating the accumulation of capital.

Results confirm that the character of the finance–growth nexus considerably varies across countries. However, the obvious result is that almost all cases, financial development is a key driving force leading investment and supporting factor accumulation. Authors are of the view that uni-directional reverse causality from economic performance to the financial sector cases are a rare occurrence.

In the emerging economies they have studied, it is established that investment may indeed be the key channel through which financial development affected growth and that it may have broader implications for other countries in the earlier stages of market development. However, there is less support for a causal link from finance to the level of output.

Rousseau, P.L. and P. Wachtel (2002), "Inflation thresholds and the finance–growth nexus". *Journal of International Money and Finance*, 21: 777–793.

Five-year averages of standard measures of financial development, inflation, and growth for 84 countries from 1960 to 1995.

Panel data fixed effects

The authors examine whether the strength of the relationship between the size of a country's financial sector and its rate of economic growth varies with the inflation rate. They point out that negative effects of inflation on growth have been widely studied, although the evidence does not always give clear support.

The study indicates that there is an inflation threshold which lies between 13%–25% for the finance–growth relationship. When inflation exceeds this threshold level, finance does not seem to increase growth. The effects are significantly positive when inflation falls below the threshold of 6%–8%. They also find that the level of financial depth varies inversely with inflation in low-inflation environments and that disinflation is associated with a positive effect of financial depth on growth.

Saidi, Hachem and Chaker Aloui (2010), "Capital Account Liberalization and Economic Growth: GMM System Analysis", *International Journal of Economics and Finance*, 2, 122-131

Panel data for 21 OECD countries and 39 developing countries covering the period from 1984 to 2003.

Two econometric methods were used to estimate dynamic panels. Firstly OLS. As OLS does not give efficient estimators due to the presence of a lagged endogenous variable in the model, Generalized Moment Method (GMM) was employed.

The focus of the study was to better understand the role played by the capital account opening in the initiation of economic growth with the objective of seeking to establish further theoretical basis justifying the implementation of convertibility of capital account. Authors say that their intention was to test the correlation between capital account liberalization and economic growth based on a qualitative indicator of such process. The model estimated takes the following form:

$$Growth_{it} = f(ypc; sep; sec; cal)$$

With $i = \{1, \dots, n\}$; $t = \{1, \dots, t\}$

Where growth = real per capita GDP, ypc = log of income per capita, sep = the log of the primary school enrolment rate, ses = log of secondary school enrolment rate, and cal = measure of capital account liberalization. The 'cal' is a qualitative indicator based on the index of capital account liberalization.

The results show a significant effect of capital account liberalization on economic growth in OECD countries having made experienced good performance and managing the risk of capital flight. However, the results obtained for the developing countries were negative. Authors further conclude that capital market opening should be carried out gradually and prudently to avoid financial crises.

Shrestha, Min B. and Khorshed Choudhury (2007), "Testing Financial Liberalization Hypothesis with ARDL Modeling Approach", *Applied Financial Economics*, 17, 1529-1540

Quarterly data from 1970 to 2003 for Nepalese economy

ARDL approach with bound testing procedure

The study focuses on the interest rate effects on savings and investment to test the implications off financial liberalization as theorized by McKinnon and Shaw on the Nepalese economy. It assumed that aggregate savings is a function of income and interest rate. Savings was proxied by bank deposits and income by GDP and this relationship is modeled to analyze the effects of changes in real interest rates on savings. The effects of real interest rate on investment through savings, this relationship was modeled taking bank credit as a proxy for investment being regressed on real time deposits, real

Empirical evidence confirmed that there is a positive significant effect of real interest rate on savings as well as clear association of savings on investment. Their findings strongly support the McKinnon-Shaw financial hypothesis. Authors states that their findings refute the conclusions reached by previous studies which failed to support the positive interest rate effects on savings and investment

Siddiki, Jalal U. (2002),
"Trade and Financial
Liberalization and Endogenous
Growth in Bangladesh".
International Economic Journal ,
16, 3, 23- 37.

Annual data for Bangladesh from
1974 to 1995

Ordinary Least
Squares (OLS)
and fully
Modified Least
Squared Method
(FMLS)

bank lending rate, real refinancing rate,
and the borrowings from the banks.

A review on the policy changes in
developing countries towards financial
and trade liberalization to revive the
economies with a new paradigm is
presented. There has been a growing
consensus among researchers that
financial and trade liberalization policies
largely contribute to economic growth.
He maintains that research on the joint
impact of financial and trade variables
on economic growth is generally
underdeveloped although few have
incorporated both variables into growth
models. Perhaps after 1998 study by K.
Blackburn and Victor T.Y. Hung
incorporating the joint impact of both
financial and trade liberalization on
economic growth, Siddiki's study is the
first to emerge in the empirical literature
on the subject. The testable hypothesis
in his study is set as "both financial and
trade liberalization jointly increase
economic growth". Distortions injected
from the restrictive financial and trade
regimes costing to the economy have
been expounded in the essay. In the
absence of a commercially motivated
banking regime, investments were
channelled to bad project without proper
screening to evaluate merits.

Empirical examination reveals that
financial development, real interest rate,
and trade liberalization are statistically
significant, but author says these are
only indicative and hence emphasizes
that definitive outcome cannot be
obtained from a small sample. A deeper
analysis could be done when more data
could become available with time goes
on as liberalization was at the early
stages in 1990s. One of the key lessons
from the study is that investing in
human capital benefits technological
progress and thereby economic growth
that would lead to social development.
The results favourably support the
endogenous growth theory, which
emphasizes the need to increase
spending on education and training with
a view to raising the quality of the
human capital.

Stengos, T. and Z. Liang, (2005),
"Financial intermediation and
economic growth: a
semiparametric approach".
In C. Diebolt and C. Kyrtsov
(eds),
New Trends in Macroeconomics
(pp. 39-52).

Panel data of 66 countries for the
period 1961-1995 averaged over
five year intervals.

Panel data - IV
augmented
semiparametric
partial linear
model

Authors examine the effect of financial
development on economic growth in an
additive Instrumental Variable-
augmented Partially Linear Regression
Model. They say that this method allows
for the unknown nonlinear components
to enter additively giving the explicit
estimation of the marginal effects of
these nonlinear components on the

The authors apply a semi-parametric
approach to analyze the possible
nonlinearity of the effect of finance on
economic growth. The results give
evidence in support of the existence of
nonlinear effect in the relationship.
However, the results are sensitive in
respect of the choice of the measures
for financial intermediary development.

Thangavelu, S.M. and J.B. Ang. (2004), "Financial development and economic growth in Australia: an empirical analysis", *Empirical Economics*, 29: 247-260.

Quarterly data for Australia from first quarter of 1960 to fourth quarter of 1999

Time Series using VARs and Granger causality

dependent variable. Their regressors were initial income per capita, average years of secondary schooling, government size, openness to trade, inflation, financial intermediary development. measured by three different indicators or choices (viz., private credit, commercial versus central bank and liquid liabilities) and a dummy for OECD.

The paper examines the dynamic relationship between financial development and economic growth in Australia on the basis of bank based and market-based financial structure. Authors say that although studies have been carried out previously in examining the causal relationship between financial development and economic growth in a time series framework, the feature of this study differs in that it re-examine the relationship in terms of bank-based and market-based financial structure. However, the results of these regression studies are seriously flawed in the methodology applied since there could be significant simultaneity bias between the two variables. Pointing to Granger they remind that it is possible for two variables to be highly correlated but not necessary causally linked. Hence the findings of these studies cannot be interpreted in a causal sense. The cross-section type technique cannot allow different countries to exhibit different patterns of causality due to the fact that it is likely that in some countries financial sector is leading while in others it lags behind the real sector. This means that the 'causality' result obtained is only valid on the average, but not for all under investigation. To avoid such

For instance, when used liquid liabilities index, financial development affects economic growth nonlinearly, effects of private credit is almost linear and insignificant. The effect is ambiguous when commercial bank-central bank index is used.

The results show that given the diverse roles of financial intermediaries and financial markets, economic growth have felt differently in the domestic economy. In particular, evidence indicates that causality runs from economic growth to the development of the financial intermediaries strongly supporting the Robinson's hypothesis. On the other hand, consistent with Schumpeterian view development in the financial markets causes economic growth but there is no evidence of any causality from economic growth to financial markets. The sensitivity test carried out with different interest rates does not alter the results.

Tornell, Aaron and Frank Westermann, (2002), "Credit Channel in Middle Income countries", *NBER Working Paper*, No. 9355

Firm level data from a panel of 3877 firms of the World Business Economic Survey of the World Bank (WBES 2001) covering 27 out of 39 Middle Income Countries

Four different Vector Auto Regressions (VARs), Panel Regrssion

weaknesses and to sufficiently solve the asymptotic problems, authors of the view that the application of time series methodology of vector autoregressive (VAR) model and Granger causality test to estimate the above relationship is the best.

Authors state that credit market plays a key role in propagating shocks in middle income countries. It has been observed that in particular, shocks to the spread between domestic and international interest rates have a strong effect on GDP and an even stronger effect on domestic credit. As such it creates a strong asymmetry in the output between the bank dependent non-tradable sector and tradable sector where non-tradable sector reacting more strongly than the tradable sector. This asymmetry, in turn, is associated with a strong reaction of the real exchange rate thus affecting the relative prices of non-tradable and tradable sector. In order to reconcile these facts and to obtain a well specified estimation framework, the authors develop structural VARs. This helps in identifying shocks to the credit market conditions and trace their effect on the whole economy.

Evidence shows that in spite of the many ways Middle Income Countries are distinct from one another, they have in common the patterns of several macroeconomic variables. Particularly, an increase in the spread between domestic and international interest rates has a strong effect on GDP and an even stronger effect on domestic credit. Additionally, movements in credit are strongly correlated with those of investment, real exchange rate and the ratio of non-tradable to tradable output.

Wurgler, Jeffrey, (1999), "Financial markets and the allocation of capital" *Yale ICF Working Paper*, No. 99-08 (On-line)

Using UN International Standard Industrial Classification (ISIC) for 28 industrial sectors and a panel of gross capital formation (investment) and value added (sales minus cost of intermediate goods) over the period 1963 to 1995 for 65 countries

A complex statistical estimation procedure and OLS method

This paper focuses on the relationship between finance and economic growth, explores international differences in the efficiency of capital allocation. The author says that as efficient allocation of capital is a fundamental function of an economy, it is achieved by investing capital in the sectors that are expected to have high returns and be withdrawn from sectors with poor prospects. Despite ample economic theories

The study finds that relative to countries with small financial markets, financially developed countries increase investment more in their growing industries and decrease it more in their declining industries. Thus, this paper identifies a specific mechanism by which financial markets improve the real economy. The results also shed light on some of the channels through which financial markets improve capital

Xu, Z. (2000),
“Financial development,
investment, and economic
growth”,
Economic Inquiry 38: 331–344.

Annual data for 41 countries
representing a mixture of
countries from various
geographic regions over the
period 1960–1993

Time Series using
multivariate
VARs and
impulse
response analyses
(IRA)

Author analyses the dynamic effects of permanent financial development on growth of real domestic investment and real GDP. In his analysis, three commonly used variables, namely, the real GDP, real domestic investment and index of financial development were used taking the first differencing of the log levels which translates them into growth rates. He says that since arbitrarily chosen specifications for a VAR model will most likely produce unreliable results, a data based model selection criterion was used to specify VAR model in respect of each country in the sample. An impulse response analysis was also carried out to infer the effects of financial development on investment and real GDP.

suggesting that financial markets contribute to economic growth, Wurgler considers that there is little direct evidence on whether and how financial markets contribute in improving the capital allocation. He states that through his work he attempts to fill this gap. He observes that relative to countries with developed and large financial markets, other countries both over invest in their declining industries and under invest in their growing industries. Since value added growth is reliably positively correlated with Tobin's Q, this result suggests that financial development helps a country take better advantage of its investment opportunities in a number of channels. Hence, financial market variables though not fully explain all of the cross-country variation in the quality of capital allocation, they can explain to a substantial degree.

allocation. Stock markets, particularly those that exhibit a high proportion of firm-specific price movements, appear to provide useful public signals of investment opportunities; state-owned firms fail to allocate capital efficiently; and consistent with Jensen's (1986) free cash flow theory, minority investor rights appear to curb overinvestment in declining industries. In brief, developed financial markets and associated institutions improve the allocation of capital through several channels.

The study finds evidence that shows financial development stimulates growth thus refuting the notion that financial development simply follows economic growth and has very little effect on it. In this regard, investment is considered to be an important channel through which finance affects growth. Positive effects of financial development on investment growth and economic growth are found in 27 countries of the 41 countries studied.

Annexure II

Chronology of Major Economic and Financial Reforms in Sri Lanka 1977 - 2010

Year	Major Reform	Legal Instrument	Outcome
1977	<p>Initial Steps towards Current Account and Investment Liberalization and Exchange Rate Reforms: Abolishment of the dual exchange rate system and unification of the exchange rate with a 44% devaluation and setting the exchange rate mechanism under managed floating system, relaxation of exchange control for payment for a variety of import of goods and services including travel, business, medical treatments, education and emigration, raising interest rates according to market determinant rates and investment liberalization</p> <p>Relaxation of Import Controls:</p>	<p>Government annual Budget for 1977; Exchange Control Act no. 24 of 1953 as amended by Acts no. 35 of 1956, no. 47 of 1957, No. 17 of 1971, Laws No. 14 of 1972, no. 39 of 1973, No. 4 of 1977 and no. 13 of 1977, Monetary Law Act no. 58 of 1949</p> <p>The Custom Ordinance - Chapter 235, Import and Export Control Act no.1 of 1969</p>	<p>After several years of inward oriented economic policy framework, Sri Lanka initiated a liberal trading environment opening up its markets and inviting foreign capital. This was the initial step towards liberalization with drastic changes in the economy.</p> <p>Scarcity of essential items such as foodstuff, machinery and raw material gradually disappeared</p>
1978	<p>Credit easing: Relaxation of selective credit ceilings on commercial bank credit to finance companies engaged in lending and hire purchase activity and removal of credit ceilings on banks for credit to government corporations and statutory boards</p> <p>Exchange controls: Exchange allowances for business travel and education were increased; commercial banks were permitted to</p>	<p>Monetary Law Act no. 58 of 1949</p> <p>Exchange Control Act no. 24 of 1953 and its</p>	<p>Relatively a large segment in the economy which hither to suffered from lack of accessibility to credit Started to benefit from this action thereby creating employment opportunities and activating production</p> <p>Business travel abroad helped to promote both export and imports as</p>

	open non-residents foreign currency accounts for Sri Lankans and foreign nationals; simplification of exchange control procedure and delegation of such activities to commercial banks	amendments	well as to learn about the available technologies in foreign countries giving greater exposure to local businessmen
1979	<p>Liberalization of Banking Sector: Relaxation of operational restrictions on commercial banking (licensing of new banks including foreign banks, permission to expand branch networks of existing banks)</p> <p>Supervision of Finance Companies: Establishment of supervisory and regulatory controls of finance companies by the Central Bank of Sri Lanka (CBSL)</p> <p>Development Banking: Introduction of a new form of specialized financial institutions (National Development Bank)</p> <p>Foreign Currency Banking: Authorization of banks to establish foreign currency banking units (FCBUs) to promote offshore banking services and international money market transactions</p> <p>Foreign Direct Investment: Creation of the Greater Colombo Economic Commission to facilitate foreign and domestic investments in Export Processing Zones in Sri Lanka</p>	<p>Monetary Law Act no. 58 of 1949</p> <p>Finance Companies Act, No. 27 of 1979</p> <p>National Development Bank of Sri Lanka Act no 2 of 1979</p> <p>Monetary Law Act no. 58 of 1949 and Exchange Control Act no. 24 of 1953</p> <p>Greater Colombo Economic Commission Act no. 4 of 1978</p>	<p>Immediately after this reform, three foreign banks opened branches in Sri Lanka</p> <p>Orderly system in the non-bank financial market were established</p> <p>Facilitated credit needs of numerous economic activities</p> <p>This helped specially foreign investors in the Export Processing Zones</p> <p>Rapid expansion in industrial output resulting from FDI inflows</p>
1980	<p>Foreign Currency Accounts: Introduction of Resident Non-National Foreign Currency Account Scheme (RNNFCA)</p> <p>Broadening the Monetary Aggregates: Monetary aggregates used for monetary policy purposes broadened to take cognizance</p>	<p>Monetary Law Act no. 58 of 1949</p> <p>Monetary Law Act no. 58 of 1949</p>	<p>Encouraged foreign national residents i the country to keep their foreign currency within Sri Lanka</p> <p>It helped to bring about an effective monetary policy</p>

	<p>of new innovations in banking system. Accordingly, the concept of Broad Money Supply (M2) was introduced.</p> <p>Upward revision of interest rates: Administered interest rates (i.e., bank rate, treasury bill rates, government securities rate and deposit rate of National Saving bank were raised</p>	<p>Monetary Law Act no. 58 of 1949</p>	<p>Following the administered rate hike, the commercial banks too increased their rates which helped maintain positive interest rates</p>
1981	<p>Treasury bill market: Secondary market for treasury bills (TB) was introduced</p> <p>Foreign Exchange: Commercial banks were permitted to encash inward remittances and travellers' cheques and foreign currency notes up to US\$500 without obtaining details on the source or purpose of receipts</p>	<p>Monetary Law Act no 58 of 1949, Local Treasury Bill Ordinance no. 8 of 1923 and Registered Stocks and Securities Ordinance no. 7 of 1937</p> <p>Exchange Control Act no. 24 of 1953 and its amendments</p>	<p>Made more attractive particularly to the institutional investors to engage in this sector as they are one of the most reliable and guaranteed investment devices.</p> <p>It encouraged more liberal approach to encashment of foreign currency</p>
1982	<p>Credit ceilings: Credit ceilings on bank credit to residents or companies registered in Sri Lanka for the purchase of plantations or immovable property were withdrawn. Also credit ceilings on selected non-priority sectors were removed</p> <p>Exchange rates: Central Bank introduced limits on daily fixed quotations of rates to the intervention currency, i.e., the US dollar</p> <p>Stock Exchange: Colombo Stock Exchange Ltd was established</p>	<p>Monetary Law Act no 58 of 1949</p> <p>Monetary Law Act no 58 of 1949</p> <p>Companies Act No. 17 of 1982</p>	<p>Credit market became more efficient and these sectors were injected with new life.</p> <p>More stability to exchange rate was brought about.</p> <p>Initial step for raising equity capital through a market mechanism was laid down.</p>

1983	<p>Credit Ceilings: Overall credit ceilings on commercial banks were removed</p> <p>Venture Capital: Approval for the establishment of venture capital companies and merchant banks was granted</p>	Monetary Law Act no 58 of 1949	<p>A further step towards credit market liberalization.</p> <p>It gave a boost to startup firms by making available seed capital and entrepreneurial talents.</p>
1984	<p>Banking: National Saving Bank (NSB) was allowed to set its own deposit rates.</p> <p>Real estate sector development: State Mortgage and Investment Bank was reorganized as a specialized housing bank and was authorized to accept deposits</p> <p>Main emphasis was placed on indirect monetary policy instruments, open market operations</p>	<p>National Savings Bank Act no. 30 of 1971 and Monetary Law Act no 58 of 1949</p> <p>State Mortgage and Investment Bank Law no. 13 of 1975</p>	<p>A step towards further liberalization of credit market.</p> <p>Facilitated housing construction, small business and manufacturing sectors</p>
1985	Establishment of Regional Rural Development Banks (RRDBs)	Regional Rural Development Bank Act, No. 15 of 1985	Increased focus on the rural economy to provide financial support to agriculture, cottage and small industry, fisheries, commerce and other activities
1986	Exchange Controls: Requirement of obtaining exchange control approval for encashment of travellers' cheques exceeding Rs. 100,000 per day was withdrawn and also exchange entitlements for education abroad were further enhanced	Exchange Control Act no. 24 of 1953	Step towards further liberalization of foreign exchange transactions
1987	Certificates of Deposits: CBSL removed the limits placed on commercial banks relating to the issue of Certificates of Deposits	Monetary Law Act no. 58 of 1949	Immediately after the relaxation, such deposits increased from

	<p>(CDs)</p> <p>Privatization: Privatization of public enterprises was announced as a state policy and action was taken towards this direction.</p> <p>Stock Market: Securities Council to regulate the securities market was established</p>	<p>Public Corporation Act no. 22 of 1987 and Public Company Act no. 23 of 1987</p> <p>Securities and Exchange Commission of Sri Lanka Act, no. 36 of 1987</p>	<p>Rs.1,673mn at the end of 1986 to Rs.2,032mn by end of 1987 and in the following year, the amount reached Rs.2,399mn. Two more banks, namely the Seylan Trust Bank and the Indian Bank entered the CD market thus increasing the number of banks operating in the market to 23 in 1988.</p> <p>By end of 1995, 60 state enterprises were divested or sold. Further, most of the state-owned plantations were handed over to 22 companies for management.</p> <p>Orderly situation was introduced in regard to securities market by granting licenses to stock exchanges, stock brokers, and stock dealers and also establishing a compensation fund and to overseeing such activities,</p>
1988	<p>Banking laws: A comprehensive procedure for the regulation and control of banking in Sri Lanka by the CBSL was introduced</p> <p>Non-bank financial institutions: CBSL was given wider powers to regulate finance companies and setup a new department for</p>	<p>The Banking Act, no. 30 of 1988</p> <p>Finance Companies Act no. 78 of 1988</p>	<p>Improved prudential regulations in light of changing international environment helped to strengthen the sector</p> <p>Better business environment in the non-bank financial sector was</p>

	<p>supervision of non-bank financial institutions</p> <p>Treasury bill rates: Interest rates in primary treasury bill market were allowed to be determined by market conditions as against the previous practice of administratively determined rates</p> <p>Investment Protection Guarantee: A law was enacted enabling Sri Lanka to fulfil its obligations under the Convention establishing the Multilateral Investment Guarantee Agency as Sri Lanka became a signatory to the Convention on October 3, 1986.</p>	<p>Monetary Law Act no. 58 of 1949</p> <p>Multilateral Investment Guarantee Agency Act no. 57 of 1988</p>	<p>created</p> <p>Alignment of interest rate with market fundamentals reduced the disparity between treasury bill rates and other products.</p> <p>More confidence were created among foreign investors</p>
1989	<p>Prudential Regulations: Under the prudential regulations, minimum liquid assets ratio and single borrower limit for commercial banks were imposed</p>	<p>Monetary Law Act no. 58 of 1949, Banking Act no. 30 of 1988</p>	<p>Helped manage cash flows and interbank settlement of banks</p>
1990	<p>Credit Information: CBSL established the Credit Information Bureau (CIB) to function as a resources base for banks in screening borrowers to avoid loan defaults</p> <p>Debt Recovery: Action was taken to introduce procedure governing recovery of debts of commercial banks</p> <p>Exchange Controls: Permission was granted to approved country funds, regional funds and non-resident individuals to invest in shares listed companies up to 40 per cent of issued share capital. With this a scheme of Share Investment External Rupee Accounts (SIERA) was introduced through authorized dealers to facilitate</p>	<p>Credit Information Bureau of Sri Lanka Act No. 18 of 1990</p> <p>Debt Recovery (Special Provision) Act N. 2 of 1990, Mortgage (Amendments) Act No. 3 of 1990 and Recovery of Loans by Banks (Special Provisions) Act No. 4 of 1990</p>	<p>Continued to facilitate a large number of clientele in the financial sector with credit reports</p> <p>This facilitated the banking sector to recover or reschedule some of their bad debt.</p> <p>It gave a boost to share market.</p>

	<p>and monitor such investments.</p> <p>Exchange Rate: Central Bank stopped fixed quotations for US dollar and began announcing buying and selling rates for US dollar at the beginning of each day. The rates could be varied during the day.</p>	<p>Monetary Law Act no. 58 of 1949, Banking Act no. 30 of 1988</p>	<p>It aligned the rates with market trends.</p>
1991	<p>Import Tariffs: Through a gradual process for the reduction and simplification of tariff rates that began in 1977, the tariff rates bands were further rationalized with a four band system consisting 10, 20, 35 and 50 per cent tariff rates.</p> <p>Stock Market: Securities Act was amended to form the Securities and Exchange Council (SEC) covering regulations of unit trusts.</p> <p>Security Market: Companies incorporated abroad were permitted to invest in securities traded in the Colombo Stock Exchange.</p> <p>Exchange controls: Exporters were granted permission to borrow from Foreign Currency Banking Units for financing imported inputs.</p> <p>Money changers: Money changers were appointed permitting them to purchase and exchange foreign currency against Sri Lanka rupees or against other currencies.</p> <p>Resident Foreign Currency Accounts: Sri Lankan residents and non residents were allowed to open Resident Foreign Currency Accounts (RFCs)</p> <p>Finance companies: A regulatory framework governing financial</p>	<p>Customs Ordinance</p> <p>Securities Council (Amendments) Act No. 26 of 1991</p> <p>Securities Council Act no. 36 of 1987</p> <p>Exchange Control Act</p> <p>Exchange Control Act</p> <p>Exchange Control Act</p> <p>Finance Companies</p>	<p>Until 1991 there existed a 13 band tariff rates system. The reduction and simplification was brought further openness to trade.</p> <p>More regulatory supervision of the unit trusts to ensure investor confidence</p> <p>A further step towards liberalization of capital transactions</p> <p>A further step towards liberalizing exchange controls</p> <p>It helped broaden the base of foreign currency dealers</p> <p>A further relaxation of foreign currency dealings</p> <p>Helped to create confidence in the</p>

	companies to discipline from misappropriation of funds	(Amendment) Act No. 23 of 1991	minds of finance service demanders
1992	<p>Bank lending: Commercial banks' lending to selected non-priority sectors were removed.</p> <p>Prudential regulations: For the banking sector, disclosure requirements and loan recovery mechanisms were introduced</p> <p>Foreign investments: Approved country funds, regional funds, non-resident individuals and corporate bodies incorporated outside Sri Lanka were authorised to invest in shares in listed companies up to 100 percent of issued share capital</p> <p>Board of Investment: Board of Investment was established replacing the Greater Colombo Economic Commission with extending the area of authority from the limited zones to cover the entire country.</p>	<p>Monetary Law Act no 49 of 1949, Banking Act no. 30 of 1988</p> <p>Monetary Law Act no 49 of 1949, Banking Act no. 30 of 1988</p> <p>Greater Colombo Economic Commission Act no. 4 of 1978</p> <p>Greater Colombo Economic Commission (Amendment) Act No. 49 of 1992</p>	<p>Government further keeping away from giving directives for lending</p> <p>An act for further confidence building between banks and their clienteles</p> <p>Helped to boost share prices</p> <p>More opportunities for FDI attraction</p>
1993	<p>Capital Adequacy: New standards on capital adequacy for commercial banks were introduced, based on Basel guidelines.</p> <p>Recapitalization of State Banks: Two state banks were recapitalized to make financial viability and to bring in line with internationally accepted levels.</p> <p>Expansion of Capital Base: The capital base of National Development Bank was raised through a share issue.</p>	<p>Monetary Law Act no 49 of 1949, Banking Act no. 30 of 1988</p> <p>Bank of Ceylon Act (chapter 397) and People's Bank Act no. 30 of 1961 and Banking Act no 30 of 1988</p> <p>National Development Bank of Sri Lanka Act</p>	<p>Helped to ensure increased solvency and building the trust</p> <p>Creating further financial viability and trust</p> <p>Helped to ensure increased solvency and building the trust</p>

	<p>REPO Market: CBSL established a market (REPO-market) for repurchasing treasury bills with a view to establish the lower end of the call money market</p> <p>Commercial Paper: The private sector started to issue commercial papers for covering short-term funding needs</p> <p>Exchange Controls: Repatriation and surrender requirements in respect of export proceeds were abolished and export earnings were allowed to be maintained in foreign currency accounts either in Sri Lanka or abroad.</p> <p>Remaining restrictions on payment in connection with education abroad, travel and remittances for miscellaneous purposes were eliminated.</p>	<p>no. 2 of 1979</p> <p>Monetary Law Act no 49 of 1949</p> <p>Exchange Control Act</p> <p>Exchange Control Act</p>	<p>Helped to enhance the short-term capital market</p> <p>Helped to encourage private sector-led capital market while investors being provided with an alternative investment opportunity</p> <p>A further relaxation of transactions both in the current and capital accounts</p> <p>A further relaxation of transactions both in the current and capital accounts</p>
1994	<p>Exchange Controls: Commercial banks were allowed to issue international credit cards 1998</p> <p>Currency Convertibility: Acceptance of article VIII of the International Monetary Fund (IMF) agreement for the complete removal of restrictions on current account transactions</p> <p>Import Controls: Import licensing requirements in respect of</p>	<p>Exchange Control Act</p> <p>Banking Act no. 30 of 1988</p> <p>Monetary Law Act no 49 of 1949, Bretton Woods Agreement Act no. 20 of 1950, 19 of 1959, 4 of 1961, 2 of 1961 and Law no. 10 of 1978</p> <p>Customs Ordinance</p>	<p>A further relaxation of foreign exchange transactions</p> <p>Sri Lanka currency became freely convertible in respect of all current international transactions</p> <p>A further relaxation of current</p>

	most of the remaining items under controls were also removed.		account restrictions
1995	<p>Import Tariffs: A three band tariff structure of 10, 20 and 35 per cent was put in place by reducing the maximum rate. However, higher import tariff were maintained for liquor, tobacco, crude oil and some categories of motor vehicles for revenue and social reasons.</p> <p>Foreign Borrowings by Banks: Commercial banks were permitted to borrow foreign loans up to 5 per cent of their capital and reserves</p> <p>Treasury Bill Market: Central Bank introduced reverse repurchase agreements for secondary market transactions</p> <p>Exchange Rate: Margin between Central Bank's buying and selling rates quoted daily for US dollar raised from 1 per cent to 2 per cent allowing greater flexibility to the market</p> <p>Financial sector reforms: As part of an ongoing process of developing the financial market, action was taken to restructure the capital base of the government owned National Savings Bank (NSB) and permit its operations to be more market oriented; to bring under the regular supervision of the Central Bank the activities of the NSB, the Development Finance Corporation, the National Development Bank and the State Mortgage and Investment Bank; and to permit closer Central Bank supervision of prudential guidelines for Foreign Currency Banking Units of commercial banks as well as to promote establishment of a scripless government securities system, to create market oriented</p>	<p>1995 Government Budget and Customs Ordinance</p> <p>Monetary Law Act no 49 of 1949, Banking Act no. 30 of 1988</p> <p>Monetary Law Act no 49 of 1949 and Local Treasury Bill Ordinance no. 8 of 1923</p> <p>Monetary Law Act no 49 of 1949</p> <p>National Savings Bank (Amendment) Act, No. 28 of 1995; Banking (Amendments) Act, No. 33 of 1995 and Monetary Law (Amendments) Act No. 26 of 1995</p>	<p>Greatly facilitated importers due to simplification of the tariff structure</p> <p>A further relaxation of transactions both in the current and capital accounts</p>

	Treasury bonds and increase efficiency of secondary market in government securities.		
1998	Bond Market: CBSL commenced electronic trading of government bonds	Monetary Law Act no 49 of 1949	Greater efficiency in the transactions of bond market
1999	Ceiling on Single Borrower Limit: The CBSL set the single borrower limits to 30% of the capital of the banks as of the end of its preceding financial year Stock Market: Foreign individuals and institutional investors were allowed to participate in trading activities in the Colombo Stock Market Disclosure Requirement: The CBSL introduced specified disclosure requirements to all banks as a means of promoting a sound and efficient banking system	Monetary Law Act no 49 of 1949, Banking Act no. 30 of 1988 Securities Council Act, no. 36 of 1987 Monetary Law Act no 49 of 1949, Banking Act no. 30 of 1988	It curtailed the impact of credit growth on inflation Strong positive impact on the share market activity Improved efficiency of banking sector management
2000	Foreign Ownership of Local Banks: Limits on foreign ownership of local commercial banks and insurance companies were raised to 60% and 90%, respectively Independent Floating of Exchange Rate: CBSL allowed independent floating of the exchange rate Financial Leasing: CBSL was given the supervisory authority for regulating and monitoring of business of investing money for the provision of equipment under finance lease and the lessor companies were allowed, inter alia, recover possession of leased equipment and damage	The Banking Act, no. 30 of 1988 Monetary Law Act no 49 of 1949, Finance Leasing Act no. 56 of 2000	Efficiency through greater competition among banks Helped create a more realistic exchange rate A more orderly leasing business environment was created
2002	Reforms in the Policy Objectives of the CBSL: The focus of the CBSL's objectives changed from traditional functions to price stability and the stability of the financial system in line with the	Monetary Law Amendment Act no. 32 of 2002	Moved away from somewhat conflicting policy framework to consistency

	<p>changing consensus internationally. With this amendment, the statutory limits on statutory reserve ratio was removed</p> <p>Prudential Norms for Offshore Banks: Prudential norms applicable to the domestic banking units were extended to the offshore banking units</p> <p>Foreign Investment: Restrictions placed on non-resident investments in the areas of banking, finance, insurance, stock broking, construction of residential buildings and roads, supply of water, mass transportation, telecommunication, production and distribution of power and energy, professional services and setting up of branches/liaison offices of companies incorporated overseas were completely relaxed.</p>	<p>The Banking Act, no. 30 of 1988</p> <p>Board of Investment Law no. 4 of 1978 and amendments incorporated in 1980, 1983 and 1992.</p>	<p>Level plying field between domestic banks and offshore banks were created</p> <p>A further relaxation of restriction on the capital account</p>
2003	<p>Responsible fiscal management including reduced level of budget deficits: An act was passed with the objective of instituting a series of actions to ensure proper fiscal management in order to reduce the annual budget deficits, reduction of public debts to prudent levels, management of financial risks faced by the government, good conduct in spending policies, predictability of taxation policies and gradual reduction of public debts with a targeted calendar from 2006 until 2013</p> <p>Relaxation of Restrictions on Rupee Loans to Foreign Investors: Restrictions on Rupee lending to foreign controlled companies approved under section 17 of the Board of Investment Act were removed.</p>	<p>Fiscal Management Responsibility Act no. 3 of 2003</p> <p>The Banking Act, no. 30 of 1988 and Greater Colombo Economic Commission (Amendment) Act No. 49 of 1992</p>	<p>The change of the government in the sudden elections did not materialize the set targets</p> <p>Created a level plying field in respect of credit supply</p>

2004	Single Borrower Limit: The single borrower limit was made applicable to off-shore banking units.	The Banking Act, no. 30 of 1988 and Monetary Law Act no 49 of 1949,	Non-discriminatory prudential regulatory environment
2005	Banking Reforms: For the approval of the business in commercial banking, a series of new measures to strengthen the prudential regulations Efficiency of Payment and Settlement System: A comprehensive regulatory system for the payment, clearing and settlement, disposition of securities on the books of the central bank, for the regulation of providers of money services, electronic presentment of cheques were put into effect	Banking (Amendment) Act, no. 2 of 2005 Payment and Settlement System Act, no. 28 of 2005	Authority of the CBSL in regard to prudential controls of commercial banks was strengthened Most efficient and speedy clearing system for cheques, monitoring payment transactions and settlement was placed
2006	Financial transaction reporting and prevention of money laundering: Keeping with multilateral financial obligations, the government has enacted new legislation to combat money laundering activities	The Prevention of Money Laundering Act no.5 and Financial Transaction Reporting Act no. 6 of 2006	Financial Intelligent Unit was established in the Central Bank of Sri Lanka under the provision of Financial Transaction Reporting Act to monitor and detect any surreptitious financial dealings purported to be considered as money laundering
2010	Privatization of Public Enterprises: The Public Enterprises Reform Commission established in 1996 to manage an orderly privatisation mechanism of public enterprises came to an end	Public Enterprises Reform Commission of Sri Lanka (Repeal) Act, no.18 of 2010	Since the repeal of this Act, no state owned enterprises were privatised and, instead the government policy changed towards supporting public enterprises

Source: Annual Reports of the Central bank of Sri Lanka from 1977 to 2010 and the respective Ordinances, Acts and Laws stated in the column under Legal Instrument

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