Financial Liberalisation and Stock Market Behaviour: Experiences of India and Select Asian Countries

Thesis submitted

By

Joydeep Biswas

FOR THE

DEGREE OF DOCTORATE OF PHILOSOPHY (COMMERCE)

OF THE

UNIVERSITY OF NORTH BENGAL

2007

RESEARCH SUPERVISOR

Dr. Malay Kanti Roy
Reader, Dept. of Commerce,
University of North Bengal
Raja Rammohun pur,
Dt. Darjeeling.

CO-SUPERVISOR

Dr. Hirak Ray
Reader, Dept. of Commerce,
University of North Bengal
Raja Rammohun pur,
Dt. Darjeeling.

STOCK TAKING - 2011

Dedicated to my Grandfather

Sri Subodh Kr. Mitra

who has been the source of inspiration
since my school life

DEPARTMENT OF COMMERCE
UNIVERSITY OF NORTH BENGAL

P. O. NORTH BENGAL UNIVERSITY
RAJA RAMMOHUNPUR, DIST. DARJEELING,
WEST BENGAL, INDIA, PIN - 734430.
PHONE : 0353-2581 474 (O)
Fax : 0353-2581 546(O)
e-mail :

Certificate

We are very glad to certify that the thesis entitled **"Financial Liberalisation and Stock Market Behaviour: Experiences of India and Select Asian Countries"** has been prepared by Mr. Joydeep Biswas, Assistant Controller of Examinations, University of North Bengal, under our supervision. It embodies the results of his investigation and is an original piece of research work not submitted to any other University/Institution for Ph. D or any degree.

We recommend that the thesis may be sent for evaluation.

23/11/07.

Dr. Malay Kanti Roy (Supervisor)
Reader, Dept. of Commerce,
University of North Bengal
Raja Rammohun pur,
Dt. Darjeeling.

Hirak Roy 23/11/2007

Dr. Hirak Ray (Co-supervisor)
Reader, Dept. of Commerce,
University of North Bengal
Raja Rammohun pur,
Dt. Darjeeling.

Abstract

There is a growing consensus among economists, of course, not based on solid evidences that a well-developed market oriented financial system contributes to economic growth and stability. But there are dissenting voices, who suggest finance at best perform a passive role in economic growth. Hence, one may ignore any discussion on finance-growth linkage without any loss.

The current study attempts to resolve this debate. It is a formidable task that requires an immaculate measurement of level of financial sector development then to relate it through appropriate methodology with a well-accepted definition of economic growth.

Findings of the present study suggest that nature of finance-growth relationship varies across the countries. In some occasions it satisfies assumption of Neo-classical theorists and for others the views of so-called 'liberal consensus' do not hold good. While first stage of debate relates to finance-growth linkage, second controversy centers around whether bank- or market-based financial systems can offer maximum benefit to society. Our study suggest its not an "either or" situation. The structure of the financial system widely varies across countries. Grossly, bank dominates financial system of Asian countries. The region which is our main focus of attention.

Contents

List of Tables

List of Figures

ACKNOWLEDGEMENT

My interest in the study of development economics and finance developed about one decade ago when as a P.G. student of this University I attended the classes of Dr. Malay Kanti Roy. Indeed, I have learnt from him my first lesson about why one should be interested in finance. Soon after my post graduation I was encouraged to take up a study on development economics by my teachers who happens to be my supervisors.

This research work would not have been possible without the guidance and the help of a large number of people. First and foremost I am extremely grateful to my supervisors, Dr. Malay Kanti Roy and Dr. Hirak Ray, both Reader, Dept. of Commerce, University of North Bengal under whose able guidance I have been able to prepare my thesis. No amount of thanks can express my gratitude to them. All along they have guided me with their invaluable suggestions for the improvement of my thesis. They were extremely patient with me especially with my asinine mistakes and carefully pointed them out to me at every juncture and helped me to correct them. I am also benefited from the valuable help and suggestions from the faculty members of Dept. of Commerce, University of North Bengal. I convey my sincere thanks to each of them.

I should express my sincere indebtedness to Sri Shasthi Bagchi, the teacher of my life, for his faith and trust that made me believe in myself. There are no words sufficient to express my gratitude to him.

I must express my heartfelt gratitude and thanks to Dr. Dilip Kr. Sarkar, Controller of Examinations, and Dr. Debasis Dutta, Deputy Controller of Examinations, University of North Bengal who let me work on my Ph.d thesis even as an employee of Examinations Branch, University of North Bengal. I am eternally obliged to them for letting me free from the daily work load to complete my Ph.d thesis. They had been the constant source of inspiration for me. Their active support made my dreams to come true.

I must take this opportunity to thank Dr. Swapan Kr. Rakshit (Registrar, Ad-hoc), Dr. Subrata Sanyal (Inspector of Colleges), Dr. Nupur Das (Secretary, Under Graduate Council), and Mr. Surajit Das (Accounts Officer) University of North Bengal, who enriched my thesis immensely with their support and inspiration.

I also thank the staff of the *Grantha Bhavan,* the Central Library, University of North Bengal, and Center for Social Science Studies, Kolkata who helped me with all the information that I required and made me felt welcomed in their libraries. I owe special thanks to Dr. Salil Kr. Mukherjee, Sr. Lecturer in Commerce, St. Joseph's College, Darjeeling, Mr. Ajay Misra, Documentation Officer, NBU and Dr. Saptarshi Ghosh, Head, Dept. of Library Science, NBU who have provided me with the various data, and related supports which have been used in my present thesis.

I am also indebted to Smt. Gouri Sen, ex-employee, University of North Bengal for her constant encouragement and support.

I will be failing in my duty if I do not thank Mr. Sanjib Das who kept always my P.C workable. I would also like to thank Mr. Swapan Kr. Mitra, Mr. Subir Das Mohanto, and Mr. Debasish Basak, who helped me invaluably with the formatting of my Ph. D thesis.

I must thank my friends from University of North Bengal Mr. Goutam Sarkar, Mr. Dibyendu Bhattacharjee, Dr. Debabrata Deb and Mr. Joy Sarkar, who provided me with constant encouragement and strength, without which this piece of work could not have been completed.

Finally I will never find words enough to express the gratitude that I owe to my parents and my grand father. For my Grandfather the only ray of hope for his ever last few days of life was submission of my thesis. Throughout the period my parents were extremely cooperative and patient with my odd working hours and mood swings. Their tender love and affection has always been the cementing force for building the blocks of my academic career. The all round support rendered by them provided the much needed stimulant to sail through the phases of stress and strain.

My ever-caring wife Mrs. Sulagna Biswas has always taken personal interest in my work standing beside me during the most heart wrenching moments. I owe to her for ungrudgingly facing the hard times with or without me and making this effort successful.

I am really thankful to Mrs. Sanghamitra Biswas, Mr. Sushanta Biswas, and Miss. Moumita Bose, who had acted like a shadow during the process of submission of my thesis.

Finally, I must request for forgiveness to two precious gifts, my son Jishnu and my niece Guria whom I deprived a lot on the excuse of my Ph.d. Wish they may go beyond the present research to give me solace.

Needless to add, any errors and omissions found in the thesis are entirely my responsibility and I will be extremely grateful if they were pointed out to me.

Joydeep Biswas

Date: 23.11.2007.

Joydeep Biswas

Preface

What makes the difference between developed and developing economy? Answer of the financial economists is straightforward – the former has a robust financial system which latter misses. This view implicitly assumes that a well-developed, market-oriented financial system can help to support private sector to ensure economic growth. Neo-classical economists forcefully support this view of "finance leads to economic growth strategy" and the philosophy is widely influencing policy decisions of many countries.

Following this theory, many less-developed economy initiated numerous policy measures to develop a market-oriented financial system to ensure rapid economic growth and to maximize social welfare. Thus, we feel that there is a need to analyze dispassionately implications of liberalization on the growth of the financial system to adjudge theory of "finance leads to economic growth strategy".

There are dissenting voices also. Critics of Neo-classical theory argue it is not financial system but innovation and other macroeconomic variables that cause economic growth. Financial system at best performs a passive role in economic development; it is simply an "inconsequential sideshow". So, all these theorists suggest that "do not overemphasize" the role of finance. Thus, we fell that there is a need to study the causal relationship between finance and growth to assess objectively how finance and economic growth are interconnected.

Theorists further argue, even if we accept that there is a "general consensus" among academics and policy makers that "finance leads to economic growth strategy" has some merit, yet we have to answer whether bank- or market-based system or a combination of both can deliver maximum benefit to the society. In a sense, what should the structure of an ideal financial system? Is there any best solution? To find answer of these questions, it is essential to study the role of bank and stock or a combination of these two in economic development. Present study further aims to answer this question.

Virtually I find interest in this topic when I was a Post-Graduate student and India started opening up its financial system. At that stage, truly I was skeptic. My immaturity, turmoil in global capital market, love for earlier regime, moulded by opinion in favour of "no change". In this sense, the study at an interval of a decade or so is a detour to reassess my earlier stand based on "little knowledge" and my research findings

astonishingly suggest at least for India simple reliance on financial sector to grow faster, ignoring others, may not help us to achieve our target.

At the bottom, the study is organized as follows: Chapter I contains the brief introduction of the topic which is followed by literature survey, research questions, methodology, variables, time period and data sources. Introduction of sample countries with emphasis on state of macroeconomic stability, policies initiated to invigorate capital markets, level of institutional development have been briefly discussed in Chapter II. An attempt has been made in Chapter III to measure the relative degree of stock markets development of the sample countries. The Chapter IV deals with the empirical analysis to examine the debate- is it market-based or institution-based financial system that can accelerate growth and efficiency of the economy and finally, Chapter V summarizes the study and highlights further area (s) of research.

****

CHAPTER – I

Introduction

1.1 Prologue

One of the most prevalent themes in contemporary political economy involves the relationship between financial liberalization and economic growth. The late twentieth century has witnessed the transformation of numerous economies around the world from centrally planned to market systems. However, the discussion on liberalizing financial markets more or less started with the seminal publications of McKinnon (1973) and Shaw (1973). The theory of financial liberalization in its simplest form suggests abolition of institutional nominal interest rates held below their equilibrium level in order to raise savings, investments and growth. The concept of financial liberalization has become a new orthodoxy among the major international institutions that offer policy guidelines for developing countries that hastened the process of deregulation of financial system in many less developed countries (LDC). Both McKinnon-Shaw (1973) argued in favor of liberalizing financial markets on the grounds that this would contribute to more efficient investment that, in turn, would lead to higher economic growth rates.

Basically, the following arguments have been made in support of the positive relationship between financial liberalization, financial development and economic growth. First, it is claimed that the introduction of market principles and competition in financial markets increases interest rates on deposits, which leads to higher saving rates. This, in turn, increases the amount of resources available for investment (McKinnon 1973). Second, liberalizing the capital account, it is argued, would permit financial resources to flow from capital-abundant countries, where expected returns were low, to capital-scarce countries, where expected returns were high. The flow of resources into the liberalizing countries would reduce their cost of capital, increase investment, and raise output (McKinnon, 1991). Third, financial liberalization contributes to increased possibilities of risk diversification by financial institutions such as banks. This reduces the cost of capital and raises the quantum of investment and growth. Fourth, the liberalized markets not only stimulate the reduction in overhead costs, but offer new financial instruments and services to the market also. It encourages more savers to participate in the market that results in increased competition and efficiency of the market,

Stiglitz and Weiss (1981), Jaramillo, Schiantarelli and Weiss (1996), Hermes and Lensink (1998), Hellmann, Murdock and Stiglitz (1996, 1997, and 2000), Stiglitz (2000), Boot (2000), Bonfiglioli (2005) all these researchers refuting the claim of liberalists forcefully argued that financial liberalization in many cases has led to disappointing results and in some cases even to economic and financial crises. Just after Asian crisis, many voices were raised arguing that globalization had gone too far and had led to extremely erratic capital markets around the world (Kaminsky and Schmukler, 2001). Some extremists have gone so far so as to suggest that open capital markets may even be detrimental to economic development [See Bhagwati 1998, Rodrik 1998, Stiglitz 2002].

Thus, despite endless debate there is no definitive answer of the queries: Can financial liberalization help to grow a robust financial system? What is the nature of relationship, if any, exists between financial development and economic growth? It seems to be a parallel world where the researchers who support and those who oppose the present policy of liberalization have enough evidences to prove their cases.

Following early researchers, we also presume that healthy development of a nation's financial sector is quintessential for the growth of an economy (World Bank, 2002). Growing interest among macroeconomists to critically evaluate the role of the financial sector in promoting economic activity has produced a burgeoning literature.

However, the early architects of the financial liberalization McKinnon-Shaw (1973), assuming the presence of inactive capital markets in most of the developing countries, emphasized on the beneficial impact of liberalized financial system dominated by banking sector. But current experiences suggest that many emerging markets offering immense services for the growth of private corporate sector in many developing economy and its efficient functioning is gradually marginalizing role of bank in mobilization and allocation of societal resources (Roy, 2001). This finding is consistent with many empirical and theoretical assertions that emphasized virtues of competitive market and undermined role of banking sector in the societal development. Some studies even claim that banking development may actually arrest economic growth thus there is a need to shift attention on capital market to maximize use of investable resources [Ram, 1999; Khan and Senhadji, 2000; Levine, 2002; Zhang, 2003]. Some models emphasize that markets mitigate the inefficient monopoly power exercised by banks and stress that the competitive nature of markets encourages innovative, growth-enhancing activities as opposed to the excessively conservative approach taken by banks (Allen and Gale,

2000). Finding of some studies [such as Weinstein and Yafeh, 1998; Morck and Nakamura, 1999] suggest banks often collude with firm managers that violate basic principle of competitive system and causes inefficient allocation of resources. German experience also suggests that bankers often collude with firm managers [Edwards and Fischer, 1994 and Black and Moersch, 1998a]. The difficulty that new productive entrepreneurs face in obtaining finance from banks originate from characteristic of bank loans which is the fixed-fee contract, for which there are conflicting interests between lenders and borrowers. If the financial market is composed of only debt financing institutions, such as banks, the market also fails to achieve efficient allocation of capital because of shortcomings of debt finance in the presence of asymmetric information (Cho, 1986).

As equity finance is free from adverse selection and moral hazard effects, the new entrepreneurs will be able to mobilize finance from the equity markets. Therefore, Cho (1986) argued that the most efficient allocation of capital is achieved by liberalizing the financial market and letting the market allocate the capital. The development of equity markets is necessary to attain full efficiency of capital allocation. Later, McKinnon (1989) also incorporated this view in his theory and suggested that stock market development should have priority even over liberalized bank lending in the first several years of transition to a capitalist financial market where the preceding order has created a large bad debt problem for banks.

There is almost a unanimity among the academics (Grabel, 1999, etc.) that financial liberalisation encourages the formation of equity markets where they did not exist previously and helps in their deepening and widening where they predated the reforms. The expansion of equity markets of many Asian countries after liberalisation is truly impressive (Clemente, 1994). All stock market indicators such as market capitalization ratio, gross annual turnover as a share of GDP, number of listed companies, etc. the variables that financial economists generally favour to measure the growth and development of the market started behaving comparatively well with the paradigm shift (See Table 1. 1).

Table 1.1: Select Stock Market Development Indicators

Income-wise Country Groups	Market Capitalisation Ratio		Turnover Ratio		No. of Listed Companies		FDI (% of GDP)		Domestic Credit to Private Sector (% of GDP)	
	1990	2005	1990	2005	1990	2005	1990	2005	1990	2005
High Income	51.6	112.9	59.5	114.0	17078	28001	1.0	2.1	115.4	156.3
Middle Income	20.00	49.5	78.3	41.6	4900	14117	0.7	3.1	43.1	58.3
Low and Middle Income	18.8	50.1	70.7	53.7	8346	20873	0.6	2.9	39.2	54.9
Low Income	9.8	54.2	53.8	107.6	3446	6756	0.3	1.5	21.3	33.9
India	12.2	58.1	65.9	93.6	2435	4763	0.1	0.8	25.2	40.8
World	48.00	98.3	57.2	53.7	25424	48874	0.9	2.2	104.3	133.8

Source: World Development Indicators, 2000 and 2007, World Bank.

Even after such sprawling development of the stock markets, debate still continues — can financial system support in economic growth? How different channels such as bank and stock market support economic development?

1.2 Review of Literature

From early 1990s growing interest among development economists has produced a plethora of scholarly and seminal researches, which extol the virtues of the proposed link between financial sector development and economic growth. Such recent revival of interest stems from the insights of endogenous growth models, in which growth is self-sustaining without exogenous technical progress and is influenced by various initial attributes of the economy. A select of all these studies is outlined below.

Since Bagehot (1873), Schumpeter (1912), to the recent revival of the interest, a large body of empirical knowledge [Spears, 1991; Thornton, 1996; Demetriades and Hussein, 1996] accumulated whether the finance-growth relationship is a general consensus or an inconsequential sideshow. An impressive array of econometric techniques has been used to examine critically the robustness of the relationship between financial sector development and economic growth. Evidence shows mixed results while relating financial deepening and growth. The direction of causality varies across countries and depends on the definition used to measure financial development. Evidences for finance-led growth is mixed across countries [Rousseau and Wachtel, 1998; Van Nieuwerburgh, 1998; and Luintel and Khan, 1999].

In addition, earlier studies, which showed the separate effect of stock markets on economic development, in most of the cases considered one or two important variables of the stock markets and tried to link it with the economic growth. Most of the studies [for example, Atje and Jovannovic, 1993; Pagano, 1993; Bencivenga, Smith, and Starr,

1995; Demirguc-Kunt and Maksimovic, 1996; Jain, 2002; Frost, *et al.* 2002; Eleswarapu and Venkatraman, 2003; Adjasi and Biekpe, 2004; and Dey, 2005] have argued that market size and liquidity have a great impact on the economic development. For example, the initial level of stock market development and the initial level of banking development are positively and significantly correlated with future rates of economic growth, capital accumulation, and productivity growth. These results are consistent with the view that stock market liquidity facilitates long-run growth [Levine, 1991; Holmstrom and Tirole, 1993; Levine and Zervos, 1998].

In terms of economic significance, the size of the stock markets is important for the assumption that market size is positively correlated with the ability to mobilize capital and diversify risk. On the other hand, as far as the liquidity is concerned, if the financial system does not augment the liquidity of long-term investments, less investment is likely to occur in the high-return and long-term projects. Thus, with liquid stock markets, equity holders can readily trade their shares, while firms have a permanent access to the capital. Therefore, Levine (1997) suggests that by facilitating trade, stock market reduces the liquidity risk.

However, all these results do not suggest a direct and monotonic expansion of the market size in the financial system. In reality, the expansion of equity markets always appears to be preceded and accompanied by the general expansion of the overall financial system.

Apart from researching the stock market size and liquidity, economists [such as, Korajczyk, 1996; Bekaert, Harvey and Lundblad, 2003, 2005] spent prodigious time to search the link between integrated and/or segmented markets with long-run growth. Open economies with deeply integrated financial markets can benefit from cross-border capital flows and from larger flows of financial resources pouring into the market. As theory suggests, the international financial integration by bringing about a greater degree of portfolio and risk diversification, may boost the propensity to save and invest [Saint-Paul, 1992; Devereux and Smith, 1994; Obstfeld, 1994] and foster economic growth.

Studies [Allen and Gale, 2000; Diamond, 1984; Boyd and Prescott, 1986] also show the positive relation between banking development and stock market liquidity with that of the economic growth.

In comprehensive studies (taking into account both bank and stock market), Demirguc-Kunt (1994) Levine and Zervos (1996, 1998), Rousseau and Wachtel (2000) and Beck and Levine (2002), show that stock market development is strongly correlated

with growth rates of real GDP per capita. More importantly, they find that stock market liquidity and banking development both predict the future growth rate of the economy when they both enter the growth regression. In time series studies of industrialized countries over the past century, Wachtel and Rousseau (1995) and Rousseau and Wachtel (1998) present evidence that the dominant causal link between equity market and economic development runs from the intensity of intermediary activity to economic performance. Henry (2000a, 2000b) shows that liberalization leads to higher stock prices and investment booms.

The empirical studies [such as, Arestis, Demetriades and Luintel (2001), and Rousseau and Sylla (2005), among others] attempt to establish causality by undertaking Granger-causality tests between stock market and/or bank and economic growth. However, findings [Caporale, Howells, and Soliman, 2004; Gursoy and Muslumov, 2004; Dritsaki and Dritsaki-Bargiota, 2005] suggest that a well-developed stock market can foster economic development by fuelling the engine of growth through faster capital accumulation, and by tuning it through better resource allocation. The causality patterns also varied across countries.

There are also alternate views about the role stock markets play in economic growth. Apart from the view that stock markets may be having no real effect on growth, there are theoretical constructs that show that stock market development may actually hurt economic growth. For instance, Stiglitz (1985, 1994), Bhide (1993), Singh (1997), Naughton (2000) and Zhu, Ash, and Pollin (2004) note that stock markets can actually impair economic growth. They argue that due to their liquidity, stock markets may hurt growth since savings rates may reduce due to externalities in capital accumulation. Diffuse ownership may also negatively affect corporate governance and invariably the performance of listed firms, thus impeding the growth of stock markets in most developing countries because of the speculative pressure that may be generated due to rapid growth of stock markets (Shleifer and Vishny, 1986). An undesirable implication of these types of pressures is that economies may be forced to bear a greater degree of 'ambient risk' with financial liberalization than without it (Grabel, 1995). This may reduce the total volume of real-sector investment while exerting upward pressures on interest rates in view of the higher risk (Frederer, 1993). The findings of the study by Filer, Hanousek and Campos (2000) suggest that, while a developed equity market may play several roles in a modern economy, none of these appear to be essential for economic growth.

The development of stock market is influenced directly and indirectly by various factors such as the legal and institutional framework. The direct effect occurs because better legal systems and institutions (i) strengthen property rights, and corporate governance [La Porta *et al.* 1997, 1998] (ii) facilitate the use of external financing to growth [Demirguc-Kunt and Maksimovic, 1998] (iii) government reliability. Thus, broadening the appeal and confidence in equity investment leads to highly valued equities and larger stock markets. The indirect effect occurs because better legal systems and institutions also spur economic growth and improve market fundamentals Better investor protection induces companies to issue more equity and thereby leads to a broader stock market that finally leads to economic development [Pagano and Volpin, 2005]. Lombardo and Pagano (2006) show a positive cross-country correlation between the quality of legal systems and the expected return on equity. Dyck and Zingales (2002) show that insiders in French civil law countries possess systematically higher private benefits of control than those in countries of other legal origins, and Leuz *et al.* (2003) find that companies in Anglo-American countries exhibit less earnings management than their Continental-European counterparts. Bhattacharya and Daouk (2002) find that the enforcement of insider trading laws reduces a country's cost of equity.

Studies so far have mentioned are from international arena. In Indian context, however, measurement of financial sector development and to relate it with growth escaped attention of researchers. Mostly, studies [such as Pathe and Karnik, 2001; Ray, 2007, forthcoming) among others] examine the impact of macro variables on the stock market development. In India, however, a study by Samal (1997) is worth mentioning. The study that covers a period of 1991-92 to1995-96, an aggregate index called *SINDEX* has been constructed for the purpose of measuring the stock market development that too considering only simple average of market capitalisation ratio, traded- value ratio and turnover ratio. An extension of this study was conducted by Biswas (2005) for a period of 1991-92 to 2003-04. But these studies neither considered the two most important stock market variables such as, market volatility and integration to measure growth of the market, nor the studies attempted to relate with economic growth objectively. The present study aims to fill in this gap.

1.3 Scope of the Study

Indeed, the finance-growth literature is at the crossroads. Endogenous growth economists take 'it for granted' that a robust, market-oriented financial sector contributes to support economic growth. Such models of development virtually emphasize the role of financial system in the growth process ignoring many other macroeconomic variables that traditional theorists include in their theories of development. Although finance-growth nexus is a part of 'liberal consensus', still there exist some detractors. Most importantly, some researchers are less enthusiastic and express their strong reservation about so-called 'liberal consensus'. The traditional growth theorists cautiously argue that role of finance is thoroughly 'exaggerated' due to lack of robustness of methodology used by Neo-classical theorists to prove the merit of their argument.

In view of these conflicting assertions, the present study aims to answer the following research questions:

(a) What role financial systems truly play in economic growth?

(b) How the pattern of development of a financial system changed after regime shift?

(c) If finance can effectively influence growth – is it bank- or market-based system or a combination of this two can offer maximum benefit to the society?

These are the issues this study explores. Answer of the above questions will help us for a better understanding about the impact of stock market development on: capital accumulation and allocation, supply of external fund, cost of capital and finally its role as "guardian of efficiency".

1.4 Plan of the Thesis

Apart from the current one, the rest of the study have been organised as follows:

- Introduction of sample countries with emphasis on state of macroeconomic stability, policies initiated to invigorate capital markets, level of institutional development have been briefly discussed in Chapter II;
- Based on a conglomerate indexes, an attempt will be made in Chapter III to measure the relative degree of stock markets development of the sample countries;

- In Chapter IV, an endevour will be made to study objectively – is it market-based or institution-based financial system that can accelerate growth and efficiency of the economy; and
- Finally, Chapter V explores the policy prescriptions and further area (s) of research.

1.5 Research Methodology, Variables, Time Period and Data Sources

In this research, we have applied various statistical and econometrical tests such as Principal component analysis, Linear Regression Analysis, and Granger causality test. A detailed discussion will be provided in the relevant chapter that follows.

To measure the pattern of development of the financial system we consider the following variables for stock market (a) market size (b) market liquidity (c) volatility, (d) market integration (e) institutional and legal indicators and for banking sector we include the most widely used variables i.e. bank credit to private sector as a per cent of GDP.

Considering above variables we attempted to measure the level of financial sector development and its relationship with economic growth for twenty-two sample countries (See Table 1.2) for a time period 1981 to 2005. However, in some occasion we have to change the time period depending upon availability of relevant information.

Table 1.2: Specification of Sample Countries

Region-wise classification	Sample Countries	Stock Market Liberalisation	Enforcement of insider trading laws	Introduction of electronic trading system	Institutional Reform	Privatisation	Income wise classification
G-7 Markets	U.S.A	Before Sample	Before Sample	No Reform	No Reform	N.A	High Income: OECD
	U.K	Before Sample	1981	No Reform	No Reform	1981	High Income: OECD
	France	Before Sample	1975	1986	No Reform	1986	High Income: OECD
	Germany	Before Sample	1995	No Reform	No Reform	1988	High Income: OECD
East Asia and Asia-Pacific Markets	Hong Kong	Before Sample	1994	1986	No Reform	N.A	High Income: non-OECD
	Singapore	Before Sample	1978	1989	No Reform	N.A	High Income: non-OECD
	Japan	1983	1990	1982	No Reform	N.A	High Income: OECD
	Malaysia	1988	1996	1992	No Reform	1989	Upper middle income
	Indonesia	1989	1996	1995	1985	1991	Lower middle income
	Philippines	1991	No Reform	1993	1994	1991	Upper middle income
	Thailand	1987	1993	1991	No Reform	1993	Lower middle income
	Korea	1992	1988	1988	1998	N.A	High Income: OECD
	Australia	Before Sample	1996	1987	No Reform	1991	High Income: OECD
South Asian Markets	India	1992	1998	1995	No Reform	1991	Low income
	Bangladesh	1991	1998	1998	1987	No Reform	Low income
	Sri Lanka	1991	1996	1997	1990	1990	Lower middle income
	Pakistan	1991	No Reform	1997	No Reform	1991	Lower middle income
Latin American Markets	Argentina	1989	1995	No Reform	1991	1990	Upper middle income
	Brazil	1991	1978	No Reform	1999	1991	Lower middle income
	Mexico	1989	No Reform	1996	1991	1985	Upper middle income
	Chile	1992	1996	No Reform	1976	1985	Upper middle income
African Markets	South Africa	1996	No Reform	1996	1996	1997	Upper middle income

Notes: "Before sample" means that the country implemented the reform before the start of our sample period (1988). World Bank Country classification is followed.

Source: Torre, Gozzi and Schmukler (2007), World Bank Policy Research Working Paper 4184, April.

As Asia is our main focus of attention, the countries belonging to the region dominate the sample, though some very active and developed markets of other continents have been considered for comparative analysis.

All data for the sample markets for the period from 1981 to 2005 (See Table 1.3) has been collected from the S & P's Emerging Stock Markets Factbooks various issues, World Federation of Exchanges web site, database of International Financial

Corporation's Statistics, Asian Development Bank, Asian Development Outlook and Official web sites of each country.

Table 1.3: Data Availability

Country	Descriptors							
	Market Capitalisation	Value-Traded	Share Price Index (monthly)	Bank Credit to Private Sector (% of GDP)	Institutional Indicators	T-Bill Rate	Govt. Bond Yield Rate	Bank Rate/ Discount Rate
Argentina	1988-2005	1981-2005	1988-2005	1980-2005	1996-2005	N.A	N.A	N.A
Australia	1988-2005	1981-2005	1988-2005	1980-2005[a]	1996-2005	1988-2001	1988-2005	
Bangladesh	1988-2005	1981-2005	1988-2005	1980-2005	1996-2005			1988-2005
Brazil	1988-2005	1981-2005	1988-2005	1980-2005[b]	1996-2005	1995-2005		
Chile	1988-2005	1981-2005	1988-2005	1980-2005	1996-2005			1993-2005
France	1988-2005	1981-2005	1988-2005	1980-2005	1996-2005	1988-2003	1988-2005	
Germany	1988-2005	1981-2005	1988-2005	1980-2005	1996-2005	1988-2005		
Hong Kong	1992-2005	1992-2005	1992-2005	1980-2005[c]	1996-2005	1992-2005		
India	1988-2005	1981-2005	1988-2005	1980-2005	1996-2005	1988-2005		
Indonesia	1988-2005	1981-2005	1988-2005	1980-2005	1996-2005			1990-2005
Japan	1988-2005	1981-2005	1988-2005	1980-2005	1996-2005		1988-2005	
Korea	1988-2005	1981-2005	1988-2005	1980-2005	1996-2005		1988-2005	
Malaysia	1988-2005	1981-2005	1988-2005	1980-2005[d]	1996-2005	1988-2005		
Mexico	1988-2005	1981-2005	1988-2005	1980-2005	1996-2005	1988-2005		
Pakistan	1988-2005	1981-2005	1988-2005	1980-2005	1996-2005	1992-2005	1988-1999	
Philippines	1988-2005	1981-2005	1988-2005	1980-2005	1996-2005		1988-2005	
Singapore	1988-2005	1981-2005	1988-2005	1980-2005	1996-2005	1988-2005		
Sri Lanka	1988-2005	1981-2005	1988-2005	1980-2005	1996-2005	1988-2005		
South Africa	1988-2005	1981-2005	1988-2005	1980-2005[e]	1996-2005	1988-2005		
Thailand	1988-2005	1981-2005	1988-2005	1980-2005	1996-2005		1988-2005	
UK	1988-2005	1981-2005	1988-2005	1980-2005	1996-2005	1988-2005		
USA	1988-2005	1981-2005	1988-2005	1980-2005	1996-2005	1988-2005		

Notes:

1. To Calculate Sharpe ratio monthly data of share price index has taken into consideration for all sample countries. The Sharpe ratio has been calculated on the basis of T-Bill rates. The govt. bond yield rate has been used as surrogate to the T-Bill rates when the later is not available for Japan, Australia (as T-bill rates are not available from 2002 onwards) and France (as T-Bill rate is not available from 2003 onwards). Under extreme circumstances, Bank Rates/Discount Rates are used to calculate Sharpe ratio for Bangladesh, Chile, and Indonesia (data permitting from 1990 onwards) due to non-availability of neither T-bill rates nor govt. bond yield rate. Unless otherwise mentioned, all data are on yearly. N.A represents not available.

(a) Sharpe ratio for the Argentina could not be calculated as none of the T-Bill rate, Govt. Bond Yield Rate and Bank Rates/Discount Rates is available.

(b) For Pakistan and Brazil, T-Bill rates are available only from 1992 and 1995 respectively. In the case of Sri Lanka T-bill rate of 1997 is not available and for Pakistan the same is not available for 1998 and 1999.

(c) For Hong Kong, data for market capitalisation, turnover and monthly share price index are available from 1992.

2. Data on Bank credit to Private sector (% of GDP) is not available for:
(a) Australia for 2002; (b) Brazil for 1986 and 1987; (c) Hong Kong from 1980 to 1989; (d) Malaysia for 1982, 1989 and 1991 and South Africa for 1991.

Sources: World Development Indicators various issues, IFC statistics, RBI publications, S & P's Emerging Stock Markets Factbooks various issues, and World Federation of Exchanges.

References:

Adjasi,Charles K.D. and Nicholas B. Biekpe (2006): "Stock Market Development and Economic Growth: The Case of Selected African Countries", African Development Bank. Blackwell Publishing Ltd.

Allen, F. and D. Gale (2000): "Comparing Financial Systems", Cambridge, MA: MIT Press.

Arestis, P, Demetriades, P.O. and Luintel, K. B. (2001): "Financial development and economic growth: the role of stock markets". Journal of Money, Credit and Banking 33: pp. 16–41.

Atje, Raymond, and Boyan Jovanovic. (1993): "Stock Markets and Development." European Economic Review, 37(273, April): pp. 632—40.

Bagehot, Walter (1873): "Lombard Street, A Description of the Money Market", Homewood, IL: Richard D. Irwin, (1962 Edition).

Beck, Throsten and Ross Levine (2002): "Stock markets, banks, and growth: panel evidence", World Bank, Downloaded.

Bekaert, Geert, Harvey, Campbell R and Christian T. Lundblad (2003): "Equity Market Liberalization in Emerging Markets." Journal of Financial Research, 26 (Fall), pp. 275-99.

---------- (2005): "Does Financial Liberalization Spur Growth?", Journal of Financial Economics, 77 (1), pp. 3-55.

Bencivenga, V. R., B. D. Smith and R. M. Starr (1995): "Transactions Costs, Technological Choice, and Endogenous Growth", Journal of Economic Theory, 67, pp. 53-177.

Bhagwati, Jagdish (1998): "The Capital Myth", Foreign Affairs, 77 (3), May-June, pp.7–12.

Bhattacharya, Utpal and Hazem Daouk (2002): "The world price of insider trading", Journal of Finance, 57, pp. 75-108.

Bhide, Amar (1993): "The Hidden Costs of Stock Market Liquidity", Journal of Financial Economics, 34: pp. 1-51.

Biswas, Joydeep (2005): "Foreign Portfolio Investments and Stock Market Behaviour in Liberalised Economy: An Indian Experience." Asian Economic Review, Vol. 47, No. 2, August, pp. 221-232.

Black, S. W. and M. Moersch (1998): "Financial Structure, Investment and Economic Growth in OECD Countries", In: Competition and Convergence in Financial Markets: The German and Anglo-American Models, Eds: S.W. Black and M. Moersch, New York: North – Holland Press: pp.157-174.

Bonfiglioli, A. (2005): "How Does Financial Liberalization Affect Economic Growth?" Seminar Paper No. 736. Stockholm: Institute for International Economic Studies, Stockholm University.

Boot, A. W. A. (2000): "Relationship Banking: What Do We Know?", Journal of Financial Intermediation, 9 (1): pp. 7-25.

Boyd, J. H. and E. C. Prescott (1986): "Financial Intermediary-Coalitions", Journal of Economics Theory, 38: pp. 211-232.

Caporale, Guglielmo Maria, Peter G. A Howells, and Alaa M. Soliman (2004): "Stock Market Development And Economic Growth: The Causal Linkage", Journal Of Economic Development 33 Volume 29, Number 1, June, pp.33-50.

Cho, Yoon Je (1986): "Inefficiencies from Financial Liberalization in the Absence of Well-Functioning Equity Markets", Journal of Money, Credit and Banking, 18 (2), May, pp. 191-199.

Clemente, Lilia (1994): "Investing in Asia's Emerging Markets", The Columbia Journal of World Business, Summer. pp. 93-111.

Demetriades, P. and K. Hussein (1996): "Does Financial Development Cause Economic Growth? Time Series Evidence from 16 Countries", Journal of Development Economics, 51: pp. 387-411.

Demirgüç-Kunt, Asli (1994): "Developing Country Capital Structure and Emerging Stock Markets," Policy Research Working Paper, WPS 933, July.

---------- and V. Maksimovic (1996): "Stock Market Development and Firm Financing Choices." World Bank Economic Review, 10: pp. 341-370.

---------- (1998): "Law, Finance, and Firm Growth", Journal of Finance, 53: pp. 2107-2137.

Devereux, M. B., and G. W. Smith (1994): "International Risk Sharing and Economic Growth", International Economic Review, 35: pp. 535-550.

Dey, Malay (2005): "Turnover and Return in Global Stock Markets", Emerging Markets Review, 6, pp. 45-76

Diamond, D. W. (1984): "Financial Intermediation and Delegated Monitoring", Review of Economic Studies, 57, pp.393-414.

Dritsaki, Chaido and Melina Dritsaki-Bargiota (2005): "The Causal Relationship between Stock, Credit Market and Economic Development: An Empirical Evidence for Greece", Economic Change and Restructuring, 38, pp. 113–127.

Dyck, A. and L. Zingales (2002): "The Corporate Governance Role of the Media", in The Right to Tell: The Role of Mass Media in Economic Development, Ed: R. Islam, Washington, DC: World Bank, pp. 107-140.

Edwards, Jeremy and Fischer, Klaus (1994): "Banks, Finance and Investment in Germany". Cambridge and New York: Cambridge University Press (for the Centre for Economic Policy Research).

Eleswarapu, Venkat R. and Kumar Venkataraman (2003): "The Impact of Legal and Political Institutions on Equity Trading Costs: A Cross-Country Analysis", May, Downloaded Working Paper.

Filer, Randall K, Jan Hanousek, Nauro F. Campos (2000): "Do Stock Markets Promote Economic Growth?" December, Downloaded.

Federer, P. (1993): "The Impact of Uncertainty on Aggregate Investment Spending", Journal of Money, Credit and Banking, 25(1), pp. 30-45.

Frost, Carol, E. Gordon, and A. Hayes (2002): "Stock Exchange Disclosure and Market Liquidity: An Analysis of 50 International Exchanges", Working paper. Downloaded.

Grabel, Ilene (1995): "Speculation-Led Economic Development: A Post-Keynesian Interpretation of Financial Liberalization Programs", International Review of Applied Economics, 9(2), pp. 127-149.

---------- (1999): "Assessing the Impact of Financial Liberalisation on Stock Market Volatility in Selected Developing Countries". The Journal of Development Studies. 31 (6), August, pp. 903-917.

Gursoy, Cudi Tuncer and Muslumov Alovsat (2004): "Stock Markets and Economic Growth: A Causality Test". Downloaded.

Hellmann, T., K. Murdock, and Joseph E. Stiglitz (1996): "Deposit Mobilization through Financial Restraint', in N. Hermes and R. Lensink (eds), Financial Development and Economic Growth: Theory and Experiences from Developing Countries. London: Routledge, pp. 219-46.

---------- (1997): "Financial Restraint: Toward a New Paradigm", in M. Aoki, H.-K. Kim and M. Okuno-Fujiwara (eds), The Role of Government in East Asian Economic Development: Comparative Institutional Analysis. Oxford: Clarendon Press, pp. 163-207.

---------- (2000): "Liberalization, Moral Hazard in Banking and Prudential Regulation: Are Capital Requirements Enough?". American Economic Review, 90 (1), pp.147-65.

Henry, Peter Blair (2000a): "Stock Market Liberalization, Economic Reform, and Emerging Market Equity Prices", Journal of Finance, April, 55(2), pp. 529-64.

---------- (2000b): "Do Stock Market Liberalizations Cause Investment Booms?" Journal of Financial Economics, October/November, 58(1-2), pp. 301-34.

Hermes, N. and R. Lensink (1998): "Banking Reform and the Financing of Firm Investment: An Empirical Analysis of the Chilean Experience, 1983-92". Journal of Development Studies, 34, pp. 27-43.

Holmstrom, Bengt and Jean Tirole (1993): "Market Liquidity and Performance Monitoring." Journal of Political Economy, 101(4, August), pp. 678-709.

Jain, P. (2002): "Institutional design and liquidity at stock exchanges around the world," Working paper, Indiana University.

Jaramillo, F., F. Schiantarelli, and A. Weiss (1996): "Capital Market Imperfections Before and After Financial Liberalization: An Euler Equation Approach to Panel Data for Ecuadorian Firms'. Journal of Development Economics, 51, pp. 367-86.

Kaminsky, G. and S. L. Schmukler (2001): "On Booms and Crashes: Financial Liberalization and Stock Market Cycles", Discussion Paper (World Bank).

Khan, M. S. and A. S. Senhadji (2000): "Financial Development and Economic Growth: An Overview", IMF Working Paper WP/00/209.

Korajczyk, Robert, A (1996): "A Measure of Stock Market Integration for Developed and Emerging Markets." The World Bank Economic Review, 10(2), pp. 267-89.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R.W. (1997): "Legal determinants of external finance". Journal of Finance, 52, pp. 1131-1150.

---------- (1998): "Law and finance". Journal of Political Economy, 106, pp. 1113-1155.

Leuz, C., Nanda, D., and Wysocki, P.D., (2003): "Investor protection and earnings management: An international comparison." Journal of Financial Economics, 69, pp. 505-527.

Levine, Ross (1991): "Stock Markets, Growth, and Tax Policy." Journal of Finance, 46(4, September), pp. 1445-65.

--------- (1997): "Financial development and economic growth: views and agenda", Journal of Economic Literature, 35, pp. 688-726.

-------- (2002): "Bank-Based or Market-Based Financial Systems: Which is Better?" Journal of Financial Intermediation, 11, pp. 398–428.

--------- (2005): "Finance and growth: Theory and evidence", in: Aghion, P., Durlauf, S. (eds.), Handbook of Economic Growth. Elsevier Science, The Netherlands.

Levine, Ross and Sara Zervos (1996): "Stock market development and long-run growth", World Bank Economic Review, 10 (2), pp. 223-39.

---------- (1998): "Stock markets, Banks and Economic growth". American Economic Review, 88, pp.537-58.

Lombardo, D. and Pagano, M. (2006): "Legal determinants of the return on equity", in: Oxelheim L.,Corporate and Institutional Transparency for Economic Growth in Europe, Elsevier, Oxford.

Luintel, Kul and Mosahid Khan (1999): "A Quantitative Reassessment of the Finance-Growth Nexus: Evidence form a Multivariate VAR.", Journal of Development Economics. 60: pp. 381-405.

McKinnon, Ronald I (1973): "Money and capital in economic development". Washington, D.C. Brookings Institution.

-------- (1989): "Financial Liberalisation in Retrospect: Interest Rate Policies in LDCs: In the State of Development Economics," New York: Blackwell.

-------- (1991): "The Order of Economic Liberalization" Johns Hopkins University Press.

Morck, R. and M. Nakamura (1999): "Banks and Corporate Control in Japan", Journal of Finance, 54, pp. 319-340.

Naughton, Tony (2000): "The Role of Stock Markets in the Asia-Pacific Region", Asian-Pacific Economic Literature, pp. 22-34. Downloaded.

Obstfeld, Maurice (1994): "Risk-Taking, Global Diversification, and Growth." American Economic Review 84(5, December): pp.1310-29.

Pagano M. (1993): "Financial markets and growth: An overview", European Economic Review, 37, pp. 613-622.

Pagano, M. and Volpin, P. (2005): "Shareholder protection, stock market development, and politics". ECGI - Finance working paper No. 105.

Pethe, A. and A. Karnik, (2000): "Do Indian Stock Market Matter?", Economic and Political Weekly, January 29.

Ram, R. (1999): "Financial Development and Economic Growth: Additional Evidence". Journal of Development Studies, 35 (4), pp. 164-74.

Ray, Hirak (2007): "Macro-economic variables and Stock market Behaviour: An Indian Experience", Artha Vijnana, A Journal of Gokhale Institute of Politics and Economics, Pune, India (forthcoming).

Rodrik, Dani (1998): "Who Needs Capital Account Convertibility?" Princeton Essays in International Finance, 207: pp. 55–65.

Rousseau, Peter L., and Paul Wachtel (1998): "Financial intermediation and economic performance: historical evidence from five industrialized countries". Journal of Money, Credit and Banking, 30, pp. 657-78.

---------- (2000): "Equity Markets and Growth: Cross-Country Evidence on Timing and Outcomes, 1980-1995." Journal of Banking and Finance, December, 24(12), pp. 1933-57.

Rousseau, P.L. and Sylla, R. (2005): "Emerging Financial Markets and Early US Growth", Explorations in Economic History, 42, pp. 1–26.

Roy, Malay Kanti (2001): "Stock Market in a Liberalised Economy: Indian Experiences". Economic and Political Weekly. Vol. 36, No. 4, January. pp. 367-376.

Saint-Paul, G. (1992): "Technological Choice, Financial Markets and Economic Development". European Economic Review, 36 (4), pp.763-81.

Samal Kishor, C (1997): "Emerging Equity Markets In India: Role of FIIs" Economic and Political Weekly. Oct. 18. Vol. 32, No 42.

Schumpeter, J. A. (1912): "The Theory of Economic Development", Cambridge, MA: Harvard University Press, 1934.

Shaw, Edward S (1973): Financial Deepening in Economic Development. New York: Oxford University Press.

Shleifer, Andrei, and Robert W. Vishny. (1986): "Large Shareholders and Corporate Control." Journal of Political Economy, 94, pp. 461-88.

Singh, Ajit (1997): "Financial Liberalisation, Stock Markets and Economic Development", Economic Journal, May, pp. 771-82.

Spears, Annie. (1991): "Financial Development and Economic Growth - Causality Tests," Atlantic Economic Journal, 19 (3), September, pp. 66-75.

Stiglitz, Joseph, E and Weiss, A. (1981): "Credit Rationing in Markets with Imperfect Information",American Economic Review, 71(3), pp. 393-410.

Stiglitz, Joseph, E (1985): "Credit Markets and Control of Capital", Journal of Money, Credit and Banking, 17, pp. 133-52.

---------- (1994): "The Role of the state in financial markets", in M. Bruno and B. Pleskovic (eds), Proceedings of the World Bank Annual Conference on Development Economics 1993; Supplement to the World Bank Economic Review and the World bank Research Observer, Washington, DC.

---------- (2000): "Capital Market Liberalization, Economic Growth, and Instability". World Development, 28 (6): pp.1076-85.

---------- (2002): "Globalization and Its Discontents". W.W. Norton.

Thornton, John (1996): "Financial Deepening and Economic Growth in Developing countries", Applied Economic Letters, 3(4), pp.243-46.

Torre, Augusto de la, Juan Carlos Gozzi and Sergio L. Schmukler (2007): "Stock Market Development under Globalization: Whither the Gains from Reforms?", World Bank Policy Research Working Paper 4184, April.

VanNieuwerburgh, Stijn (1998): "The Relationship Between Financial Intermediation and Economic Growth in Developing Countries", Master's thesis, University of Gent May.

Wachtel, Paul and Rousseau, Peter (1995): "Financial Intermediation and Economic Growth: A Historical Comparison of the United States, United Kingdom, and Canada", In Anglo- American Financial Systems: Institutions and Markets in the Twentieth Century, edited by Michael D. Bordo and Richard Sylla, pp.329-81.

Weinstein, David E and Yishay Yafeh (1998): "On the costs of a Bank-centered Financial System:Evidence from the changing Main Bank Relations in Japan", Journal of Finance,53 (2), pp. 635-72.

World Bank (2002): "Voices of the Firms 2000: Investment Climate and Governance Findings of the World Business Environment Survey (WBES)". World Bank, Washington D.C.

Zhang, X (2003): "How Does Globalisation Affect Regional Inequality within A Developing Country? Evidence from China", The Journal of Development Studies, April, 39(4), pp.

Zhu, A., Michael Ash, and R. Pollin (2004): "Stock Market Liquidity and Economic Growth: A Critical Appraisal of the Levine/Zervos Model, International Review of Applied Economics, 18, pp. 63-71.

CHAPTER – II

Introduction of Sample Countries

2.1 Introduction

In the present chapter, we introduce our sample countries that belong to different regions of the globe. Out of these twenty-two countries, four belongs to G-7 countries, while nine east-Asian and Asia-Pacific region, four south Asian countries, four Latin American and one South African countries. The countries differ widely with respect to the following points:

- timing of liberalization;
- stages of economic development
- pattern of sequencing;
- degree of openness;
- level of institutional development;
- pattern of financial sector development;
- financial stability;
- fragility of the system; and
- final outcome due to regime shift

While policy direction of all the countries are nearly same, but the end results varies. Such observations may help us to develop country-specific experience for further guidelines. Specifically, it will help to answer (i) is it developing or developed economy who have been benefited most from this open economy system? (ii) why many countries even after the regime shift failed to develop the financial system both in qualitative and quantitative terms? (iii) why financial system of many countries is more fragile than others? (iv) what measures to be taken to minimize adverse impact of destabilizing effect of the economy?

2.2 Experiences of Sample Countries: Brief history of market reforms

A. Latin American countries

Argentina

It was November 1989, when the then Argentinean government introduced the first wave of 'Big Bang' financial liberalization. The current and capital account transactions were both liberalized simultaneously in 1991. The liberalization began with the New Foreign Investment Regime (Park and Van Agtmeal, 1993). Under this reform, all legal limits on the type and nature of foreign investments were abolished, and a free exchange regime was introduced. Capital, dividends and capital gains could be repatriated freely. The Deregulation Decree issued on October 31, 1991, eliminated most restrictions on foreign investments, including taxes on capital gains (Park and Van Agtmael, 1993). Apparently residents could begin buying foreign securities from March 1990 when the currency was made fully convertible (Cowitt, Edwards and Boyee, 1996). Argentina suffered a setback since the implementation of financial liberalization policies. Major weaknesses however, emerged during the boom years of the 1990s, including the build-up of public debt and the failure to tackle serious structural weaknesses in fiscal institutions, labour markets, and external trade. These weaknesses came into play with the onset of a prolonged depression beginning in mid-1998 on account of several factors: cyclical correction, domestic political uncertainties, poor institutional development, financial contagion from the 1998 Russian crisis, and Brazil's 1999 crisis and the subsequent devaluation of Brazil's currency (Roy, Misra and Misra, 2006). At the same time, net private capital flows turned negative since 1990's and became positive only in 2005 for the first time. The comparative analysis that emerges from the following table suggests that financial liberalization has contributed towards the development of the stock market of Argentina.

Table 2.1:Argentina: A Synoptic View Stock Market Development

	Market Capitalisation (% GDP)	Turnover (% GDP)	No. of Listed Companies	Trade Openness	FPI (% GDP)	FDI (% GDP)	S.D	Institutional Development
1990	2.3	33.6	179	23.84	-1.60	1.3	0.237*	1.16#
2005	33.6	29.7	104	8.97	1.63	2.6	0.053	4.01

Notes: Trade Openness has been measured as Import + Export as % GDP; Standard deviation (S.D) represents the fluctuations in the Stock market; For 2005, Global competitiveness index score has been considered to represent Institutional development; FPI equals foreign portfolio investments. * indicates due to non availability of data for 1990, calculation has been made for 1991. # indicates average value (1986-93) of institutional indicators, taken from Demirgüç-Kunt and Levine (1995) for only those countries that are also included in the current study.

Sources: World Development Indicators, 2000 and 2007. IFC Statistics.

Brazil

Though the Brazilian market opened during May 1991 but FPI took place under CVM Resolution 1289, was limited to investments through special funds with onerous conditions. Since May 1991 foreign institutions were allowed to own up to 49% of voting stock and 100% of nonvoting stock. Bekaert (1995) reported that foreign investments trusts were approved in March 1987 and that foreign ownership levels were increased in May 1991. Country funds were admitted in September 1987 but that the full opening took place in May 1991 (Buckberg, 1995). As per IFC (1996b) foreign investors can invest 100% of nonvoting preferred stock and 49% of voting common stock as of May 1991. However, at the initial stage of reforms, FPI by residents is restricted [Bentley (1986), Cowitt, Edwards and Boyee (1996)].

Brazil was impacted by both the East Asian and the Russian crisis and was taking steps to avert its intensity when inflows of private foreign capital suddenly dried up. At the time of financial crisis in 1999, Brazil suffered from both fiscal and balance of payments weaknesses: in mid- 1998, the bulk of the government's domestic debt - which amounted to 40 per cent of GDP - consisted of short-term financing (Roy, Misra and Misra, 2006).

The bird's eye view of stock market development of Brazil has been presented below.

Table 2.2: Brazil: A Synoptic View Stock Market Development

	Market Capitalisation (% GDP)	Turnover (% GDP)	No. of Listed Companies	Trade Openness	FPI (% GDP)	FDI (% GDP)	S.D	Institutional Development
1990	3.5	23.6	581	44.83	4825.00	0.2	0.501	1.54#
2005	59.6	37.2	381	0.060	0.34	1.9	0.075	4.03

Notes: Trade Openness has been measured as Import + Export as % GDP; Standard deviation (S.D) represents the fluctuations in the Stock market returns; For 2005, Global competitiveness index score has been considered to represent Institutional development; FPI equals foreign portfolio investments. # indicates average value (1986-93) of institutional indicators, taken from Demirgüç-Kunt and Levine (1995) for only those countries that are also included in the current study.
Sources: World Development Indicators, 2000 and 2007. IFC Statistics.

Chile

The market opening date of Chile was as far as October 1989 though IFC (1996b) considers the market as 100% open from January 1995. Chile faced a surge in private capital inflows beginning 1989. With monetary policy adhering to a domestic inflation target and exchange rate geared towards achieving an external current account target, complete deregulation of capital flows resulted in a classical monetary policy dilemma. With sterilisation costs becoming sizable, the authorities in June 1991 introduced selective controls on capital inflows (Schneider, 2000): (i) a 20 per cent unremunerated reserve requirement (URR) on foreign borrowing; (ii) the URR was also supported by restrictive measures such as a minimum stay requirement for direct and portfolio investments from abroad; some regulatory requirements for domestic corporations borrowing abroad and extensive reporting requirements on banks for capital transactions. Foreign investors were restricted under Law 18657 and DL 600. This Law required capital to be retained for five years before it can be repatriated. Foreign Portfolio Investments by residents was allowed from 1990 [Cowitt, Edwards and Boyee, 1996]. Buckberg (1995) reported that the first country fund was admitted in October 1989. Prior to April 1990, residents could not own foreign securities (Cowitt, 1991). After a brief socialist experiment that was violently ended with a *coup d'etat* in 1973 a military regime introduced a package of extreme liberal reforms. Additionally, the capital account was also liberalised, and in the exchange market a crawling peg system was adopted.

Along with these controls, supporting measures such as liberalization of capital outflows started in the early 1990s. Chile depicts a successful experience in capital account liberalization using judicious controls (Roy, Misra and Misra, 2006) along with 'Big Bang approach' of financial liberalization and economic reforms. Macro economic instability, poor institutional development etc. often posed as bottlenecks for the Chilean economy.

Chile could well recognise the significance of financial reforms (in establishing a sound prudential framework and a strong credit culture) for the success of economic reforms.

The following table bears the experience of financial liberalization on the stock market.

Table 2.3: Chile: A Synoptic View Stock Market Development

	Market Capitalisation (% GDP)	Turnover (% GDP)	No. of Listed Companies	Trade Openness	FPI (% GDP)	FDI (% GDP)	S.D	Institutional Development
1990	45.0	6.3	215	0.167	0.0037	2.2	0.080	1.52#
2005	118.4	15.5	246	0.058	0.0027	5.8	0.035	4.85

Notes: Trade Openness has been measured as Import + Export as % GDP; Standard deviation (S.D) represents the fluctuations in the Stock market returns; For 2005, Global competitiveness index score has been considered to represent Institutional development; FPI equals foreign portfolio investments. # indicates average value (1986-93) of institutional indicators, taken from Demirgüç-Kunt and Levine (1995) for only those countries that are also included in the current study.

Sources: World Development Indicators, 2000 and 2007. IFC Statistics.

Mexico

Since the 1988's, Mexico was transformed from a closed, protected economy, with an interventionist state to one of the most open and least interventionist economies in Latin America. Mexico had implemented a successful macroeconomic stabilization, embarked on an ambitious privatization and deregulation program, and liberalised the financial sector, through "Big Bang approach". As a result, from 1988 to 1994 financial sector depth in terms of GDP doubled and fixed capital formation in terms of GDP increased from 15% to 20%. Financial sector depth decreased from a high of 100% of GDP in 1994 to close to 70% of GDP in 1999. After the debt crisis in 1982, the stock market began to play an increasing role lowering the bank credit to value traded ratio less than five. The stock market experience a rapid expansion starting in 1985 and turnover reaching close to 45% of GDP in 1994 before shrinking to close to 35% in 1999. This was in part due to the financial liberalization but like with the increase in banking credit, some authors have argued that the expansion of the stock market was unsustainable (Copelman, 2000). The value traded increased considerable concurrently with the increase in capitalisation in the years following the reform of the *Ley de Mercado de Valores* in 1989 and *Ley de Fondos de Inversion* in 1990. But, there was a pronounced decrease since the crisis in 1995. The current value traded of the Mexican stock market is just below the development threshold proposed by Demirguc-Kunt and Levine (1995) of 15% for the 1990s. It may be noted that stock market capitalization as a percentage of GDP is comparable to Spain's and Germany, the activity in the market measured by value trades is considerable lower. On the other, some have argued, that the expansion was not based on fundamentals and that the bubble was bound to burst. And it has found

that the 1995 Mexican crisis has proved to have a lasting detrimental effect in Mexico's formal financial markets (Gonzalez-Anaya and Marrufo, 2001).

However, the following table shows the development of Mexican stock market in the post-reform era.

Table 2.4: Mexico: A Synoptic View Stock Market Development

	Market Capitalisation (% GDP)	Turnover (% GDP)	No. of Listed Companies	Trade Openness	FPI (% GDP)	FDI (% GDP)	S.D	Institutional Development
1990	12.5	44.0	199	11.47	0.46	1.0	0.111	1.61#
2005	31.1	25.7	326	4.14	0.12	2.4	0.057	4.18

Notes: Trade Openness has been measured as Import + Export as % GDP; Standard deviation (S.D) represents the fluctuations in the Stock market returns; For 2005, Global competitiveness index score has been considered to represent institutional development; FPI equals foreign portfolio investments. # indicates average value (1986-93) of institutional indicators, taken from Demirgüç-Kunt and Levine (1995) for only those countries that are also included in the current study.

Sources: World Development Indicators, 2000 and 2007. IFC Statistics.

B. Select Asian Markets

Bangladesh

The year of liberalization in the case of Bangladesh was 1991. Prior to liberalization the market showed significant increase in 1987 by registering a gain of 110% in local index. Moreover, the trading value and market capitalization increased by 271% and 120% respectively. However after that the market went on a falling trend. The trend continued even in the year of liberalization. The real response to liberalization measures came after three years in 1994. In particular the trading activity increased by 640% causing the turnover ratio to increase from 3.8 to 14.3. Purchases of Bangladesh shares and securities by nonresidents, including nonresident Bangladeshis, in stock exchange in Bangladesh allowed (Husain and Qayyum, 2005).

Bangladesh has made considerable progress in recent years in modernizing its regulatory and supervisory regime. Infrastructure development is needed in the country for economic growth in general, and private sector development in particular. In this context, the Bangladesh Bank is helping to prepare a power sector strategy. Important steps have been taken to improve the functioning of the interbank and Treasury bill markets, including the establishment of a settlement system for secondary bond trading and introducing detailed "mark-to-market" guidelines for treasury securities. Market-based auctions for treasury securities have been introduced. The government continues

to rely on market-based mechanisms. In this regard, changes in market-based exchange rates continue to underpin the economy's ability to adjust to changes in the external environment (IMF Country Reports).

A bird's eye view of Bangladesh stock market development is shown below.

Table 2.5: Bangladesh: A Synoptic View Stock Market Development

	Market Capitalisation (% GDP)	Turnover (% GDP)	No. of Listed Companies	Trade Openness	FPI (% GDP)	FDI (% GDP)	S.D	Institutional Development
1990	101	105	134	0.50	N.A	0.0	0.051	N.A
2005	5.1	32.3	255	0.47	0.00008	1.3	0.081	3.46

Notes: Trade Openness has been measured as Import + Export as % GDP; Standard deviation (S.D) represents the fluctuations in the Stock market returns; For 2005, Global competitiveness index score has been considered to represent institutional development; FPI equals foreign portfolio investments.

Sources: World Development Indicators, 2000 and 2007. IFC Statistics

India

India's approach to economic development had until recently been highly interventionist and inward-oriented. The serious balance of payment crisis was the cause of the start of India's market liberalization in 1991. In June 1991, the new Indian government undertook major steps in stabilising and liberalising the economy. The reforms adopted in India in 1991 had four main elements: (i) immediate stabilisation measures, notably a 19 percent devaluation of the rupee and increase in interest rates designed to restore confidence and reverse the short-term capital outflow; (ii) fiscal consolidation aimed at reducing the central government deficit from 8.5% of GDP in 1990-91 to 5% in 1992-93; (iii) mobilisation of substantial exceptional financing from the IMF, the World Bank, and bilateral donors to maintain a minimum level of imports; (iv) initiation of major structural reforms (Ahluwalia, 1996). The early emphasis of the reforms was on industrial deregulation and trade liberalization to reduce drastically licensing requirements for investment and imports. Subsequently, the focus turned to tax reform, further trade liberalization (including reduction of tariffs), and financial sector reforms. Discouraged by a tight regulatory regime as well as the highly distorted economy, capital flows to India have historically been low. Direct investment was limited, averaging around $200 million a year over 1985-90. A key component of the economic reform program was the adoption of a much more open approach to foreign investment. At the outset, approval for direct investment participation up to 51% in priority areas was made automatic, while the criteria for approval were liberalised more

generally (IMF, 2000). In February 1992, it was announced that Indian firms in good standing would be allowed to raise funds through equity and convertible bond issues in euromarkets. In September 1992, registered Foreign Institutional Investors (FIIs) were allowed to purchase both equity and debt securities directly on local markets (Verspoor, 1995a). To encourage these flows further, in March 1993 Budget, the tax on interest and dividend income on FII holdings was set at 20 percent while capital gains tax was set at 30 percent on investment held for less than one year and 10 percent thereafter. The response to these liberalization measures was strong: total FDI and portfolio investment rose to $5.1 billion in 1994/1995, from $585 million in 1992/93 and $148 million in 1991/92. (Verspoor, 1995b). Since India did not have the inflation, external debt, and social inequalities as severe as those in Latin America, it was able to stabilize the economy more rapidly and at a lower cost. Indeed, India's economic recovery from adjustment programs has been both rapid and robust. Since growth was driven mainly by exports and private investment, the recovery did not put pressure on inflation or the external accounts. Though largely successful, the process of economic reform in India is not complete (Bajpai and Sachs, 1996). The comparative analysis that emerges from the following table suggests that financial liberalization has contributed towards the development of the stock market of India.

Table 2.6: India: A Synoptic View Stock Market Development

	Market Capitalisation (% GDP)	Turnover (% GDP)	No. of Listed Companies	Trade Openness	FPI (% GDP)	FDI (% GDP)	S.D	Institutional Development
1990	11.9	65.9	2435	0.60	N.A	0.1	0.103	1.34#
2005	68.6	93.6	4763	0.63	0.32	0.8	0.038	4.44

Notes: Trade Openness has been measured as Import + Export as % GDP; Standard deviation (S.D) represents the fluctuations in the Stock market returns; For 2005, Global competitiveness index score has been considered to represent institutional development; FPI equals foreign portfolio investments. # indicates average value (1986-93) of institutional indicators, taken from Demirgüç-Kunt and Levine (1995) for only those countries that are also included in the current study.

Sources: World Development Indicators, 2000 and 2007. IFC Statistics.

Indonesia

The official liberalization date of liberalisation was September 1989. Residents were allowed to own foreign securities before January 1990. Untill Dec. 1987; the market was closed to foreign investment. In Dec. 1987, the govt. introduced measures to allow foreigners to purchase shares in eight non-joint venture companies. The Bank Act. Of 1992, enacted Oct. 30, 1992, allowed foreigners to invest up to 49% of listed shares

of private national banks. Minister of Finance allows foreigners to purchase up to 49% of all companies listing shares on the domestic exchange, excluding financial firms (Kim and Singal, 2000). The following table shows the pattern of development in Indonesian stock market.

Table 2.7: Indonesia: A Synoptic View Stock Market Development

	Market Capitalisation (% GDP)	Turnover (% GDP)	No. of Listed Companies	Trade Openness	FPI (% GDP)	FDI (% GDP)	S.D	Institutional Development
1990	7.1	75.8	125	0.0205	-0.000040	1.0	0.037*	1.04#
2005	28.4	54.8	336	0.3279	0.0072	1.8	0.060	4.26

Notes: Trade Openness has been measured as Import + Export as % GDP; Standard deviation (S.D) represents the fluctuations in the Stock market; For 2005, Global competitiveness index score has been considered to represent institutional development; FPI equals foreign portfolio investments. * indicates due to non-availability of data for 1990, calculation has been made from July to Dec.1995. # indicates average value (1986-93) of institutional indicators, taken from Demirgüç-Kunt and Levine (1995) for only those countries that are also included in the current study.

Sources: World Development Indicators, 2000 and 2007. IFC Statistics.

Japan

The first sign of reforms in the Japanese financial market appeared in 1970s with the problem of high volume of bond issues by the Bank of Japan (Uchida and Tsutsui, 2005).

During 1971-74, some major policy changes observed in Japan. Among these restrictions on outward direct and portfolio investments eased further, easing of restrictions on the purchase of Japanese securities and lowering of the marginal reserve requirement of nonresident free yen accounts are important to mention. Marginal reserve requirement on non-resident free yen accounts abolished during this period of time. With the liberalisation of short-term euro/yen lending by Japanese banks, Japanese Off-shore Market (JOM) opened in 1986.

Although in early 1990s all deposit rates were liberalised, financial markets were controlled by number of measures. These controls were directed towards all areas such as day to day operations, managements, to new entrants and also to customers. However, gradual relaxation of restrictions was implemented by authorities from time to time but there were no substantial policy initiatives until the so-called full-fledged reforms. Since the end of 1996 Japan has started a serious reform package to further eliminate existing inefficiencies and remove number of barriers within the financial sector of the country. In 1998 Japan introduced new Foreign Exchange and Foreign Trade Control Law (Honda, 2003).

With the implementation of these reform programmes it was expected to make the financial system a modern and vibrant one. Japan could be regarded as the last country to implement such financial sector reform package among all other developed countries. The major objectives of the reform policies were to remove entry and (also exist) barriers to the financial industry, opening up the Japanese financial sector to the rest of the world including foreign exchange markets, removing of price setting controls allowing market forces to determine all prices within the industry and improve transparency and prudential regulatory mechanism within the financial system where it could be more accountable (Edirisuriya, 2003).

The experience of Japan's stock market development is shown below.

Table 2.8: Japan: A Synoptic View Stock Market Development

	Market Capitalisation (% GDP)	Turnover (% GDP)	No. of Listed Companies	Trade Openness	FPI (% GDP)	FDI (% GDP)	S.D	Institutional Development
1990	98.2	43.8	2071	0.12	0.01	0.1	0.071	N.A
2005	104.5	103.5	2351	0.22	0.04	0.1	0.034	5.60

Notes: Trade Openness has been measured as Import + Export as % GDP; Standard deviation (S.D) represents the fluctuations in the Stock market returns; For 2005, Global competitiveness index score has been considered to represent institutional development; FPI equals foreign portfolio investments.

Sources: World Development Indicators, 2000 and 2007. IFC Statistics.

Korea

Unlike several of the larger economies in East Asia, which evolved from protectionism, inward-looking trade regimes toward relatively open economies, Korea's development experience shows that export orientation, effective public policy intervention, and financial liberalisation are the center of economic development. Internationalization of Korea's capital market has been carried out cautiously since the announcement of the long-term plan in 1981 (Park, 2001). Since 1984, limited indirect investment in Korean stocks has been allocated through foreign investment funds, Korea Fund and Korea-Europe fund. Foreign securities companies were allowed to open representative offices. Korean began liberalising FDI in the early 1980s, and since 1985, the stock of FDI has more than doubled, from $0.5 billion to 1.3 billion in 1988. On December 1988, Government announced plans to liberalize domestic financial markets. Lending rate were decontrolled, monetary operation was shifted from direct credit control to indirect credit control. Started at the end of 1980s, foreign banks and insurance

companies were allowed to enter Korean market. At the same time, international investment trusts were permitted, and foreign and domestic securities companies were allowed to do business with each other. In 1992, Government announced plans to liberalize the capital account in several steps. Starting January 1992, foreigners were allowed to invest directly in Korean stocks with certain limits, and substantial overseas capital flowed into the Korean stock market. Since February 1995 Koreans have been allowed to (i) hold foreign currencies without any restrictions, (ii) invest up to $300,000 in overseas real estate, and (iii) deposit up to $30,000 in overseas banks. In June 1993, the government announced a three-stage program for complete liberalization of financial, capital and foreign exchange market by 1998 (Yang, 2002).

Although Korea took several steps to liberalised its financial sector and capital account, many internal and external factors triggered a severe financial crisis at the end of 1997. The causes of the crisis have been a weak legal and regulatory framework, regulatory forbearance and weak enforcement capacity, and excessive government intervention to promote certain industries. Nonetheless, the tremendous progress made by Korea in economic reform and human development over the past 40 years cannot be ignored (Yoon, 2005).

The following table highlights some indicators of Korean stock market development.

Table 2.9: Korea: A Synoptic View Stock Market Development

	Market Capitalisation (% GDP)	Turnover (% GDP)	No. of Listed Companies	Trade Openness	FPI (% GDP)	FDI (% GDP)	S.D	Institutional Development
1990	43.8	61.3	669	0.24	0.0012	0.3	0.064	1.55#
2005	92.2	210.8	1616	0.067	0.0003	0.6	0.034	5.13

Notes: Trade Openness has been measured as Import + Export as % GDP; Standard deviation (S.D) represents the fluctuations in the Stock market returns; For 2005, Global competitiveness index score has been considered to represent institutional development; FPI equals foreign portfolio investments. # indicates average value (1986-93) of institutional indicators, taken from Demirgüç-Kunt and Levine (1995) for only those countries that are also included in the current study.

Sources: World Development Indicators, 2000 and 2007. IFC Statistics.

Malaysia

The New Economic Policy introduced towards eliminating the identification of race with economic function, by reducing poverty and making the Malays participate in the ownership of capital. To a certain extent the NEP was successful, if in 1970 Malays owned 2.4 % of corporate equity, in 1990 this share had risen to 20.3; and the incidence

of poverty fell from 46.4 to 17.1 during the 1976- 1990 period. These equity improvements were accompanied by an average GDP growth rate of 7%. During this period the government changed its focus to an export oriented growth. The Industrial Coordination Act (ICA) imposed price regulation, licenses and quotas all directed to the accomplishment of public goals. However, the recession obliged Malaysia to relax the strict controls of the NEP. The economy recovered its high growth record, with an average GDP growth of 8% for the period, specially boosted by direct foreign investment. By 1987 50% its investment was direct foreign investment and it peaked to 70% in 1989. Also, policies that previously had deterred foreign capitals - like ethnic quotas in equity ownership - were relaxed. Malaysia was successful in attracting Japanese capital, not only because it opened in the right time, but also had social and macroeconomic stability to offer (Yoon, 2005). Most of this direct foreign investment was oriented to the more dynamic electronic and electric machinery industry. However during the 90's foreign debt has been held steady at nearly 40% of GDP, and their balance of payments shows a current account deficit that has been growing to -8.5% of GDP in 1995. The future challenges for the Malaysian economy as stated by its own government is to transit to "productivity-driven growth"(IMF, Country Reports).
The impact of new economic policy on the Malaysian stock market is shown below.

Table 2.10: Malaysia: A Synoptic View Stock Market Development

	Market Capitalisation (% GDP)	Turnover (% GDP)	No. of Listed Companies	Trade Openness	FPI (% GDP)	FDI (% GDP)	S.D	Institutional Development
1990	113.6	24.6	282	49.30	-0.21	5.3	0.060	1.63#
2005	139.1	26.9	1019	50.91	2.20	3.0	0.020	5.11

Notes: Trade Openness has been measured as Import + Export as % GDP; Standard deviation (S.D) represents the fluctuations in the Stock market returns; For 2005, Global competitiveness index score has been considered to represent institutional development; FPI equals foreign portfolio investments. # indicates average value (1986-93) of institutional indicators, taken from Demirgüç-Kunt and Levine (1995) for only those countries that are also included in the current study.

Sources: World Development Indicators, 2000 and 2007. IFC Statistics.

Philippines

During the turmoil of 1980s, both political and economic, external debt was cumulated, and both investment and saving were discouraged. To attract international capital and promote private investment, the Aquino government started economic reforms, mainly through privatization. In June 1989, 30 percent of the equity of the Philippine National Bank was privatized. Foreign Investment Act signed into law. The

Act removes, over a period of three years, all restrictions on foreign investments (IMF, 2000). In June 1991, the Foreign Investment Act allows 100% foreign equity ownership except in restricted sectors. In August 1992, the exchange control was lifted on virtually all current-account transactions. In February 1993, the telecommunication monopoly was ended. In 1994, 60 percent of the equity of the state owned refinery was privatized, and the ban on entry of foreign bank branches was lifted. In 1995, aviation services opened up for private involvement, and 100 percent foreign equity was allowed in mining in exchange for technology and investment. In 1996, maximum tariff was cut from 50 percent to 30 percent. All those structural reforms created an environment of attracting investment and promoted export. The economic growth in 1990s was characterized by export promotion, investment attraction, and private sector participation (Kim and Singal, 2000).

The following table highlights some indicators of Philippines stock market development.

Table 2.11: Philippines: A Synoptic View Stock Market Development

	Market Capitalisation (% GDP)	Turnover (% GDP)	No. of Listed Companies	Trade Openness	FPI (% GDP)	FDI (% GDP)	S.D	Institutional Development
1990	13.4	13.6	153	1.97	-0.005	1.2	0.090	1.32#
2005	40.5	20.4	237	1.64	0.298	1.1	0.407	4.00

Notes: Trade Openness has been measured as Import + Export as % GDP; Standard deviation (S.D) represents the fluctuations in the Stock market returns; For2005, Global competitiveness index score has been considered to represent institutional development; FPI equals foreign portfolio investments. # indicates average value (1986-93) of institutional indicators, taken from Demirgüç-Kunt and Levine (1995) for only those countries that are also included in the current study.

Sources: World Development Indicators, 2000 and 2007. IFC Statistics.

Thailand

The Thai government unilaterally started a World Bank style structural adjustment programs (SAP) in 1980. The recession over 1984-85 accelerated the process of reforms. The government devalued the currency in November 1984 and started a far more vigorous export promotion policy. Thailand continued its reform in the area of financial deregulation. In 1993, the Bangkok International Banking Facility (BIBF) was established for easy access to funds. This and many other factors led to accumulation of huge debt, concentrated in the financial firms and banks, and finally triggered off the 1997 economic crisis.

Thailand went in for capital account liberalisation before reforming the financial sector. Capital inflows were actively promoted in Thailand since 1985 till the mid-1990s. Inflows through portfolio and equity investments were permitted freely, though portfolio and foreign direct investment outflows were subject to restrictions. Sterilisation measures were stepped up. In addition, some measures designed to target capital inflows more directly were introduced in August 1995: (i) asymmetric open position limits for short and long positions (with smaller limits on short foreign currency positions in an attempt to discourage foreign borrowing abroad); (ii) reporting requirement for banks on risk control measures in foreign exchange and derivatives trading; and (iii) a seven per cent reserve requirement (held at the central bank) on non-resident baht accounts with less than one-year maturity and on finance companies' short-term foreign borrowing (IMF, 2000).

With the outbreak of East Asian crisis, the Thai government to stabilise the foreign exchange market and stem speculative attacks on the baht, imposed a series of measures. However, with the economic situation showed signs of improvement and the Bank of Thailand lifted controls in 1998 along with unifying the two-tier market. As a result, baht appreciated and stock prices improved (Roy, Misra and Misra, 2006).

The following table shows the impact of financial liberalization towards the development of the stock market of Thailand.

Table 2.12: Thailand: A Synoptic View Stock Market Development

	Market Capitalisation (% GDP)	Turnover (% GDP)	No. of Listed Companies	Trade Openness	FPI (% GDP)	FDI (% GDP)	S.D	Institutional Development
1990	28.0	92.6	214	2.56	-0.0017	2.9	0.119*	1.36#
2005	69.9	75.2	504	3.32	0.1013	2.6	0.036	4.58

Notes: Trade Openness has been measured as Import + Export as % GDP; Standard deviation (S.D) represents the fluctuations in the Stock market returns; For 2005, Global competitiveness index score has been considered to represent institutional development; FPI equals foreign portfolio investments. * indicates due to non-availability of data for 1990, calculation has been done for 1997. # indicates average value (1986-93) of institutional indicators, taken from Demirgüç-Kunt and Levine (1995) for only those countries that are also included in the current study.

Sources: World Development Indicators, 2000 and 2007. IFC Statistics.

Hong Kong

By the end of the twentieth century, Hong Kong was widely recognised as one of the world's top five international financial centers. Hong Kong has traditionally been viewed as a laissez-faire paradise for international finance (Schenk, 2004).

The Hong Kong stock exchange (HKSE) came into existence in Oct. 1986. A new era for the Stock Exchange of Hong Kong was launched after the October 1987 crash required the suspension of trading for four days. In this instance, Hong Kong was mainly the victim of the global equities collapse, but the crash also exposed the poor governance of the market and the illegal practices that had arisen during the boom. This episode led to reform of the exchange to strengthen the regulatory framework and eliminate the 'ethical laxity' that had become endemic in the market. In 1988 the Davison Report delivered its recommendations for the reform of the SEHK in the wake of this scandal. The external government watch-dog was strengthened by the establishment of a new Securities and Futures Commission with a more substantial staff and independent of government (Fong and Koh, 2002).

In 1993 the semiautomatic system was combined with automatic order matching and execution system (AMS). The order and trade information for both automatic and nonnautomatic stocks are disseminated through Telecast system. The Hong Kong market is a highly volatile market and the 'China Plot' has been a major factor influencing the market (Machiraju, 2000). There is no restriction on foreign investment and no limits exist on ownership of domestic companies by foreigners. Profits, dividends and interest can be fully and freely repatriated. Clearing and settlement are done on a computerised book entry clearing and settlement system. Reduction of the settlement cycle in equity from T+2 to T+0 (buyer) and T+3 to T+1 (seller).

The following table highlights experiences of some indicators of Hong Kong stock market development.

Table 2.13: Hong Kong: A Synoptic View Stock Market Development

	Market Capitalisation (% GDP)	Turnover (% GDP)	No. of Listed Companies	Trade Openness	FPI (% GDP)	FDI (% GDP)	S.D	Institutional Development
1990	111.5	43.1	284	28.02	N.A.	-	0.034*	N.A
2005	566.2	55.7	1096	43.59	0.67	20.2	0.041	5.46

Notes: Trade Openness has been measured as Import + Export as % GDP; Standard deviation (S.D) represents the fluctuations in the Stock market returns; For 2005, Global competitiveness index score has been considered to represent institutional development; FPI equals foreign portfolio investments. * indicates due to non-availability of data for 1990, calculation has been done for 1996.
Sources: World Development Indicators, 2000 and 2007. IFC Statistics.

Singapore

Singapore's financial sector, which is dominated by the banking sector (55 percent share of domestic banking assets), remains robust despite a series of economic downturns and substantial asset price decline (Kapur, 2005).

Singapore has proactively implemented significant financial sector reforms since 1998. The reforms are aimed at enhancing Singapore's position as a major international financial center and include (i) opening the financial industry to greater foreign competition; (ii) bringing regulatory and supervisory practices closer in line with international best practices on prudential regulation and supervision and disclosure-based regulation; (iii) developing deep and liquid fixed-income and equity markets; (iv) promoting the asset management industry; and (v) gradually liberalizing the restrictions on the international use of the Singapore dollar. As a part of legislative and regulatory reforms, in 2002 a risk-based capital framework for securities for capital markets services license holders came into force and the Payment and Settlement Systems (Finality and Netting) Act was enacted to provide for protection of the payment and settlement systems from disruptions (Kapur, 2005). Moreover, in 2003 the Code of Corporate Governance took effect and listed companies with market capitalization of S$75 million or more were required to make quarterly reports. To develop stock markets, the Singapore Exchange (SGX) was formed following the demutualisation and merger of the Stock Exchange of Singapore and Singapore International Monetary Exchange. Investment restrictions on CPF Special Accounts were liberalized during 2001. A new SGX listing manual came into effect in 2002. The borrowing period for the securities lending facility was extended, and full order book information on the SGX securities market was made available to investors on a subscription basis. Financial institutions may not be allowed to extend credit facilities larger than S$5 million if there is reason to believe that the funds may be used for Singapore dollar currency speculation (IMF Country Reports).

The contributions of liberalization policies towards the development of the stock market of Singapore are given below.

Table 2.14: Singapore: A Synoptic View Stock Market Development

	Market Capitalisation (% GDP)	Turnover (% GDP)	No. of Listed Companies	Trade Openness	FPI (% GDP)	FDI (% GDP)	S.D	Institutional Development
1990	93.6	59.15	150	1.69	0.20	15.1	0.098	N.A
2005	178.4	63.1	686	213.17	0.19	17.2	0.028	5.63

Notes: Trade Openness has been measured as Import + Export as % GDP; Standard deviation (S.D) represents the fluctuations in the Stock market returns; For 2005, Global competitiveness index score has been considered to represent institutional development; FPI equals foreign portfolio investments.

Sources: World Development Indicators, 2000 and 2007. IFC Statistics.

Pakistan

At the beginning of 1990s, financial structure of Pakistan continued to reflect the policy initiatives that drastically enlarged the role of government in the process of deposit mobilisation and credit allocation. The capital market, at the beginning of 1990s, consisted of market for equities term-loans, corporate debt, and mutual funds (. The capital market at that time was not adequately supplementing the intermediary role of banking system. During this period of time foreign nationals were not allowed to make investment without prior approval from government and were also barred from owning 100 percent shares of a company. Moreover, restrictions on foreign exchange movement in and out of the country kept the foreign investors away from Pakistani markets. On the supervisory front, the control over capital market was compromised due to lack of autonomy, inadequate professional capacity, lacked proper infrastructure for trading and settlement.

The reform programmes was initiated to reduce the market segmentation, instill competition, and switch over to market-based and relatively more efficient monetary and credit mechanism. However, this reform process gathered momentum since 1997, when a crucial set of reforms aiming at institutional strengthening, restructuring of banks and DFIs, and improvement in regulatory framework was introduced. The emphasis was also given on the strengthening of governance, institutions, regulation, and supervision. Exchange and payment reforms proved to be of great significance in the development of capital market. Through these reforms, foreigners and oversees Pakistanis were allowed to make investments without prior approval except in few specified industries. This resulted in large inflows of foreign funds. Furthermore, the permission to retain 100 percent equity by foreign investors in a company with no obligation to go public helped improve their confidence in Pakistani markets. Other important steps in this regard were:

(i) the permission to bring in any amount of foreign currency and to take it out freely; (ii) treatment of foreign private investment with regard to taxes on income, at par with those applicable to similar investment made by citizens of Pakistan; and (iii) relief from double taxation in case of those countries with which Pakistan had treaties for avoidance of double taxation (Husain, 2000).

The following table highlights some indicators of stock market development in Pakistan.

Table 2.15: Pakistan: A Synoptic View Stock Market Development

	Market Capitalisation (% GDP)	Turnover (% GDP)	No. of Listed Companies	Trade Openness	FPI (% GDP)	FDI (% GDP)	S. D	Institutional Development
1990	7.1	8.7	487	0.025	0.0077	0.6	0.017	1.09#
2005	41.5	375.7	736	0.031	0.0065	2.0	0.098	3.66

Notes: Trade Openness has been measured as Import + Export as % GDP; Standard deviation (S.D) represents the fluctuations in the Stock market returns; For 2005, Global competitiveness index score has been considered to represent institutional development; FPI equals foreign portfolio investments. # indicates average value (1986-93) of institutional indicators, taken from Demirgüç-Kunt and Levine (1995) for only those countries that are also included in the current study.

Sources: World Development Indicators, 2000 and 2007. IFC Statistics.

Sri Lanka

In 1990 liberalisation of investment in the Stock Market with the abolition of the 100% transfer of Property Tax on share purchases by non-nationals, and the relaxation of Exchange Control on inward remittances for share purchases and outward remittances of surpluses on dealings in listed shares was introduced. The year 1991 had been marked as milestones in the history of the Colombo Stock exchange. During this period of time automation of the Clearing House of the Stock Exchange with the establishment of the Central Depository System, abolition of Wealth Tax on listed company shares had all come into effect. Introduction of an Over the Counter Market for unlisted shares. The introduction of a two-tiered board, In 1996 the Rules for investment companies adopted. Automation of trading with the installation of a Screen Based Trading System, rules for establishing branch officers and sales outlets of Member Firms and Dispute Resolution between clients/brokers and Member Firms adopted. In 1997 the establishment of a Settlement Guarantee Fund and a Compensation Fund. Introduction of new Listing Rules 2000 The introduction of a new index on Total Returns 2004 Launch of a new state-of-the-art system for the trading of debt securities Trading System (DEX). Reduction of the

settlement cycle in equity from T+5 to T+3 (buyer) and T+5 to T+4 (seller) (See Colombo SE Official Website).

The following table shows some indicators of Sri Lanka's stock market development.

Table 2.16: Sri Lanka: A Synoptic View Stock Market Development

	Market Capitalisation (% GDP)	Turnover (% GDP)	No. of Listed Companies	Trade Openness	FPI (% GDP)	FDI (% GDP)	S.D	Institutional Development
1990	11.4	5.8	175	1.43	N.A	0.5	0.030*	N.A
2005	24.4	23.7	239	0.65	-0.0055	1.2	0.059	3.87

Notes: Trade Openness has been measured as Import + Export as % GDP; Standard deviation (S.D) represents the fluctuations in the Stock market returns; For 2005, Global competitiveness index score has been considered to represent institutional development; FPI equals foreign portfolio investments. * indicates due to non-availability of data for 1990, calculation has been done for 1992.

Sources: World Development Indicators, 2000 and 2007. IFC Statistics.

C. G – 7 countries

Australia

The foundation for financial reforms in Australia was laid some decades ago and is a continuous process. Banking sector is the largest sector of the financial system and it controls the majority of financial assets in the system.

In general, the Australian financial system until the end of 1970s was a highly regulated one and no liberalization policy was initiated until the appointment of the Campbell Committee in 1979. The situation of financial institutions in Australia at the end of the 1980s, that is a decade after the introduction of financial deregulation, was somewhat turbulent (Edirisuriya, 2003).

After implementing the Campbell Committee recommendations, there has been a major structural change in the financial services industry of Australia. During this period the complexity of the financial market has increased. As a result of this, new challenges to the regulatory system of the country have surfaced. As per the recommendations of the Wallis enquiry new institutions have been created or already established institutions have been re-organized (Perkins, 1989). The Australian Prudential Regulation Authority (APRA) is one such new institution created to regulate the financial services industry sector of Australia.

Key changes in capital account liberalisation policies include loosening the requirement to hold a non-interest bearing deposit with the Reserve Bank when

borrowing overseas suspended (and not reintroduced) in 1977. During 1981-83, monetary limits on overseas investment in equity or real Estate and restrictions on interest-bearing investments by non-residents were abolished and the exchange rate was floated. With abolishing a range of portfolio controls, restrictions on inward direct investments were also eased in 1986 (Roy, Misra and Misra, 2006).

The following table highlights some indicators of Australia stock market development.

Table 2.17: Australia: A Synoptic View Stock Market Development

	Market Capitalisation (% GDP)	Turnover (% GDP)	No. of Listed Companies	Trade Openness	FPI (% GDP)	FDI (% GDP)	S.D	Institutional Development
1990	36.2	31.6	1089	20.75	1.77	2.6	0.043	N.A
2005	109.8	75.7	1714	14.22	5.92	-4.7	0.028	5.29

Notes: Trade Openness has been measured as Import + Export as % GDP; Standard deviation (S.D) represents the fluctuations in the Stock market returns; For 2005, Global competitiveness index score has been considered to represent institutional development; FPI equals foreign portfolio investments.

Sources: World Development Indicators, 2000 and 2007. IFC Statistics.

France

France followed a very gradual approach towards capital account liberalisation during the 1980s. Soon after the second oil price shock, a major reorientation occurred in 1983 in French economic strategy, which involved the deregulation of the financial sector policies which was brought about in stages. Quantitative credit control mechanism was abolished in 1985. The public debt market was reformed to enhance the investors' interest. While this well-planned liberalisation of financial sector was being implemented, France continued to maintain capital controls. When the French macro-economic situation strengthened, current account stabilized in 1984 and the financial sector was considered to be able to withstand foreign competition, capital controls were withdrawn gradually. There were sizable increases in portfolio flows into France (from below 0.5 per cent of GDP in early 1980s to close to 4 per cent of GDP by late 1980s). Yet, the liberalisation efforts continued uninterrupted till 1990 when France adopted complete CAL. The French approach to strengthen the domestic economy before liberalising the volatile items in the capital account was the key element behind the French attempt at capital account liberalization (CAL).

The major changes in CAL in France were (i) starting from 1980, relaxation of restrictions on inward and outward direct and portfolio investments gradually eased out in 1985 completely; (ii) *Devises-titres* market abolished, purchases of secondary

residences abroad liberalized, forward foreign exchange operations eased (iii) *Carnet de change* abolished and exchange controls for commercial enterprises substantially eased and (iv) In 1988 domestic enterprises permitted to operate foreign currency accounts. Finally, by 1990 all remaining exchange control regulations abolished (Roy, Misra and Misra, 2006).

A fully computerized clearing and settlement system called RELIT was introduced in 1990 based on delivery verses payment or the simultaneous exchange of securities and cash on the same day and standard time frame for trade comparisons and settlement. Institutional investors can buy and sell large blocks of shares at a predetermined price without waiting for a matching order reaching the central market (Machiraju, 2000).

The following table highlights some indicators of France stock market development.

Table 2.18: France: A Synoptic View Stock Market Development

	Market Capitalisation (% GDP)	Turnover (% GDP)	No. of Listed Companies	Trade Openness	FPI (% GDP)	FDI (% GDP)	S.D	Institutional Development
1990	26.3	37.76	578	43.70	4.19	1.1	0.073	N.A
2005	80.4	81.7	1259	36.85	13.38	3.3	0.032	5.31

Notes: Trade Openness has been measured as Import + Export as % GDP; Standard deviation (S.D) represents the fluctuations in the Stock market returns; For 2005, Global competitiveness index score has been considered to represent institutional development; FPI equals foreign portfolio investments.

Sources: World Development Indicators, 2000 and 2007. IFC Statistics.

Germany

Like Japan, the economy of Germany is dominated by the banking sector. Industry in Germany is still reliant on institutional financing and German economy is poorly represented by the stock markets. But soon after the opening up of the German economy, the Deutsche Bourse AG has emerged one of the developed markets in the world. Market capitalization as a percent of GDP was 23.6 % at the end of 1994.

A dual system comprising of floor and computerized trading have been employed. Computerised trading known as IBIS, provided by Deutsche Bourse AG, is open to all members of German stock exchanges. IBIS has been widely accepted and is responsible for bringing the off-exchange trading back to the exchange. Transactions concluded with IBIS are automatically transmitted for clearing and settlement. Banks whose role is universal in Germany provide dealing services and transmit customers'

orders to the exchange. Delivery is made possible by book entry. Standard settlement takes place on the second business day after the bargain (Machiraju, 2000).

No sooner had the financial reforms policies introduced, capital market activity is increasing and fostering efficiency gains. Opportunities for further private equity participation are large as the business landscape remains fragmented. The role of venture capital for new startups, however, appears more constrained. Recognizing the benefits of private capital for the entry of new firms, innovation, economies of scale, and corporate governance, the authorities are formulating a more effective legal framework to mobilize additional market financing, including by streamlining tax incentives. The authorities also attach high priority to establishing real estate investment trusts (REITs) to increase flexibility of property markets and deepen capital markets.

Additional deregulation of product and service markets is in the process strengthen competition and raise productivity. A more efficient financial sector would improve the allocation of capital to areas of highest return, strengthening economic performance. Banks and insurance companies are healthier than in recent years, but the improvement in earnings is largely cyclical and they still underperform most EU peers. However, it remains vital to allow more private capital to enter public sector banks to harness market signals and facilitate restructuring (IMF Country Reports). Prudential supervisory criteria determined by the German supervisory authorities helps deepening capital markets and playing a greater role in guiding corporate decisions. Moreover, increasing flexibility in the real estate market also contributes to the economic efficiency.

A bird's eye view about Germany's stock market development is shown below.

Table 2.19: Germany: A Synoptic View Stock Market Development

	Market Capitalisation (% GDP)	Turnover (% GDP)	No. of Listed Companies	Trade Openness	FPI (% GDP)	FDI (% GDP)	S.D	Institutional Development
1990	22.9	139.3	413	59.32	0.96	0.2	0.082	N.A
2005	43.7	123.7	764	47.13	11.05	1.1	0.036	5.58

Notes: Trade Openness has been measured as Import + Export as % GDP; Standard deviation (S.D) represents the fluctuations in the Stock market returns; For 2005, Global competitiveness index score has been considered to represent institutional development; FPI equals foreign portfolio investments.

Sources: World Development Indicators, 2000 and 2007. IFC Statistics.

United Kingdom (U.K.)

The London Stock Exchange, one of the world's oldest stock exchanges and can trace its history back more than 300 years, deregulated the market in 1986, through "Big Bang" process. Deregulation of the market came in: (i) ownership of member firms by an outside corporation is allowed. (ii) all firms become broker/dealers able to operate in a dual capacity. (iii) minimum scales of commission are abolished. Individual members cease to have voting rights. Trading moves from being conducted face-to-face on a market floor to being performed via computer and telephone from separate dealing rooms. (iv) the exchange becomes a private limited company under the Companies Act 1985. SETS (Stock Exchange Electronic Trading Service) is launched to bring greater speed and efficiency to the market. The CREST settlement service is launched in 1997.

United Kingdom's experience is a classic case of rapid liberalization of capital controls. Since World War II till 1979, UK operated one of the most extensive systems of capital controls along with tight domestic financial regulation. The government recognised that the abolition of capital controls had to be accompanied by domestic deregulation and macro-economic policies oriented towards stabilisation. Though the process of liberalisation of capital controls in UK was one of the fastest (convertibility of sterling introduced in 1958), it was part of a broader policy framework aimed at improving the functioning of the overall UK economy in late 1970s. In 1967 restrictions on repatriation of non-residents' capital eased and controls on portfolio inflows abolished in 1971. During 1978-79, restrictions on resident institutional investors investing in foreign currency securities eased out and abolition of all restrictions on outward direct investment and significant liberalization of outward portfolio investments were made. Such loosening of controls reflected its impact in an interesting way. While inflows increased marginally, the immediate post-liberalisation period saw a substantial hike in capital outflows from UK. Economic growth in UK improved during the 1980s and inflation fell. As such there is no restriction on capital transactions in money, capital, derivatives market and also with respect to personal capital transactions and institutional investors(Roy, Misra and Misra, 2006).

The development of stock market in U.K. has been shown in the following table.

Table 2.20: United Kingdom: A Synoptic View Stock Market Development

	Market Capitalisation (% GDP)	Turnover (% GDP)	No. of Listed Companies	Trade Openness	FPI (% GDP)	FDI (% GDP)	S.D	Institutional Development
1990	87.0	33.3	1701	73.51	4.26	3.4	0.039	N.A
2005	139.1	140.5	3091	48.59	19.88	7.2	0.025	5.54

Notes: Trade Openness has been measured as Import + Export as % GDP; Standard deviation (S.D) represents the fluctuations in the Stock market returns; For 2005, Global competitiveness index score has been considered to represent institutional development; FPI equals foreign portfolio investments.

Sources: World Development Indicators, 2000 and 2007. IFC Statistics.

United States of America (USA)

The United States, that had generally adopted liberal policies with regard to capital account in the post-war period, introduced capital controls on account of speculative outflows in the 1960s. Controls in the form of Interest Equalisation Tax (1963), Voluntary Guidelines limiting foreign lending and investment (1965) and Voluntary Guidelines limiting foreign direct investment (1968) were introduced. Most of these controls such as abolition of capital controls, including voluntary guidelines etc. were eliminated from 1974 onwards after the breakdown of the Bretton Woods system. Since then, the United States has followed a liberal capital regime with limited controls mainly pertaining to security concerns (Bakker & Chapple, 2002).

The experience of the USA stock market development is presented below:

Table 2.21: USA: A Synoptic View Stock Market Development

	Market Capitalisation (% GDP)	Turnover (% GDP)	No. of Listed Companies	Trade Openness	FPI (% GDP)	FDI (% GDP)	S.D	Institutional Development
1990	55.1	53.4	6599	15.69	0.38	0.8	0.040	N.A
2005	136.9	126.5	5143	18.52	7.56	0.9	0.017	5.61

Notes: Trade Openness has been measured as Import + Export as % GDP; Standard deviation (S.D) represents the fluctuations in the Stock market returns; For 2005, Global competitiveness index score has been considered to represent institutional development; FPI equals foreign portfolio investments.

Sources: World Development Indicators, 2000 and 2007. IFC Statistics.

D. African Markets

South Africa

The liberalisation of capital and foreign exchange markets has facilitated greater integration of financial markets across jurisdictions and increased competition. One of the strategies pursued has been the creation of diversified financial groups, now commonly termed "Financial Conglomerates" or "Large and Complex Financial Institutions (LCFI)". These financial groups provide opportunity for reaping economies of scale and for revenue diversification. However, the size and complexity of their operations present challenges for risk management.

The democratization of South Africa coincided with the relaxation of controls in the foreign exchange and capital markets in SA, thus permitting the increased regional and international participation in local financial activity. Within the broad framework of liberalization, factors such as privatization, the seeking of joint ventures and technical partnerships with larger firms and the need for assistance in recapitalization have provided ad hoc opportunities for foreign investment and offered a channel for global banking groups to acquire prime indigenous banks (IMF Country Report).

SA has improved their macroeconomic performance markedly over the past decade. Generally, better financial indicators coupled with financial sector reforms have helped build investor confidence. In countries that previously faced political instability, more sustainable economic growth patterns are emerging as political environments become more stable and direct investors become more attuned to the opportunities that Africa can provide.

The following table shows the development of stock market of South Africa in the post-reform period.

Table 2.22: South Africa: A Synoptic View Stock Market Development

	Market Capitalisation (% GDP)	Turnover (% GDP)	No. of Listed Companies	Trade Openness	FPI (% GDP)	FDI (% GDP)	S.D	Institutional Development
1990	122.8	5.93	732	14.48	0.50	-0.1	0.041	N.A
2005	236.0	41.6	373	3.83	3.04	2.6	0.026	4.36

Notes: Trade Openness has been measured as Import + Export as % GDP; Standard deviation (S.D) represents the fluctuations in the Stock market returns; For 2005, Global competitiveness index score has been considered to represent institutional development; FPI equals foreign portfolio investments.

Sources: World Development Indicators, 2000 and 2007. IFC Statistics.

2.3 Conclusion

The above discussions are mostly descriptive in nature. However, we summarize below some salient points of our discussion.

i. Latin American countries: it's a crisis-prone region; nearly all countries from this region followed a 'big bang approach' of financial liberalization.

ii. South Asian countries: the countries in this region followed a 'gradual' approach liberalization of economy. There is ample scope of further reforms in this territory. Comparatively, this region is a crisis-prone region.

iii. South east Asia: mostly, countries in this region adopted 'cautious' steps for opening up of their economies. At the same time these countries are not free from "contagious effect". In some occasion to protect the economy from the destabilization, some countries often reverted back for a while to the tighter control regime e.g. Korea.

iv. G-7 countries: in this cluster the financial structure of the countries are matured. Further scope of innovation, institutional and legal-system development may be beneficial for the countries long-run economic growth.

The analysis may help us only if finance leads growth strategy works. Alternatively, if exogenous growth model is relevant, then above discussions will loose much of it significance. There is a need of robust analysis to relate finance with growth and to assess the merit of two above mention models. The next chapter deals with the measure the development of financial sector objectively to facilitate the finance-growth relationship.

References

Ahluwalia, Isher J. (1996): "India's Opening Up to Trade and Investment, in Policy Reform in India", Development Center Seminars, Development Center, OECD, Paris France.

Bajpai, Nirupam and Jeffrey Sachs (1996): "India's Economic Reforms: The Steps Ahead. Development", Discussion papers no. 532. Harvard Institute for International Development, Havard University.

Bakker, Age and Bryan Chapple (2002): "Advanced Countries Experiences with Capital Account Liberalisation", IMF Occasional Paper No. 214, IMF, Washington D.C.

Bekaert Greet (1995): "Market Integration and Investment barriers in emerging equity markets", World Bank Economic Review, vol.9, January, pp.75-107.

Bentley, P (ed.) (1986): "World Guide to exchange control regulations." Wolfeboro, N.H, Longwood.

Buckberg, Elaine (1995): "Emerging Stock Markets and International Asset Pricing", World Bank Economic Review, vol.9, January, pp. 51-74.

Copelman, Martina (2000): "Financial Structure and Economic Activity in Mexico." Presented at the conference "Financial Structures and Economic Development" World Bank Feb 10-11, 2000.

Cowitt Philip P (edited) (1985): "World Currency Yearbook, 1984", New York, Currency Data and Intelligence Inc.

---------- (1991): "World Currency Yearbook, 1988-89", New York, Currency Data and Intelligence Inc.

----------, Edwards Carolyn A and Boyce Elliot R (1996): "World Currency Yearbook, 1990-93", (edited), New York, Currency Data and Intelligence Inc.

Demirguc-Kunt, Asli and Ross Levine (1995): "Stock Market Development and Financial Intermediaries: Stylized Facts." The World Bank Policy Research Working Paper No. 1462, World Bank.

Edirisuriya, Piyadasa (2003): "Financial Sector Reforms, Regulatory Structure and Banks: Australian and Japanese Experience", Downloaded.

Fong, Wai Mun and Seng Kee Koh (2002): "The Political Economy of Volatility Dynamics in the Hong Kong Stock Market", Asia-Pacific Financial Markets, Vol.9, pp. 259–282

Gonzalez-Anaya, José Antonio and Grecia M. Marrufo (2001): "Financial Market Performance in Mexico", Stanford University Center for Research on Economic Development and Policy Reform Prepared for the Mexican Credit Conference October 5-6.

Honda, E (2003): "Financial Deregulation in Japan", Japan and the World Economy, Vol. 15, pp. 135-140

Husain, Fazal (2000): "Financial Sector Reform in Pakistan", Downloaded.

Husain, Fazal and Abdul Qayyum (2005): "Stock Market Liberalizations: The South Asian Experience", March. Downloaded.

IMF (2000): "Capital Controls: Country Experiences with their use and Liberalization", *IMF Occasional Paper 190*, IMF, Washington, D.C.

IMF Country Reports, downloaded from the official website of the IMF.

International Financial Corporation (1996b): "The IFC Indexes – Methodology, Definitions and Practices", May, Washington, D.C, World Bank.

Joshi, V and I.M.D Little (1996): India's Economic Reforms 1991-2001. Oxford, Clarendon Press.

Kapur, Basant K (2005): "Capital Flows and Exchange Rate Volatility: Singapore's Experience", Department of Economics, National University of Singapore.

Kim Han E. and Vijay Singal (2000): "Stock markets openings: Experience of Emerging Economies", The Journal of Business, Vol. 73, No.1 January, pp.25-66.

Levine, Ross (1999): "Napoleon, Bourses, and Growth: With a Focus on Latin America", IRIS Center Working Paper No. 229, April.

Machiraju, H.R (2000): " The Working of Stock Exchanges in India", (2nd edition), New Age International (P) Limited Publishers, New Delhi.

Park Keith K. H and Van Agtmael, Antoine W (1993): "The World's Emerging Stock Markets: Structure, Development, Regulations and Opportunities" (eds.), Chicago Press.

Park, Won-am Fal. (2001): "Was Korea's Financial Crisis Self-fulfilling?" The Journal of Korean Economy, Vol. 1, pp. 301-323.

Perkins, J.N.O (1989): "The Deregulation of the Australian Financial System: The Experience of the 1980s", Melbourne University Press.

Roy Mohua, Rekha Misra and Sangita Misra (2006): "A Review of Cross-Country Experience in Capital Account Liberalisation", RBI Occasional Papers, Vol. 27, No. 1 and 2, Summer and Monsoon, pp. 1-71.

Schenk, Catherine R (2004): "Regulatory reform in an emerging stock market: the case of Hong Kong", Financial History Review 11.2 (2004), pp. 139–63.

Schneider, Benu (2000): "Issues in Capital Account Convertibility in Developing Countries", Prepared for Overseas Development Institute (ODI) Conference on 'Capital Account Liberalisation: The Developing Country Perspective' ODI, London, June.

Stock Exchanges Official websites of the sample countries.

Uchida, H., and Tsutsui, Y (2005): "Has competition in the Japanese banking sector improved?", Journal of Banking & Finance, Vol. 29, pp. 419–439.

Verspoor, Adriaan (1995a): "Economic Developments in India: Achievements and Challenges: A World Bank Country Study". The World Bank. Washington DC.

---------- (1995b): "India: Recent Economic Developments and Prospects", The World Bank, 1995.

Yang, Doo-Yang (2002): "Economic reform in post crisis Korea", The Journal of East Asian Affairs. The Research Institute for International Affairs, 16: pp.255-281.

Yoon, Seok (2005): "Comparative Analysis of Economic Policies for Korea and Malaysia after the Financial Crisis", American Journal of Applied Sciences, Vol. 2 (9): pp.1315-1320.

CHAPTER – III

Measuring Stock Markets Development

3.1 Introduction

Popular assertion that economic growth and efficiency largely depends on the maturity of financial system is at the center stage of voluminous research dated back to Bagehot (1873). Schumpeter (1912) Gurley and Shaw (1955) in their classical writings forcefully argued that one of the differences between developed and developing countries are that the financial system of former is more matured than the latter. Since then numerous studies by development economists delved to satisfy the queries — how financial sector contributes in economic growth or how corporations finance themselves?

Any definite answer to all these questions largely depends upon robustness of the technique followed to measure growth of financial sector and tools used to relate it with a well-accepted definition of economic development, while both are difficult tasks and susceptible to criticism. At a more basic level, economists may have neither a common concept nor a common measure of stock market development. Subsequently, we know little about how stock market development affects rest of the financial system and economic development.

The present chapter, however, attempts to calibrate a multifaceted model to measure stock market development, an important segment of financial system of both developed and developing economies. Past lesson is undeniably important. But it is important to initiate series of actions based on experiences to convert markets into more meaningful institutions in the changed regime. Present writing aims to satisfy these two objectives.

3.2 Scope of the chapter

The chapter aims at to measure the growth of stock markets around the world in general and Asian markets in particular with the help of a conglomerate index that comprises of various stock market development indicators. There is no denying since each indicator of stock market development suffers from statistical and conceptual shortcomings, using a number of indicators with all possibilities help us to develop a well defined model capable to measure immaculately stock market development across countries. Furthermore, stock market development like — the level of economic development — is a complex and multi-faceted concept and no single measure is awfully

inadequate to satisfy our requirement. Hence, we reject popular policy of 'pick and choose' a single variable as the most important one, instead relied on a more robust methodology to measure stock market growth to answer the following questions:

What is the pattern of growth of some major stock markets around the world? What is the performance of Asian markets vis-à-vis others of the world? Do countries at different stages of development have different looking financial system?

Based on the answer of above quires, present writing attempts to develop a sensible, well conceived policy for the development of capital market — a quintessential institution in a liberalized economy. Answer of the above questions will help us for a better understanding about the impact of stock market development on: capital accumulation and allocation, supply of external fund, cost of capital and finally, its role as "guardian of efficiency".

There are numerous studies since Bagehot (1873) and Schumpeter (1912) to Demetriades and Hussein (1996), Fishman and Love (2003), Prasad *et. al.* (2004), Bekaret *et. al.* (2001, 2002, and 2003) to investigate the issue— is there any relationship between financial sector development and growth. Studies are important that deserve serious attention of researchers in this area but the fact is findings of the studies are inconclusive. Hence, we know little about how financial system influences growth. Historical focus of finance and growth related studies were on banking sector [King and Levine (1993a), Stiglitz (1985), Boyd and Prescott (1986) and Arestis *et al.* (2001) etc.]. Implied assumption was, in the absence of a well-developed stock market particularly in developing country, it is non-securitized market that matters for growth of the economy, hence, it drew attention of researchers. Furthermore, impeccable theories supported by robust empirical findings helped to develop an impression that banks mitigate information asymmetries that foster better investment and faster growth which encouraged researchers to focus on bank neglecting stock market. However, debate on merit of "bank versus market" based financial system seems to be over. There is a growing feeling that it is not an "either–or" situation, both have definitive role in economic development that inspiring researchers to repudiate their earlier stand. Theorists also claim as financial system becomes more sophisticated intermediate finance becomes less important – thus development economists of modern times duly emphasizing role of organized equity-debt-derivative markets in the growth process.

Phenomenal growth of emerging markets and expanding literature to adjudge ties between stock market and economic growth reflects attitude change of researchers. Still our understanding about development implications of a well functioning equity market is unclear because varied definitions used by researchers while measuring market growth and the measures are not beyond criticism. Most of the studies used a single variable such as value-traded ratio (Atje and Jovannovic, 1993), liquidity ratio [Beck and Levine (2002), Bencivenga *et. al.* (1995)], or market integration [Devereux and Smith (1994), Obstfield (1994), Korajczyk (1996)] as an indicator of stock market development ignoring utility of a comprehensive measure.

Methodology used by researchers to test market – growth linkage also vary, it ranges from simple regression to co-integration [see, for example, Jung (1986), Demetriades and Hussein (1996), Wachtel *et. al.* (1995), Rousseau and Wachtel (2000)] and Granger type test of causality [see, Forbes and Rigobon (2002), Caporale, Howells, and Soliman (2004), Gursoy and Alovsat (2004), etc.]. If the theory "capital market influences economic growth" has any merit, it becomes imperative to suggest what fundamental changes to be initiated [see Shleifer and Vishny 1998 and Hasan *et. al.* 2006] so that poorly developed market can finally act as an agent of growth.

Most of the earlier studies suffer from the problem of data inadequacy; it is a formidable hurdle particularly when countries are less developed. Researchers thus were forced either to rely on small sample or to follow a methodology that caused huge loss of information. Present study also suffers from the same problem.

3.3 Data, Variables and Time period

Variables used in the present study to prepare a comprehensive index are not new and were considered by Demirguc-Kunt and Levine (1996) and Levine and Zervos (1998) and others, these are (a) market size (b) market liquidity (c) volatility, and (d) market integration. Justifications of using these variables are as follows: -

A. Stock Market Size

Number of listed companies and the market capitalisation ratio are two popular approaches broadly used to measure stock market size. Number of listed companies does not give any outstanding rationale to measure the size of the market. Ignoring few "dumb numbers", earlier researchers also rightly preferred to rely on alternative parameter to measure size of the market. Number of listed companies in Indian stock market is

ostensibly more that that of many developed markets such as Germany, France, Japan etc. but it would be highly impractical to assume that simply due to sheer numbers it is ahead than other developed markets. Large number of inactive shares symbolises weakness not strength of the market, hence we considered market capitalisation ratio as a measure of stock market size. The market capitalisation ratio equals the value of listed shares divided by GDP. Resource mobilisation and risk reduction capacity of market largely depends upon market capitalisation ratio and this is the prime reason of selecting this variable ignoring others.

B. Liquidity

Liquidity is the single most important variable considered by researchers interested to study stock market development and its impact on: savings [Levine, 1991; Holmstrom and Tirole, 1993; Levine and Zervos, 1993] quantity and quantity of investment, and corporate governance [Shleifer and Vishney 1986; Bhide, 1993] etc. Levine (1991) succinctly summarized importance of the stock market liquidity when he writes – "stock markets accelerate growth directly by eliminating premature capital liquidation which increases firm's productivity and indirectly by reducing liquidity risk which encourages firm investment." Surely, assertion of Levine (1991) is not beyond criticism but a wide range of debate centering around stock market liquidity and its multidimensional impact on economy, nonetheless suggests importance of this variable as a proxy of stock market development. While economists advance many theoretical definitions of "liquidity," analysts generally use the term "liquidity" to refer to the ability to easily buy and sell securities. A comprehensive measure of liquidity would of course quantify all the costs associated with trading, including the time costs and uncertainty of finding a counterpart and settling the trade. In absence of information of all these parameters for the country under study, we relied on two widely used measures - value traded ratio and turnover ratio for the present study.

Total value traded / GDP equals to value of trades of domestic shares traded on domestic exchange divided by GDP. Total value traded ratio measures the organised trading of equities as a share of national output and therefore should positively reflect liquidity on an economy-wide basis. Total value traded/GDP ratio complements the market capitalisation ratio. High market capitalisation along with little trading is a unique feature of some immature market. Thus, market capitalisation and total value traded/GDP taken together can truly measure market size and liquidity.

A second measure of liquidity is the turnover ratio. Turnover equals the value of total shares traded divided by market capitalisation. High turnover is often used as an indicator of low transactions costs. Turnover ratio complements total value traded/GDP ratio. While total value traded /GDP denotes trading compared with the size of the economy, turnover measures trading relative to the size of the market. Put differently, a small, liquid market will have a high turnover ratio but a small value traded ratio. Thus, market capitalisation, value traded, and turnover ratio taken provide together a more comprehensive picture about the state of development of any stock market than the information provided by any single indicator.

C. Market Risk

Early studies relied on standard deviation (S.D) of return to measure risk. We include Sharpe ratio as an indicator to measure risk. The Sharpe ratio expresses the excess return per unit of risk, where risk is measured by the standard deviation of the rate of return. Reason for selecting Sharpe ratio instead of S.D is simple – the ratio considers simultaneously both risk and return hence it is more meaningful. However, basic assumption of the ratio is, portfolio of most investors is not well diversified. Greater the Sharpe ratio better is the condition of the market in terms of its capability to attract savers to invest fund in more productive assets.

D. Market Integration

An integrated capital market, theorists assume, offer greater opportunity of risk reduction by efficient diversification of funds, lower the required rate of return demanded by the investors, increase competition in the local market, encourage the use of sophisticated financial technology, increase information processing capability of local market operators and strengthen financial services. Foreign investors pressure help to improve disclosure rules so as to enable them to monitor corporate performance and better capital allocation (see Kim, 1998). Thus, an integrated capital market by definition is an efficient and mature market and any attempt to measure development of stock market cannot afford to miss this variable.

A number of popular techniques widely used to measure openness of an economy such as foreign direct investment/GDP, import and export/GDP, portfolio investment liabilities/GDP etc. (El-Wassel, 2005). But the problem with all these widely used measure is, while these proxies can estimate degree of openness of an economy, it fails

to measure stock market integration directly. Undeniably, openness of economy and stock market integration to an extent co-dependent, however, we opted for a more direct measure. A group of researchers [Korajczyk, 1996], Levine and Zervos, 1998] relied International Capital Asset Pricing Model (ICAPM) and International Arbitrage Pricing Technique (IAPT) to measure integration. Obviously these are more robust and direct techniques to measure capital market integration. However, there is a current trend to use various forms of correlation [Bekaert, 1995; Bekaert, Harvey and Campbell, 1995; Bekaert, Harvey and Lumsdaine, 2002a, 2002b] to measure stock market integration; of late which has been substituted by econometric techniques known as co-integration. While using this technique researchers [Beakert and Hervey, 2000; Reid and Plummer 2005; Davies, 2006] argued that correlation as a measure of integration is not acceptable because of its limited forecasting ability-it's a static concept thus to be ignored. Hence, forecasting of co-movement of share price among markets is beyond the scope of the present study, we adopted simple but meaningful technique of correlation to measure year wise level of unification of a national market with global market.

Considering above variables we attempted to measure the level of stock market development of twenty-two sample countries for an eighteen years time period ranging from 1988 to 2005. It includes U.S, U.K, Germany, France, Australia, Hong Kong, Singapore, Malaysia, Indonesia, Philippines, India, Korea, Japan Thailand, Pakistan, Bangladesh, Sri Lanka, South Africa, Argentina, Brazil, Mexico, and Chile. As Asia is our main focus of attention, the countries belonging to the region dominate the sample, though some very active and developed markets of other continents have been considered for comparative analysis. Altogether, sample countries share nearly 47% of world market capitalization and Asian markets contribute roughly 90% market capitalization of the region.

The relevant data for the study are collected from the various sources like Emerging Stock Market Fact Book (Standard & Poor's), Database of International Financial Statistics (IFC), World Bank, World Federation of Exchanges, etc.

3.4 Stock Market Development Index – a cross-country analysis

We calculated the stock market development index applying various techniques to answer the question- does change in approach results in any havoc differences in measurement? Is it reasonable to assume that all the variables are equally important? If

not, what is the most scientific means to assign importance to each variable to construct a weighted average index?

(i) Simple Average Index

At the outset, we constructed a conglomerate index by taking into account simply the average of the above variables for the period 1988-2005. It's a simple and straightforward approach, also tried by Demirguc-Kunt and Levine, (1996).

Table 3.1: Simple Average Index Ranking (1988-2005)

Country	Simple Average Index[1]	Rank	S.D of the Year
Hong Kong	1.311	1	0.747
USA	1.270	2	0.832
Singapore	1.056	3	0.742
Korea	0.933	4	1.081
UK	0.858	5	0.720
Malay	0.857	6	0.992
Germany	0.785	7	0.685
Indonesia	0.781	8	0.551
France	0.776	9	0.717
Thailand	0.769	10	0.737
South Africa	0.554	11	0.793
Mexico	0.537	12	0.700
Australia	0.506	13	0.722
Japan	0.487	14	0.981
Philippines	0.475	15	0.638
India	0.457	16	0.705
Chile	0.392	17	0.861
Pakistan	0.370	18	0.968
Brazil	0.339	19	0.667
Argentina	0.192	20	0.055
Bangladesh	-0.061	21	0.972
Sri Lanka	-0.216	22	0.915

Simple average index shows Hong Kong tops the list with value 1.311 and Sri Lanka stands at 22nd position with index value -0.216 (See Table 3.1). Hong Kong is ahead of U.S, U.K, Germany, and France the countries that are usually considered as the epi-center of world financial market. India ranks 16th in the final index and value of its each variable nearly hover around its final ranking. While nearly all-South East Asian countries performances are encouraging, East Asian along with Latin American countries score is utterly frustrating. Does it indicate that gradually there is a shift of importance of international nerve center of financial system from western to south-eastern part of the

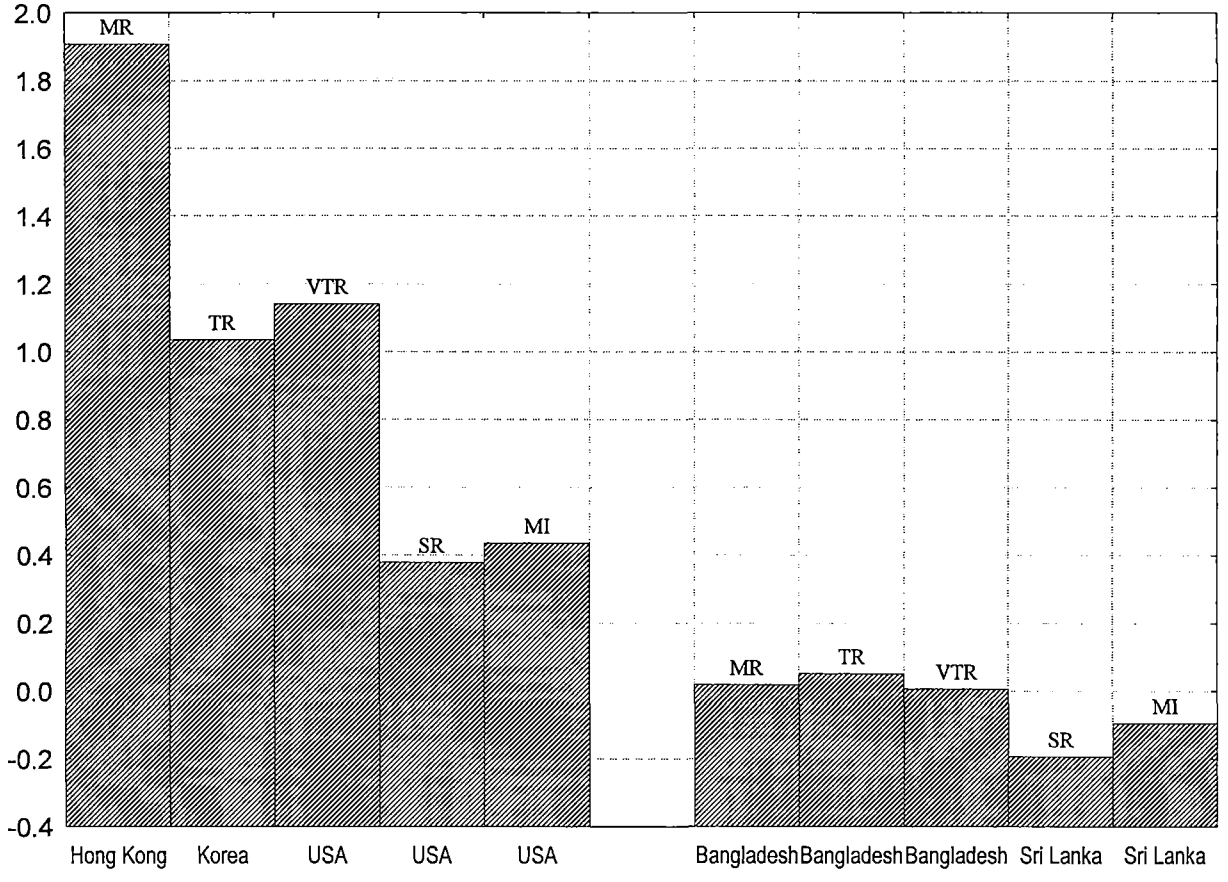
globe? The issue is interesting for further study but we abstain from making any serious comment on the topic, as it deserves rigorous empirical testing which is beyond the scope of the present writings. Financial sector development index that comprises both stock and banking sector also suggests that South East Asian countries particularly Malaysia, Korea have a robust financial system in comparison with many developed economies. Finance-growth literature suggests that a competitive financial system contributes to real sector development, promotes efficiency of the economy, encourage in innovative intermediate and final products, increase in capital-output ratio etc. If all these assertions are correct, then South East Asian economy will unhesitatingly be more stronger in future.

Virtually, assumption of frictionless growth of asset market is neither theoretically compatible nor achievable in practice. Among many, virtual and prospective change in the macroeconomic condition is one important factor that influences stock market growth of various regions. Latin America offers a formidable evidence of this hypothesis. Apart from fundamentals, other non-rational traits also influence functioning of the market and it can be reasonably assumed that emerging markets are more susceptible to this sort of unwarranted symptom.

Though sample differs, findings of the present research more or less confirm results of earlier studies (Demirguc-Kunt and Levine, 1996). Major exception is Japan[2]. The country tops the list in the earlier research of mid 1990's, since then it lost it's earlier glory and slipped in the ranking.

Variable wise performance (See Figure 3.1) of select countries will help us to analyze who leads and who lags on each count. We deliberately selected average value of each variable as a measure of performance simply because it will smoothen out year-to-year variation of each variable which is rampant for most of the cases.

Figure 3.1: Variable-wise High and Low



Notes: MR represents market capitalization ratio, TR equals turnover ratio, VTR refers to value-traded ratio, SR and MI equals Sharpe ratio and market integration respectively.

Out of five, U.S tops the list for three variables, namely, value-traded, Sharpe and market integration ratio, where as, Hong Kong and Korea enjoys this honour for one variable each i.e market capitalization and turnover ratio respectively. For all variables, as usual South Asian countries particularly Bangladesh, and Sri Lanka are at the bottom.

(ii) Means-Removed Values Index (SMDEX)

While variables remain same, we propose to develop an index called *SMDEX* (stock markets development index) by averaging the means-removed values (See Levine and Zervos, 1996) of each variable. The mean removed market capitalisation ratio for country *i* equals the market capitalization ratio for country *i* minus the mean of all countries, divided by mean for all countries. Then we took simple average of the mean-removed market capitalisation ratio, turnover ratio, value- traded ratio, Sharpe ratio and market integration to obtain a conglomerate index of stock market development, *SMDEX*. Formally, let M (i, j) equal the average value (over the relevant period) of

variable *j* for country *i*. Let M (j) equal the average value of variable *j* across all countries. So, mean-removed value may be shown as:

$$m(i,j) = [M(i,j) - M(j)] / M(j) \quad \text{..... Eq. 1}$$

Then *SMDEX* for country *i* is

$$SMDEX\ (i) = \sum_j m\ (i, j)$$

Where, we take the average across all the variables for country *i*.

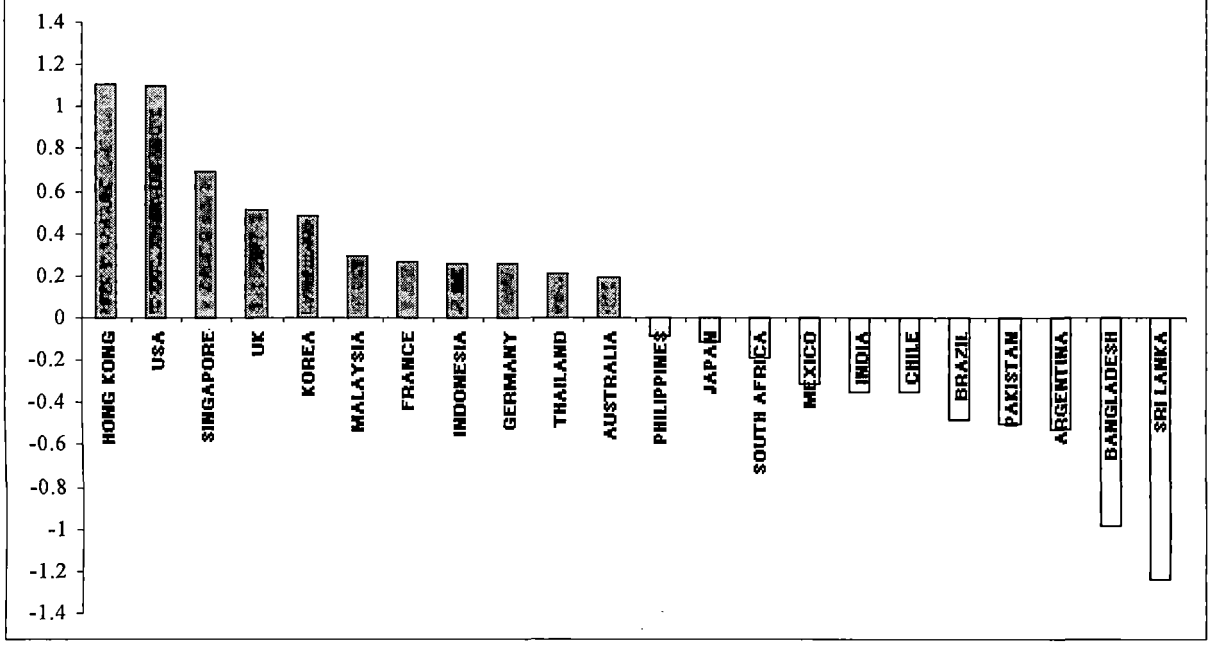
Findings of the means-removed values are shown in Table 3.2.

Table 3.2: Stock Market Development: Means-Removed Value (MRV) (1988-2005)

Country	MRV Average Index[1]	Rank
Hong Kong	1.107	1
USA	1.094	2
Singapore	0.690	3
UK	0.514	4
Korea	0.486	5
Malaysia	0.289	6
France	0.261	7
Indonesia	0.257	8
Germany	0.253	9
Thailand	0.205	10
Australia	0.189	11
Philippines	-0.089	12
Japan	-0.118	13
South Africa	-0.192	14
Mexico	-0.309	15
India	-0.349	16
Chile	-0.354	17
Brazil	-0.482	18
Pakistan	-0.499	19
Argentina	-0.528	20
Bangladesh	-0.985	21
Sri Lanka	-1.240	22

There is a marginal change in the ranking of the countries based on MRV. A large number of South east Asian countries enjoy positive MRV whereas all Latin American along with South Asian countries have negative MRV. Out of 11 countries with positive MRV, 6 belong to South East Asia, 3 European along with USA and Australia. A graphical representation of MRV may give us a clearer picture of country-wise position (See Figure 3.2).

Figure 3.2: Ranks under Means-Removed Value Method



Amidst fast growing south East Asian market, like earlier occasion Philippines stock market performance appears less attractive. South Asian markets particularly India, which has a highest number of listed companies in the world, enjoys a ranking that is far below the average. Wide difference in the level of stock market development is also evident from Figure 1 while Hong Kong has a positive value of 1.107, score of Sri Lanka is –1.24. Level of economic development of sample countries widely vary, this may be one plausible reason for huge differences in the stock market growth.

(iii) Weighted Index

Finally, we constructed the weighted average stock market development index of various variables used in this study. None of the previous studies by Demirguc-Kunt and Levine (1996) and Levine and Zervos (1998) considered relative importance of each variable while preparing the stock market development index. Presumably, earlier researches may have assumed that all the stock market development indicators such as market capitalisation ratio, turnover ratio, value-traded ratio etc. are equally important hence it is needless to assign any special emphasis to any variables. This is an a priori assumption, not defendable by any logic. Hence, we propose to measure importance of each variable objectively using the technique of Principal Component Analysis (PCA) so as to prepare Weighted Average Index.

The PCA analysis can be expressed summarily as:

$$z_j = a_{j1}F_1 + a_{j2}F_2 + \ldots. + a_{jn}F_n + d_j U_j \ldots\ldots\ldots\ldots \text{Eq. 2}$$

where each of the n observed variables (z_j) is described linearly in terms of n new uncorrelated components F_1, F_2, ..., F_n, each of which in turn is defined as a linear combination of the n original variables. The coefficient a_{ji} is the factor loading (regression weight) on the *ith* factor and U_j denotes a unique factor, i.e. it is the part that is influenced by idiosyncratic determinants, specific to each variables, z_j, with a loading of d_j. A factor loading is simply the correlation between the time series of observations on the market development indicator from a single country and the associated factor.

The method principal components analysis makes no particular assumption about the underlying structure of the variables. The central point is to obtain their best linear combination. Hence, the first component or factor may be viewed as the single best summary of the linear relationships exhibited in the data and is obtained by maximizing the variance which it explains. The second factor is defined as the second best linear combination of variables, under the condition that the second component is orthogonal to the first, which means that it accounts for most of the residual variance after the effect of the first factor is removed from the data.

The factors which have eigen values greater than one, contribute most to the total variance of the variables and hence describe more of the data than any other factor. As a result, these are examined more closely. In the present study, it is value-traded ratio that enjoys highest relative importance (0.908) (See Table 3.3 and 3.4). Finding is consistent with earlier studies [Demirguc-Kunt and Levine, 1996; Levine and Zervos, 1998; Beck and Levine, 2002] and historical evidence also supports validity of our findings. Sir John Hicks (1969) argued that critical new ingredient that ignited growth in 18th century England was capital market liquidity. Thus historical evidences and current experiences suggest that liquidity increases fraction of fund available for firm investment, discourages agents to invest in more liquid assets that do not augment growth, improves corporate efficiency that contributes in welfare and help economy to achieve a steady state of growth. Virtually value traded ratio is a much broader concept than turnover ratio, hence a more acceptable measure of liquidity.

Table 3.3: Results of Principal Component Analysis

Component	Initial Eigenvalues	Percentage of Variance	Cumulative Percentage of Variance
1	2.074	41.476	41.476
2	1.039	20.780	62.256
3	.953	19.067	81.323
4	.771	15.421	96.744
5	.163	3.256	100.000

Notes: Extraction Method: Principal Component Analysis.

Table 3.4: Relative Load and Coefficient of the variables

	Component 1	
	Load	Coefficient
Market Capitalisation Ratio	.757	.365
Turnover Ratio	.532	.257
Value-Traded Ratio	.908	.438
Sharpe Ratio	.169	.082
Market Integration	.603	.291

Notes: Extraction Method: Principal Component Analysis

The extent of stock market development based on five variables is assessed by the explanatory power of the most powerful factor- that is, by the first factor- and the numbers of the other significant factors extracted. Finally ranking of the countries based on weighted index is shown in Table 3.5.

Table 3.5: Stock Market Development: Weighted Average Index

Country	Weighted Index Value[1]	Rank	Level of Economic* Development[3]
USA	2.536	1	3
Hong Kong	2.295	2	3
Singapore	2.233	3	3
UK	2.048	4	3
Korea	1.978	5	2
Malaysia	1.722	6	2
Germany	1.639	7	3
France	1.570	8	3
Australia	1.549	9	3
Indonesia	1.530	10	1
Thailand	1.512	11	1
South Africa	1.346	12	2
Japan	1.346	13	3
Mexico	1.328	14	2
India	1.316	15	1
Chile	1.060	16	2
Philippines	0.883	17	1
Brazil	0.859	18	2
Pakistan	0.858	19	1
Argentina	0.083	20	1
Bangladesh	-0.661	21	1
Sri Lanka	-0.995	22	1

*Notes: we followed broad based classification by the World Bank where per capita GDP at Stage 1 = ≤$ 3000; Stage 2 = >$ 3000≤$ 17000; and Stage 3 =≥ $ 17000.

Rankings of the sample countries changed while measuring stock market development using weighted index. Index shows US tops the list with value 2.536 and Sri Lanka stands at 22nd position with index value -0.995. Performance of many South east Asian countries, namely, Hong Kong, Singapore, Korea, Malaysia, is exceptionally encouraging; in the sense, these countries outperformed many developed European markets. The scores East Asia along with Latin American countries is utterly disappointing. Our analysis suggests, with the opening up of the economy gradually there is a shift of importance of international epicenter of financial system from western to southeastern part of the globe. Issue deserves attention of scholars particularly interested to measure "gainer or loser" from an open economic world order. But we abstain from making any serious comment on this highly debatable issue as it deserves serious empirical testing which is beyond the scope of present writing. Financial sector development index that includes both stock and banking sector also suggests that south East Asian countries, particularly Malaysia and Korea, have a robust financial system in comparison with many developed economies. If "finance led growth" theoretic approach has any merit, it may be reasonably assumed that south East Asian economy will be stronger in future.

Sample countries of our study belong to different stages of economic development measured in terms of GDP per capita at market exchange rate. Most of the less developed markets belong to the countries that are at the first stage of economic development (GDP per capita < US $ 3000[3]) [See Rousseau and Wachtel, 2000; Beck and Levine, 2002] while markets of developed economy are more or less matured. Findings may incite the debate – does stock market development cause economic growth or vice versa? Despite numerous studies [Levine and Zervos, 1993; Atje and Jovanovic 1993; Levine and Zervos, 1998; Rousseau and Wachtel, 2000; Beck and Levine, 2002, Capasso, 2006 etc.] dilemma over nature of linkage between asset market and economic growth is still there. This confusion needs to be settled. We feel "finance led growth strategy" – the concept which is theoretically appealing and enjoy more empirical support can help developing economy to pursue a well conceived policy for growth of capital market and to reverse present trend of disappointing growth of many countries.

A comparison with earlier studies (Demirguc-Kunt and Levine, 1996) suggest even after a lapse of one decade, excepting Japan, there is no havoc change in the ranking of worlds most developed market (See Table 3.6).

Table 3.6: Stock Market Development – Demirguc-Kunt and Levine Study (Index 4: 1986-93)

Country	Score
Japan	1.41
U.S.A	.94
U.K	.89
Korea	.73
Malaysia	.60
Thailand	.31
India	-0.01
Mexico	-0.11
Brazil	-0.23
Pakistan	-0.33
Chile	-0.37
Philippines	-0.40
Argentina	-0.50

Note: Only the scores of those countries that are also included in the present study are shown above.

Source: Demirguc-Kunt and Levine, (1996).

Most notably, market in the bottom, like Argentina, Brazil, Chile, Philippines, India failed to improve its ranking sufficient enough to enter in the upper tier of world markets. Though our study and findings of Demirguc-Kunt and Levine (1996) are strictly not comparable as sample and methodology differs, yet comparative analysis gives some impression that within one decade the less developed markets failed to prepare itself for nest stage. It is a real problem that needs to be addressed – yet action based on sensible policy is still abegging.

(iv) Means-Removed Weighted Average Index (MRWI)

Having same variables, we have tried another rigorous and widely used alternative model for comparative analysis of the level of stock market development known as Means-Removed Weighted Average Index (MRWI). For instance, mean removed weighted market capitalization ratio for country *i* equal the weighted market capitalization ratio for country *i* minus the weighted mean of all countries, divided by weighted mean for all countries. Then we have considered the average of the mean-removed weighted values of the market capitalization ratio, turnover ratio, value- traded ratio, Sharpe ratio and market integration to obtain a conglomerate index (MRWI) of

stock market development. Formally, let M (i, j) equal the weighted average value (over the relevant period) of variable *j* for country *i*. Let M (j) equal the weighted average value of variable *j* across all countries. So, mean-removed weighted average value of country i for variables j [m(i,j)] may be shown as:

$$m(i,j) = [M(i,j) - M(j)] / M(j) \ldots\ldots\ldots \text{Eq. 3}$$

Then *MRWI* for country *i* is

$$MRWI\ (i) = \sum_j m(i,j)$$

Where, we take the average across all the variables for country *i*.

Rankings of Countries under *MRWI* has been shown in Table 3.7.

Table 3.7: Rankings under MRWI values (1988-2005)

Country (Above the Mean Value)	MRWI values	Ranks
USA	1.402814	1
Hong Kong	1.1715268	2
Singapore	0.9425609	3
UK	0.655058	4
Malaysia	0.4632317	5
Germany	0.4610821	6
France	0.4342811	7
Korea	0.2972219	8
Australia	0.1140041	9

Country (Below the Mean Value)	MRWI values	Ranks
South Africa	-0.0830571	10
Japan	-0.0902489	11
Thailand	-0.1232907	12
Mexico	-0.124305	13
India	-0.1458661	14
Pakistan	-0.3459931	15
Brazil	-0.4487912	16
Philippines	-0.6010292	17
Chile	-0.6518495	18
Argentina	-0.7790012	19
Bangladesh	-1.0154333	20
Sri Lanka	-1.2027423	21

In this method also there is not any havoc difference observed between the country rankings. Again, we find that the USA tops the list with a score of 1.402 and Sri Lanka is at the bottom enjoying a value of – 1.202. Out of nine countries that enjoy above the average score, four belongs to south East Asia. The robust asset market development of these four nations may have partly attributed to the efficiency of the countries finance related legal/institutional infrastructure as it is espoused by Ito (2005). All South Asian, Latin American and two South East Asian countries (e.g. Thailand and Philippines) stock markets' growth are awfully disappointing.

The wide gap in the scores of upper and lower tier countries suggest that there are some problems with the countries at the bottom. Macroeconomic instability, poor infrastructure, improper sequencing, inadequate integration, faulty fiscal policy etc. are the few among many reasons that are plausibly retarding the growth of these markets. Despite the poorly developed capital markets, rate of economic growth of many

countries e.g. India, Brazil, Mexico are quite encouraging. Financing pattern of industries of these countries and its impact on growth and efficiency deserve a close scrutiny.

Therefore, from the results of the various methodologies above, some nagging question are required to answer what makes the difference amongst the countries stock market development? Do countries at different stages of economic development have different looking financial system? Let us find the answers in the following section.

3.5. What makes the Difference? A Cross-country Analysis

Our second research question is: do countries at different stages of economic development have different looking financial system? Our earlier analysis provides a faint impression that rich countries more or less have a developed stock market. Many Asian and Latin American economies e.g. India, Chile, Argentina etc are far too well integrated with world economy yet, the countries failed to develop competitive markets that can alleviate information asymmetry such as adverse selection and moral hazards [Stiglitz, (2000), Claesens *et. al.* (2001)].

Till now we were involved in an analytical approach that can explain what happened in past, retrospectively, but offers few, if any, insights as to how changes can be implemented in these countries so as to make capital market a more rational and meaningful institutions in the changed regime. We propose to find solution of the problem following theory-"institutional development helps to promote a competitive system"- thesis duly emphasized in the literature of sequencing but often ignored by policy makers while trying to solve real world problem. Reason for different looking capital market in fast and slow moving economy can be partly traced in the theory that institutional development foster economic growth[4] and encourages in the development of capital market. While policy of financial liberalization cannot be aborted, "right way" or "right order" of implementing the policy is still an issue of research – because any bold policy without fundamentally altering existing institutional structure may fail to deliver desired results or even bring about economic turbulence [Kaminsky and Schmukler (2001), Kaminsky and Reinhart (2002)].

Measurement of institutional development essentially includes value of some basic elements that help to develop competitive economic system and increase capacity of controlled transformation of socio economic structure with minimum disturbances.

Broadly the variables are: independence of judicial system, cost of corruption, strength of property right, efficiency of financial institutional services, state of political condition, accounting standard and practices, macroeconomic stability[5] etc. In sum, institutional development contributes to a well functioning competitive system, where a large number of market participants operate freely and enjoy benefits of their merit while keeping economic distortions to a minimum. It's a standard theory endorsed by scores of researchers. Implication of this theory for growth and efficiency of capital market can be explained in a slightly different framework while basic philosophy remains same.

Finance theory suggests relevance of capital market in an economy largely depends on how it values information and equitably distributes wealth among market participants. An efficient market by definition continuously reward informed traders, punish ill-informed, in the process while former becomes richer, latter lose their money and at its extreme vanishes from the market. Operations, which are popularly known as risk arbitrage is at the core of the efficient, market theory. It further acclaims, "equilibrium price makes capital markets a superior allocator of resources than financial intermediaries that often make mistakes."

But the operation of risk arbitrage may be less rewarding and risky in an economy with inadequate institutional development. This insufficiency contributes in unwarranted events like macroeconomic instability, difficulties to predict and plan unexplainable asset price movements – the cases of course have some real cost. Inefficient legal system, inadequate accounting practices, opaque political system, high cost of corruption increases risk in participating asset market and discourage informed traders to act as "guardian of efficiency" of the market. Arbitragers who do make correct predictions and attempt to free the market from the clutches of ill-informed may feel that highly volatile and least supportive environment will not allow them to enjoy the benefits 'of being right'. Researchers (see Allen and Gale, 2000; Kyle and Xiong, 2001) argue that an insufficient level of informed trading 'can create space'[6] for noise trading – the trading that results from any irrelevant events excepting information (see Kurtzman, Yago and Phumiwasana, 2004). Once the proportion of noise traders in the market rises above a critical level, it might crowd out risk arbitragers who are more risk averse. A stock market with insufficient informed trading is essentially an unruly market that discourages long-term investors, foreign portfolio investors not to participate in it and its insufficiency finally adversely affects rest of the economy (see Kurtzman, Yago and Phumiwasana, 2004). Ultimate outcome of poorly developed capital market are – low

turnover, insignificant market capitalization higher cost of using funds, little market integration that retard growth of capital market and pull down country ranking of asset market[7].

However, findings of any robust statistical analysis will offer a detailed explication of why, how and under what condition even after a decade of earlier study many poorly developed markets failed to prepare themselves for higher stage of maturity.

We employed ANCOVA model to study i) whether stock market development differs with stages of overall economic development and ii) the linkage of foreign portfolio investments (FPI), foreign direct investments (FDI), and global competitiveness index of the sample countries that are at the different stages of economic development with stock market growth. Stages of overall economic development of sample countries has been measured by per capita GDP, and we followed World Bank classification and set the same as dummy variables. Quantitative variables like FPI, FDI and global competitiveness index (GCI)[5] are used as covariates of the regression equation. We intentionally ignored inflation, interest rates and openness of the economy as determinants of stock market growth to avoid the problem of double counting. A very comprehensive aggregate governance indicators index prepared by the World Bank to measure institutional development score includes effect of all those variables under the heading macroeconomic stability. Assuming the impact, if any, is deterministic one, we estimate the equation below in the additive form of the indicator variables:

$$Y_i = \beta_1 D_{1i} + \beta_2 D_{2i} + \beta_3 D_{3i} + \alpha_j \sum_{j=1}^{n} X_{ji} + u_i \quad \ldots\ldots\ldots\ldots \text{ Eq. 4}$$

where, Y_i is stock market development represented by VTR, $D_{1i} = 1$ for the countries with per capita GDP$\leq$ \$3000 and 0 for others, $D_{2i} = 1$ for the countries with per capita GDP > \$3000 but $\leq$ \$17000 and 0 for others, $D_{3i} = 1$ for the countries with per capita GDP> \$17000 and 0 for others, X_j the covariates like FPI, FDI and GCI; and u_i the error term ~ N (0, δ).

For the present study we relied on the data for a period of 11 years (1996 – 2006) for 21 countries. Selection of time period was guided by availability of information GCI in particular. Thus, the sample I consists of all 21 countries, Sample II includes 11 countries with the weighted index more than the average and Sample III consists of 10

countries with weighted index below the mean. The results are shown in Table V (See Table 3.8).

Table 3.8: Results of the Estimates with the Stages of Development as Dummy* (ANCOVA-Model)

[VTR =f (FPIL, FDI and GCI)]

	Sample-I (All Countries)				Sample-II (Above-Mean Countries)				Sample-III (Below-Mean Countries)			
Variable	*Coefficient*	*Std. Error*	*t-statistic*	*p-value*	*Coefficient*	*Std. Error*	*t-statistic*	*p-value*	*Coefficient*	*Std. Error*	*t-statistic*	*p-value*
FPIL	3.68916	0.956147	3.8584	0.00015	5.95098	1.63688	3.6356	0.00046	1.8275	0.482024	3.7913	0.00024
FDI	5.52554	1.73477	3.1852	0.00166	5.16317	2.4188	2.1346	0.03545	0.0146037	1.83446	0.0080	0.99366
GCI	0.352413	0.094481	3.7300	0.00025	0.250238	0.220973	1.1324	0.26039	0.118459	0.040166	2.9492	0.00385
D1	0.29155	0.077088	3.7820	0.00020	**	**	**	**	0.21943	0.026595	8.2506	<0.00001
D2	0.227067	0.077688	2.9228	0.00385	0.868642	0.209053	4.1551	0.00007	0.0797453	0.035139	2.2694	0.02509
D3	0.0981358	0.168342	0.5830	0.56054	0.129321	0.336694	0.3841	0.70180	***	***	***	***
Number of Observations 218					97				121			
Standard error of residuals = 0.584432 Unadjusted R^2 = 0.371306 Adjusted R^2 = 0.356478 F-statistic (5,212) =25.0413 (p-value < 0.00001)					Standard error of residuals = 0.751928 Unadjusted R^2 = 0.224017 Adjusted R^2 = 0.190279 F-statistic (4,92) = 6.63984 (p-value = 9.69e-005)				Standard error of residuals = 0.191191 Unadjusted R^2 = 0.189572 Adjusted R^2 = 0.161626 F-statistic (4, 116) = 6.78354 (p-value =6.09e-005)			

***Notes:** D1=1 for the 'countries with per capita GDP less than $3000 and 0 for others; D2=1 for 'the countries with per capita GDP $3000-$17000 and 0 for others; D3 =1 for 'the countries with per capita GDP $17000 or more' and 0 for others. **Sample II consists of no countries with per capita GDP less than $ 3000 *** Sample III consists of no countries with per capita GDP $17000 or more.

We believe that the relationship between stock market growth and a particular variable of interest to be robust if it remains statistically significant with theoretically predicted sign. In this sense, our findings are in the tune with the economic theory and are mostly statistically significant. Outcome of the estimation strongly supports that the level of stock market growth significantly differs across the countries belonging to different stages of economic development. In sample II all countries are developed and their per capita GDP is more than US $ 17,000. In sample III, nearly all countries are less developed with per capita GDP less than US $ 17,000 i.e., in the stage of eitherD_1 or D_2.

Hence, no results for D1 in the sample II and D3 in the sample III are expected. Out of the three covariates, both the FPI and FDI maintain a positive relationship with stock market development across sample I, II, and III. The findings are consistent with the economic theory. However, the relationship is more robust for the FPI than the FDI.

Another point of interest of the present study is whether the level of institutional development varies across the stages of economic development and to what extent it can explain the stock market growth. Findings suggest that nature of association between institutional development and stock market behavior is quite interesting. The market performance is positively and statistically significantly associated with sample I and III countries but, curiously, it maintains a weak but positive relationship with 'above the mean' countries. One plausible reason for the absence of any robust relationship is that, in less developed economy (sample III) where institutional development is virtually at a basic level any positive change of the same contributes in higher growth of stock market. Unless the change in the institutional development is radical in developed economy any marginal change may have little or no impact on the functioning of the market.

The empirical results strongly support theoretical underpinnings of our earlier analysis i.e. the look of the stock market (VTR) of the countries belonging to different stages of economic development vary, and the institutional development and flow of funds immensely influence market activities. International bank on several occasions reiterated that to allow competitive economic system and to keep its promise for higher growth particularly for less developed countries, there is a need to update and modify its institutions and practices. Failure of a large number of weak countries to develop their financial system and to attract foreign funds rests on their inability to develop a robust economic system that is free from corruption, inadequate regulations and without prudent economic activities.

3.6 Conclusion

Even after a decade of earlier study, why many emerging markets failed to improve its performance? A flat, stereotypical policy prescription for all economies ignoring its unique feature and stages of development may be ineffective to overcome inherent inadequacies of the markets. Economic structure of many less developed countries of Asia and Latin America is at an early stage of development through which advanced countries have already passed. Thus, the strategy which is effective for Sri Lanka, Bangladesh, India, Philippines etc, may not be appropriate for Thailand, again emphasis will be different for U.S, U.K, Hong Kong, Korea etc. Therefore, we prescribe

some policy for the asset market development depending on stages of economic development - an important ingredient that influences factors associated with the functioning of the market.

Table 3.9: Model of Policy Prescriptions

Stage I (Low-income and emerging markets[8])	Stage II (Middle-income and emerging markets[8])	Stage III (High income and developed markets)
Focus on Basic Requirement	Focus on Efficiency	Focus on Innovation
• Institutional development • Infrastructure development • Macro-economic stability • Training and education	• Higher education and skill enhancement • Market efficiency • Technological readiness	• Business sophistication • Innovation

Go for new concept, technology, and sophisticated means to manage the growing complexities of global finance - these are the few steps what developed markets (Stage III) should target to achieve. These measures with all possibilities will further enhance the capabilities of market to mobilize more domestic and foreign funds to be used for productive purpose.

On the other extreme, (Stage I) countries with low income, dissatisfactory institutional development, low scoring capital markets (such as Bangladesh, Sri Lanka, Pakistan) should primarily aim at to develop at least a threshold level of legal system and institution in absence of which benefits of free economy can not be achieved. Once this fundamental of the free economy is attained, a transition of the countries at higher level of development is highly expected.

In between these two extremes, there are countries with middle income (e.g. Thailand, Mexico, Chile, and Brazil etc.) and a few with low income like India where fuzzy condition prevails. Case by case analysis may help us for a better understanding of the finance-growth relationship which we failed to perform due to the limited availability of the data of these countries. Financial systems of most of the stage II countries belong to Latin America are widely known for their obscure behavior which is essentially destabilising. Hence, improve the 'market efficiency', 'discipline it', 'develop the

finance related skill of the participants', 'improve mundane affairs' etc, should be the primary focus of these countries. Successful implementation of all these tasks would surely improve the quantity and quality of investment and gradually the countries will move to the next stages of development.

End Notes:

1. The Sharpe ratio has been calculated on the basis of the monthly data of share price index and yield rate of T-Bills. The govt. bond yield rate has been used as surrogate to the yield rate of T-Bills when the later is not available for Japan, Australia (from 2002 onwards) and France (from 2003 onwards). Under extreme circumstances, Bank Rates/Discount Rates are used to calculate Sharpe ratio for Bangladesh, Chile, and Indonesia (data permitting from 1990 onwards) as neither the yield rate of T-Bills nor govt. bond yield rate are available.
   i. Sharpe ratio for the Argentina could not be calculated, as none of the yield rate of T-Bills, Govt. Bond Yield Rate and Bank Rates/Discount Rates is available.
   ii. For Pakistan and Brazil, the yield rates of T-Bills are available only from 1992 and1995 respectively. In the case of Sri Lanka the yield rate of T-Bills of 1997 is not available and for Pakistan the same is not available for 1998 and 1999.
   iii. For Hong Kong, data for market capitalization, turnover and monthly share price index are available from 1992.
2. To measure the level of economic development, the per capita GDP value (in US $) for 2005 has been taken into consideration.
3. Japan's deepest and longest postwar recession resulted in the doubling of land value prices and a 180% rise in the Nikkei. However, the Tokyo stock market had fallen 38% by the end of 1990, thus effectively wiping out 2.07 trillion dollars in value. In the aftermath of the bursting of the land and equity price bubbles in the early 1990s, persistently high non-performing loans and a declining value of banks' equity portfolios constrained bank credit and sapped household and business confidence. These imbalances combined to hold down both investment demand and household income (and thereby consumer spending). The depth of the problems and the gradual approaches in dealing with them, along with certain unforeseen external shocks, led to the vicious circle of falling demand and falling prices that persisted for long.
4. For a discussion on the role of institutional infrastructure and financial development [see Rajan and Zingales (1998), Claessens *et.al.* (2002), Caprio *et.al.* (2003)].
5. For a detailed discussion on variables and methodology see Global Competitiveness Index prepared by World Bank and Opacity index was initially launched in the late 2000 by a joint effort of PricewaterhouseCoopers and the Milken Institute. By the first quarter of 2001, first opacity index was complied and released to the public by the PricewaterhouseCoopers.
6. It will be relevant to mention some revealing findings of earlier studies that suggest 1% decline in institutional development index results: decrease in per capita GDP by $986, 1% fall in foreign direct investment as a percentage of GDP, 0.06-point decline in its Capital Access Index, 4% decrease in bank assets as a percentage of GDP, 0.9% fall in stock market capitalization and value traded ratio as a percentage of GDP, 0.46% increase in inflation rate (See Opacity index, 2005).
7. For an earlier discussion see Figlewiski (1982).
8. The concept of emerging markets is not well-defined; there are many emerging markets that are more developed than many developed markets.

References:

Allen, F., and Gale, D. (2000): Comparing Financial Systems, MIT Press, Cambridge, MA.

Arestis, P., Demetriades, P. O. and Luintel, K. B. (2001): "Financial Development and Economic Growth: The Role of Stock Markets", Journal of Money, Credit, and Banking, 33: pp. 16-41.

Atje, R. and Jovanovic, B. (1993): "Stock Markets and Development", European Economic Review, vol. 37: pp. 632-640.

Bagehot, W. (1873): "Lombard Street, A Description of the Money Market", Homewood, IL: Richard D. Irwin, (1962 Edition).

Beck, Thorsten and Ross Levine (2002): "Stock Markets, Banks and Growth: Panel Evidence", World Bank mimeo, Washington, D.C.: World Bank. Downloaded.

---------- (2003): "Legal Institutions and Financial Development", World Bank Policy Research Working Paper 3136, September, pp. 1-41.

Bekaert, G. Harvey, Campbell R. and Lundblad, Christian T. (2001): "Emerging Equity Markets and Economic Development." Journal of Development Economics, December, 66(2), pp. 465-504.
---------- (2002): "Does Financial Liberalization Spur Growth?" Working paper,
Duke University.
---------- (2003): "Equity Market Liberalization in Emerging Markets" Federal
Reserve Bank of St. Louis Review, July/August, Vol. 53, pp. 53-74.

Bekaert, G,. Harvey, Campbell R. and Lumsdaine, Robin, L (2002a): "Dating the Integration of World Equity Markets." Journal of Financial Economics, August, 65(2), pp. 203-247.
---------- (2002b): "The Dynamics of Emerging Market Flows." Journal of International Money and Finance, June, *21*(3), pp. 295-350.

Bekaert, Geert (1995): "Market Integration and Investment Barriers in Emerging Equity Markets." World Bank Economic Review, January, 9(1), pp. 75-107.

Bekaert, Geert and Harvey, Campbell R. (1995): "Time-varying world market integration", Journal of Finance, Vol. 50, pp.403–444.

---------- (2000): "Foreign Speculators and Emerging Equity Markets", Journal of Finance, Vol. 55 (2), pp. 565-613.

Bencivenga, V. R.. Smith, B. D. and Starr, R. M. (1995): "Transactions Costs, Technological Choice, and Endogenous Growth", Journal of Economic Theory, Vol.67: pp. 53-177.

Bhide, Amar (1993): "The Hidden Costs of Stock Market Liquidity," Journal of Financial Intermediation, August, 34(1), pp. 1-51.

Boyd, J. H. and Prescott, E. C. (1986): "Financial Intermediary-Coalitions", Journal of Economics Theory, 38, pp. 211-232.

Capasso, Salvatore (2006): "Stock Market Development and Economic Growth", UNU-WIDER Research Paper No. 2006/102.

Caporale, Guglielmo Maria. Howells, Peter G. A and Soliman, Alaa M. (2004): "Stock Market Development And Economic Growth: The Causal Linkage" Journal of Economic Development. Vol. 29, No. 1, June. pp. 33-50.

Caprio, G. Laeven, L., Levine, R. (2003): "Governance and bank valuation". University of Minnesota, mimeo.

Claessens, S.. Demirguc-Kunt, A. and Huizinga, H. (2001): "How Does Foreign Entry Affect Domestic Banking Markets?" Journal of Banking and Finance. 25, pp. 891- 911.

Claessens, S. Djankov, Fan J. Lang, L. (2002): "Expropriation of minority shareholders in East Asia". Journal of Finance, 57.

Davies, Andrew (2006): "Testing for international equity market integration using regime switching cointegration techniques", Review of Financial Economics, Vol. 15, Issue 4, pp. 305-321.

Demetriades, P. and Hussein,K. (1996): "Does Financial Development Cause Economic Growth? Time Series Evidence from 16 Countries", Journal of Development Economics, Vol.51: pp. 387-411.

Demirguc-Kunt, Asli and Levine, Ross (1996): "Stock Market Development and Financial Intermediaries: Stylized Facts." The World Bank Economic Review, 10 (2), pp. 241-65.

Devereux, M. B., and Smith, G. W. (1994): "International Risk Sharing and Economic Growth", International Economic Review, Vol.35: pp.535-550.

El-Wassel,K.A.(2005): "Understanding the Growth in Emerging Markets", Journal of Emerging Markets, 4:3.

Figlewiski, Stephen (1982): "Information Diversity and Market Behavior." Journal of Finance, Vol. 37, No. 1, March, pp. 87-102.

Fisman, R.J. and Love, I. (2003): "Financial Development and Growth Revisited", National Bureau of Economic Research Paper No. 9582.

Forbes, K. and Rigobon, R. (2002): "No Contagion, only Interdependence: Measuring Stock Market Co-movement", Journal of Finance, Vol. 57, pp.2223-2261.

Gurley, J. G. and Shaw, E. S. (1955): "Financial Aspects of Economic Development", American Economic Review, 45: pp. 515-538.

Gursoy, Cudi Tuncer and Alovsat, Muslumov. (2004): "Stock Markets and Economic Growth: A Causality Test". Downloaded.

Hasan, Iftekhar, Wachtel,Paul. and Zhou, Mingming. (2006): "Institutional development, financial deepening and economic growth: Evidence from China", BOFIT Discussion Papers No.12, Bank of Finland, BOFIT, Institute for Economies in Transition.

Hicks, John Richard (1969): "A Theory of Economic History", Oxford University Press.

Holmstrom, B. and Tirole J.,(1993): "Market Liquidity and Performance Monitoring", Journal of Political Economy, Vol.101: pp.678-709.

Ito, Hiro (2005): "Financial Development and Financial Liberalization in Asia: Thresholds, Institutions and the Sequence of Liberalization". Downloaded.

Jung, W. S (1986): "Financial development and economic growth: International evidence". Economic Development and Cultural Change, Vol. 34, pp. 333-346.

Kaminsky, G. and Reinhart, C (2002): "Financial Markets in Times of Stress" Journal of Development Economics 69, pp. 451-470.

Kaminsky, G. and Schmukler, S (2001): "On Financial Booms and Crashes: Regional Patterns, Time Patterns, and Financial Liberalization", Policy Research Paper. World Bank.

Kim E. Han (1998): "Globalization of Capital Markets and the Asian Financial Crisis" Journal of Applied Corporate Finance, Vol. 11, No. 3, Fall, pp. 30-39.

King, R. G. and Levine, R. (1993b): "Finance, Entrepreneurship, and Growth: Theory and Evidence", Journal of Monetary Economics, 32: pp. 513-542.

Korajczyk, Robert A (1996): "A Measure of Stock Market Integration for Developed and Emerging Markets," World Bank Economic Review, 10 (2): pp. 223-39.

Kurtzman, Joel. Yago, Glenn and Phumiwasana, Triphon. (2004): "The Global Costs of Opacity" MIT Sloan Management Review, October.

Kyle, Albert S and Xiong, Wei (2001): "Contagion as a Wealth Effect", The Journal of Finance, Volume 56, Number 4, August, pp. 1401-1440.

La Porta, Rafael. Lopez-de-Silanes, Florencio. Shleifer, Andrei.and Vishny, Robert W. (1998): "Law and Finance", The Journal of Political Economy, Vol. 106, No. 6. (December), pp. 1113-1155.

Levine, Ross (1991): 'Stock Markets, Growth, and Tax Policy'. Journal of Finance, 46 (September): pp. 1445-65.

Levine, Ross and Zervos, Sara. (1993): "What We have Learned about Policy and Growth from Cross-country Regressions?" American Economic Review, Vol. 83, pp. 426-430.

---------- (1996): "Stock Market Development and Long-run Growth," World Bank Economic Review, 10 (2), pp. 323-339.

---------- (1998): "Stock Markets, Banks, and Economic Growth", American Economic Review, Vol.88. pp. 537-558.

Obstfeld, Maurice (1994): "Risk-Taking, Global Diversification, and Growth," American Economic Review, December, Vol.84 (5), pp. 1310-1329.

Prasad, Eswar, Rogoff, Kenneth. Wei, Shang-Jin. And Kose, M. Ayhan (2004): "Financial Globalization, Growth and Volatility in Developing Countries", NBER Working Paper Series, No.10942.

Rajan, Raghuram G. and Zingales, Luigi. (1998): "Financial Dependence and Growth." American Economic Review, June, 88(3), pp. 559-86.

Reid W. Click, and Plummer, Michael G. (2005): "Stock market integration in ASEAN after the Asian financial crisis", Journal of Asian Economies, Volume 16, Issue 1, February 2005, pp. 5-28.

Rousseau, P. L. and Wachtel, P. (2000): "Equity Markets and Growth: Cross-Country Evidence on Timing and Outcomes, 1980-1995", Journal of Business and Finance, Vol. 24: pp.1933-1957.

Schumpeter, Joseph. A. (1912): "The Theory of Economic Development", Cambridge, MA: Harvard University Press, 1934.

Shleifer, Andrei and Robert W. Vishny (1986): "Large Shareholders and Corporate Control," Journal of Political Economy, 94, pp. 461-488.

Stiglitz, Joseph. E. (1985): "Credit Markets and the Control of Capital", Journal of Money, Credit and Banking, 17: pp. 133-152.

--------- (2000): "Capital Market Liberalization, Economic Growth and Instability", World Development, Vol. 28, No. 6, pp. 1075-1086.

Wachtel, Paul and Rousseau, Peter L (1995): "Financial Intermediation and Economic Performance: Historical Evidence from Five Industrial Countries," Journal of Money, Credit, and Banking, November, 30(4), pp. 657-78.

Wei, Shang-Jin (2000): "Local Corruption and Global Capital Flows", Brooking Paper on Economic Activity, No. 2.

CHAPTER – IV

Stock Markets, Banks and Economic growth

4.1 Introduction

The contemporary paradigm of financial liberalization hardly needs restatement. There is a growing consensus among economists, of course, not based on solid evidences that a well developed, market oriented financial system contributes to economic growth and stability. But there are dissenting voices who challenge this "take it for granted views" [Stiglitz, 1994; Arestis and Demetriades, 1997; Singh, 1997; Singh and Weiss, 1998; Grabel, 1999] while some are radical, others are less enthusiastic about finance led growth strategy. Role of finance is 'badly over-stressed', "enterprise leads finance follows," argues Lucas (1988), Robinson (1952) and others [Wachtel, 2003; Manning, 2003]. Message of the pessimists is clear, finance at best perform a passive role in economic growth hence one may ignore any discussion on finance-growth linkage without any loss. At the bottom, we know little about finance growth relation, still it's a mystery and not any rhetoric but solid empirical evidences can only help to solve this puzzle. In early 1990s King and Levine (1993a, b) coupled with host of economists [Demirguc-Kunt, 1994; Levine and Zervos, 1996; Demirguc-Kunt and Levine, 1996; Rousseau and Wachtel, 2000; Beck and Levine, 2002; Caporale, Howells and Soliman, 2005; Adjasi and Biekpe, 2006] among others, once again fueled the debate to prove that finance – growth debate is no longer an issue, controversy if any has been settled. There is a liberal consensus among modern economists that development of financial market and institutions is an inextricable part of the growth process and not an inconsequential sideshow. The theory is at the core of policy decisions of many countries.

Nevertheless above was the first stage of debate, which was followed by one more equally important controversy – how best to develop the financial sector? Should one country rely on bank or market? Is it truly an 'either or' situation, alternatively, do stock markets and banks are substitute source for corporate finance? Does definition of "well structured financial system" vary considerably across countries? Again, we have inadequate theories that can explain why different financial structure emerges or why it changes over time and how it affects economic growth? This insufficiency needs to be addressed particularly by the advocacies of finance led growth strategy in absence of which the theory will further lose its significance.

More is known about bank financing. Many countries have bank dominated financial system [See Miwa and Ramseyer, 2000; Demirguc-Kunt and Levine, 2005] and a vast body of scholarly works dated back to Bagehot (1873), Schumpeter (1912), to Stiglitz (1985), Hoshi, Kashyap, and Scharfstein (1991), Boot, Greenbaum, and Thakor (1993) critically examine its role in innovation and growth. Alternatively, growth implications of a well functioning equity market failed to draw sufficient attention of researchers despite its mammoth transformation in post liberalization era. Presumably, deep rooted contemplation based on theories that "market rationality is a significant special case" (Hirshleifer, 2001), "prices are not fully revealing" [Grabel, (1995); Singh and Weisse (1998)], "stock markets often misallocate resources and economy suffers" [Stiglitz (1985, 1994); Bhide, 1993; Singh, 1997] discouraged some economists to study this market seriously.

Cynics thus emphasize its destructive vices ignoring constructive virtues of a well functioning asset market that deter them to suggest design of an efficient financial system. Therefore, a debate that appears senseless to us continues which centers around relative merit of bank based or market based system that ignores the reality- both offers different bunch of services for economic development.

4.2 Financial Intermediaries, Market and Economic Growth

In a frictionless Arrow-Debreu (1954) world with no information and transaction cost benefit of any financial system is difficult to justify. Thus, any theory about the role of the financial system in the economic growth adds specific frictions to Arrow-Debreu model. Different frictions cause various types of contracts, markets and institutions. The functional approach of Levine [1997] offers a useful framework to think about the role of financial system to adjudge – is it an "essential ingredients"? Or an "inconsequential side show" in the growth process. We specify some of these functions briefly before entering in to bank-stock debate.

Specifically, financial systems –

-facilitate the trading, hedging, diversifying, and pooling and diversifying of risk [Saint-Paul (1992); Devereux and Smith (1994); Obstfeld (1994)]

- mobilize savings and allocate resources among the most promising users, help in technological development by supporting entrepreneur with novel idea with best chance of success [Greenwood and Smith (1997)].

-monitor managers and exert corporate control to align interest of owners and managers of the firm.[Diamond and Verrecchia (1982); Jensen and Murphy (1990); Laffont and Tirole (1988); Scharfstein (1988)]
-reduction in transaction costs and liquidity costs [Levine (1991); Bencivenga *et al.* (1996)]
- acquisition of information about firms [Grossman and Stiglitz (1980); Kyle (1984); Allen (1993); Holmstrom and Tirole (1993)].

We deliberately avoided any detailed discussions on above points; Ross Levine (1997, 2004) along with others [Demirguc-Kunt (2006); Capasso, (2006)] in their scholarly writings elaborated functions of financial system impeccably. Instead we prefer to focus on a more difficult question – what is the relationship between financial structure, functioning of the financial system and economic growth. Our presumption, this relationship varies across the countries and changes as countries develop.

Historical focus of finance and growth related studies were on banking sector [Bagehot, 1873; Schumpeter, 1912; Gurley and Shaw, 1955; Goldsmith, 1969; and McKinnon 1973]. Implicit assumption was in absence of a well-developed stock market in developing and in some highly developed economy, it is banking sector that is relevant hence it drew attention of researchers. Furthermore, immaculate theories supported by robust empirical findings helped to develop an impression that banks mitigate information asymmetries that foster better investment and faster growth [Diamond and Dybvig, 1983; Bencivenga and Smith, 1991; Greenwood and Smith, 1997; Miwa and Ramseyer, 2000; Diamond and Rajan, 2001; Da Rin and Hellmann, 2002; Ueda, 2006] that too inspired researchers to focus on bank neglecting stock market. However, debate over Anglo-Saxon bank-dominated and European capital dominated system seems losing grounds with globalization, technological advancement, regulatory changes and emergence of continental style universal banking system [See Wachtel, 2003]. Hence there is a growing feeling that both bank and stock market offers complementary services to each other and the policy- rely on one and ignore other is an awfully impractical proposition. Of course, relative importance of the channel may vary across countries.

4.3 Scope of the chapter

Thus, we propose to study how financial sector influences economic growth? What is the implication of stock and credit market growth in financial development? We follow a time series approach in exclusion of cross-country regression, not only because it may suffer from problems of econometric nature, but also because it may provide inaccurate reflections of each countries circumstances. Nature of our study demands inclusion of a large number of countries in the sample that belong to different stages of economic development from different geographical region to adjudge how financial structure varies across countries and its implication on economic growth.

Accordingly, we selected altogether twenty-two countries[1] across the world, with particular emphasis on Asia to examine our research questions for a time period 1981 to 2005. Selection of countries were simply guided by a single point criteria i.e. availability of relevant information for the time period. Finally, to put it in clear terms, we specifically propose to examine (a) to what extent different channels of financial system influence economic growth? (b) nature of causal relationship that exists between variables of our interest of study e.g. economic growth and bank, market and financial system. All these research issues are consistent with the objective of our study of this section that aims to investigate the intricate relationship between finance and growth and the role of different channels in economic development.

4.4. Data and Variables

4.4.i. Variables

While assessing this relationship we used some indicators to represent the respective economic sector. They are:

A. Stock Market Indicator

To assess the extent of stock market development then to relate it with growth, earlier studies relied on a range of variables either singly or jointly and most prominent are turnover ratio, value-traded ratio, market integration ratio, number of listed companies and market size etc. However, lessons of earlier studies [Bencivenga *et al.* 1995; Levine, 1997; Levine and Zervos, 1998; Beck and Levine, 2002] suggest value-traded ratio that can be expressed in terms of traded value of shares in exchanges divided by GDP is the single most important variable that can explain adequately strength of

market in an economy. It confirms our findings of earlier chapter and we also relied on this variable in exclusion of others.

B. Banking Development

Varieties of definitions have also been used by researchers while measuring 'depth of banking sector'. Some used overall size of banking sector to proxy for "financial depth" (usually M_3). While financial depth measures the size of specific liabilities of the financial system relative to national output, this type of 'financial depth' indicator does not measure (a) whether the liabilities are those of banks, the central bank, or other financial intermediaries or (b) where the financial system allocates the funds (King and Levine, 1993a).

We have used the variable bank credit to private sector (*BCPS*), which equals the value of loans made by banks to private enterprises divided by GDP. This indicator improves upon financial depth measures of banking development. *BCPS* isolates credit issued by banks, as opposed to credit issued by the central bank, and *BCPS* isolates credit to enterprises, as opposed to credit issued to governments (Levine, 1997). We focus almost exclusively on the results with *BCPS*. The assumption underlying using *BCPS* measure is that financial systems that allocate more credit to private firms are more engaged in researching firms, exerting corporate control, providing risk management services, mobilising savings and facilitating transactions than financial systems that simply funnel credit to the government or state owned enterprises (Levine, 1997).

C. Variables of Growth

Following the earlier studies [See Barro, 1991; Levine and Zervos, 1998; Rousseau and Wachtel, 2000; Beck and Levine, 2002; Dritsaki and Dritsaki-Bargiota, 2005, among others], the real per capita gross domestic product (GDP) has been used as an indicator of economic growth.

4.5 Methodology

In analysing of the relationship between stock market, credit sector and economic growth the following function is used:

$$EG = f(SD, BD)$$

where

EG =Economic growth

SD = stock market development indicator represented by value-traded ratio

BD=Banking sector development represented by bank credit to private sector as a percent of GDP.

While searching the explanatory power of the stock market and banking sector variables for influencing the economic growth in select sample countries, this study has started with the linear regression of the variables in the form:

$$Y_t = \alpha_i + \beta_1(S_t) + \beta_2(B_t) + e_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{Eq (1)}$$

where, Y_t denotes the economic growth, S_t denotes the stock market variable, B_t indicates the banking sector variable, α_i denotes the intercept, β_1 and β_2 denote the slope coefficients and the error term is e_{it}.

4.5.1. Stationarity of the Variables:

A major problem with using regression equation as an estimation technique relates to the issue of non-stationarity of the time series involved in the Eq (1). If the time series is non-stationary, then the estimate of βi would be spurious and biased. The stationarity of the time series in our study is primarily estimated through Augmented Dicky-Fuller Test (ADF) [1979]. If a series, say, Y_t , has a stationarity , invertible, stochastic ARMA representation after differencing 'd' times, it is said to be integrated of order 'd' and denoted by Y_t = I(d). Stationarity, presence of drift, trend and seasonality can simultaneously be tested by estimating the equation below, against the null hypothesis $\beta_1 = \beta_2 = \gamma_{j=} \ \delta = 0$:

$$\Delta Y_t = \beta_1 + \beta_2(t) + \gamma_j \sum_{j=2}^{p} D_j + \delta Y_{t-1} + \alpha_i \sum_{i=1}^{m} \Delta Y_{t-i} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots \text{Eq.(2)}$$

were, ε_t is a pure white noise, Y_t is a variable or time series under study, β_1 is the co-efficient for the drift, β_2 is the differential coefficient for the trend, $\delta = (\rho - 1)$, ρ =co-efficient for autoregression, γ_j =seasonal dummies and

$\alpha_i \sum_{i=1}^{m} \Delta Y_{t-i}$ is the 1st difference of Y_t at various lags of order i= 1,2,3.....m,

introduced to augment the equation to achieve the independent and identically distributed error terms i.e., $\varepsilon_t \sim N(0,\sigma)$.For an asymptotic series, the test statistics follows the 'F'-distribution (Gujarati,2003). If the hypothesis $\beta_1 = \beta_2 = \gamma_j = \delta = 0$ is accepted , we can conclude that the series under question i.e., Y_t is I(1). If we cannot reject the hypothesis that Y_t is I(1), we need to further test the Null hypothesis H_0: Y_t =I(2) versus the alternative hypothesis H_1: Y_t = I(1) .The residuals obtained from the Eq(2) are tested for

their influence on the regressors through two sets of tests proposed by Box-Pierce (1970) and Ljung-Box (1978) using the Null H_0: $\rho_{u,1} = \rho_{u,2}$ ..... $= \rho_{u,h} = 0$ against alternative H_1: $\rho_{u,i} \neq 0$ for at least one i= 1,2,.....h is tested. Here, $\rho u,i = corr(u_t, u_{t-1})$ denotes autocorrelation coefficients of the residual series. Both the test-statistics Q_h and LB_h grossly follow the $\chi 2$ distribution.

The results of the country-wise unit-root tests are shown in Table 4.1. From the estimates it is clear that all variables for sample countries are I (1), except GDP of India, Sri Lanka and USA. While GDP of Sri Lanka and USA is not a I (1) process, the same of India is very weakly I (1). The error variables are strongly uncorrelated with the regressors and are white noise.

Table 4.1: Country-wise Unit Root Test Results

Argentina	**DF / ADF**		**Residuals**				**Phillips-Perron test**	
Variables	**Coefficient**	**Statistic**	**B-P Test**		**L-B Test**			
			Statistic	**p- value**	**Statistic**	**p- value**	**Variables**	**Statistics**
VTR	-0.1950	-0.7811	0.6650	0.7207	0.7749	0.6788	VTR I (1)	-3.5067 (<0.01)
VTR I (1)	-2.1399	-3.6267	0.3618	0.8345	0.4325	0.8056		
BCPS	-0.0976	-1.4629	0.1874	0.9106	0.2222	0.8949	BCPS I (1)	-3.3478 (<0.025)
BCPS I (1)	-1.6359	-3.4874	0.5082	0.7756	0.5914	0.7440		
GDP	0.0563	1.5620	0.0692	0.9660	0.0810	0.9603	GDP I (1)	0.2649 (<0.99)
GDP I (1) [at lag 0]	-0.5372	-2.5234	2.2495	0.3247	2.5992	0.2726		

Australia	**DF /ADF**		**Residuals**				**Phillips-Perron test**	
Variables	**Coefficient**	**Statistic**	**B-P Test**		**L-B Test**			
			Statistic	**p- value**	**Statistic**	**p- value**	**Variables**	**Statistics**
VTR	0.1179	2.5373	0.1286	0.9377	0.1518	0.9269	VTR I (1)	0.456 (<0.99)
VTR I (1) [at lag 0]	-0.6372	-3.1881	4.0475	0.1322	4.6062	0.0999		
BCPS	-0.2341	-0.8748	1.3114	0.5191	1.5440	0.4621	BCPS I (1)	-0.8746 (<0.90)
BCPS I (1) [at lag 1]	-0.4236	-2.1958	3.7752	0.1514	4.4701	0.1070		
GDP	0.0373	1.6544	0.0942	0.9540	0.1116	0.9457	GDP I (1)	-0.0839 (<0.95)
GDP I (1)	-0.5582	-1.6598	0.5471	0.7607	0.6421	0.7254		

Bangladesh	**DF /ADF**		**Residuals**				**Phillips-Perron test**	
Variables	**Coefficient**	**Statistic**	**B-P Test**		**L-B Test**			
			Statistic	**p- value**	**Statistic**	**p- value**	**Variables**	**Statistics**
VTR	0.0961	0.6392	0.2001	0.9048	0.2400	0.8869	VTR I (1)	-1.5353 (<0.90)
VTR I (1)	-1.6552	-2.3222	0.8159	0.6650	0.9973	0.6074		
BCPS	0.0419	2.0323	0.1271	0.9384	0.1490	0.9282	BCPS I (1)	-0.2226 (<0.95)
BCPS I (1)	-0.4811	-1.9966	0.8516	0.6532	0.9816	0.6121		
GDP	0.0296	3.7678	0.2436	0.8853	0.2810	0.8689	GDP I (1)	-0.7537 (<0.90)
GDP I (1) [at lag 1]	-0.5334	-3.0762	2.2196	0.3296	2.6339	0.2679		

Country-wise Unit Root Test Results ***contd..***

Brazil	DF /ADF		Residuals				Phillips-Perron test	
Variables	Coefficient	Statistic	B-P Test		L-B Test			
			Statistic	p- value	Statistic	p- value	Variables	Statistics
VTR	0.0206	0.2357	0.1716	0.9178	0.2004	0.9047	VTR I (1)	-2.5368 (<0.90)
VTR I (1)	-1.0927	-2.2761	0.1890	0.9098	0.2284	0.8921		
BCPS	-0.0331	0.05728	2.4008	0.3011	2.7755	0.2496	BCPS I (1)	-2.055 (<0.90)
BCPS I (1)	-1.9350	-5.4742	0.1354	0.9345	0.1554	0.9252		
GDP	0.0065	0.1637	0.1589	0.9236	0.1892	0.9097	GDP I (1)	-1.6849 (<0.90)
GDP I (1)	-0.8165	-2.3172	0.1374	0.9336	0.1576	0.9242		

Chile	DF /ADF		Residuals				Phillips-Perron test	
Variables	Coefficient	Statistic	B-P Test		L-B Test			
			Statistic	p- value	Statistic	p- value	Variables	Statistics
VTR	0.0239	0.2525	0.1306	0.9368	0.1531	0.9263	VTR I (1)	-1.2237 (<0.90)
VTR I (1)	-1.3595	-3.2445	0.4995	0.7790	0.5967	0.7420		
BCPS	-0.0077	-0.3537	1.0246	0.5991	1.1659	0.5583	BCPS I (1)	-1.2237 (<0.90)
BCPS I (1)	-0.6368	-1.7856	1.3172	0.5176	1.5782	0.4543		
GDP	0.0318	1.3213	0.0911	0.9555	0.1085	0.9472	GDP I (1)	-0.3277 (<0.95)
GDP I (1) [at lag 0]	-0.4960	-2.5339	0.0288	0.9857	0.0326	0.9838		

France	DF /ADF		Residuals				Phillips-Perron test	
Variables	Coefficient	Statistic	B-P Test		L-B Test			
			Statistic	p- value	Statistic	p- value	Variables	Statistics
VTR	0.0400	0.7789	0.6360	0.7276	0.7617	0.6838	VTR I (1)	-0.6935 (<0.90)
VTR I (1)	-0.6682	-2.2909	0.7011	0.7043	0.8416	0.6565		
BCPS	-0.008	-0.5192	0.0230	0.9886	0.0272	0.9865	BCPS I (1)	-3.2893 (<0.025)
BCPS I (1)	-1.2096	-2.8383	0.0217	0.9892	0.254	0.9874		
GDP	0.0351	1.3968	0.0104	0.9948	0.0119	0.9941	GDP I (1)	-0.9018 (<0.90)
GDP I (1)	-0.6164	-1.8266	0.6737	0.7140	0.7859	0.6751		

Germany	DF /ADF		Residuals				Phillips-Perron test	
Variables	Coefficient	Statistic	B-P Test		L-B Test			
			Statistic	p- value	Statistic	p- value	Variables	Statistics
VTR	0.0317	0.4222	0.1353	0.9346	0.1557	0.9251	VTR I (1)	-1.4046 (<0.90)
VTR I (1)	-1.2323	-3.0912	0.4283	0.8072	0.5010	0.7784		
BCPS	0.0028	0.3877	0.1335	0.9354	0.1541	0.9259	BCPS I (1)	-1.0779 (<0.90)
BCPS I (1) [at lag 0]	-0.5221	-2.8881	1.0943	0.5786	1.2431	0.5371		
GDP	0.0299	1.1751	0.0405	0.9800	0.0481	0.9762	GDP I (1)	-1.2507 (<0.90)
GDP I (1)	-0.5485	-1.6931	0.3681	0.8319	0.4234	0.8092		

Hong Kong	DF /ADF		Residuals				Phillips-Perron test	
Variables	Coefficient	Statistic	B-P Test		L-B Test			
			Statistic	p- value	Statistic	p- value	Variables	Statistics
VTR	0.1850	1.7991	0.1920	0.9085	0.2262	0.8931	VTR I (1)	-1.4721 (<0.90)
VTR I (1)	-1.7351	-2.7185	1.0578	0.5893	1.2378	0.5385		
BCPS	0.0008	0.0733	1.1583	0.5604	1.5725	0.4555	BCPS I (1)	-1.6394 (<0.90)
BCPS I (1)	-0.6157	-1.6679	0.9147	0.6330	1.2762	0.5283		
GDP	0.0080	0.5566	1.1065	0.5751	1.3139	0.5184	GDP I (1)	-1.5474 (<0.90)
GDP I (1) [at lag 1]	-0.2853	-1.6227	2.1895	0.3346	2.5929	0.2735		

Country-wise Unit Root Test Results *contd..*

India	DF /ADF		Residuals				Phillips-Perron test	
Variables	Coefficient	Statistic	B-P Test		L-B Test			
			Statistic	p- value	Statistic	p- value	Variables	Statistics
VTR	-0.0128	-0.0681	0.4723	0.7897	0.5548	0.7577	VTR I (1)	-2.537 (<0.90)
VTR I (1)	-2.2481	-3.7828	0.2545	0.8805	0.3026	0.8596		
BCPS	0.0106	0.7201	0.1533	0.9262	0.1797	0.9164	BCPS I (1)	0.4081 (<0.99)
BCPS I (1) [at lag 0]	-0.6409	-3.0537	4.7419	0.0934	5.5512	0.0623		
GDP	0.0259	1.3399	0.8519	0.6531	0.9959	0.6078	GDP I (1)	1.2488 (<1.00)
GDP I (1) [at lag 0]	-0.2276	-1.4454	6.6962	0.0352	7.7887	0.0204		

Indonesia	DF /ADF		Residuals				Phillips-Perron test	
Variables	Coefficient	Statistic	B-P Test		L-B Test			
			Statistic	p- value	Statistic	p- value	Variables	Statistics
VTR	0.0086	0.0768	0.0748	0.7844	0.0855	0.7699	VTR I (1)	-1.51621 (<0.90)
VTR I (1)	-1.9311	-3.4764	0.0000	0.9964	0.0000	0.9962		
BCPS	-0.0187	-0.3873	0.0035	0.9531	0.0039	0.9500	BCPS I (1)	-1.7655 (<0.90)
BCPS I (1)	-0.8150	-2.3373	0.0000	0.9975	0.0000	0.9973		
GDP	0.0251	0.5295	0.0000	0.9969	0.0000	0.9967	GDP I (1)	-1.4596 (<0.90)
GDP I (1)	-1.0372	-2.4236	0.0121	0.9124	0.0138	0.9064		

Japan	DF /ADF		Residuals				Phillips-Perron test	
Variables	Coefficient	Statistic	B-P Test		L-B Test			
			Statistic	p- value	Statistic	p- value	Variables	Statistics
VTR	0.0172	0.1247	0.0871	0.7679	0.0995	0.7524	VTR I (1)	-1.8008 (<0.90)
VTR I (1)	-1.1895	-2.7887	0.0759	0.7830	0.0872	0.7677		
BCPS	0.0034	0.1468	0.3477	0.5554	0.3952	0.5296	BCPS I (1)	-2.4402 (<0.90)
BCPS I (1) [at lag 1]	-1.5512	-5.0077	0.3540	0.5519	0.4023	0.5259		
GDP	0.0182	0.7765	0.0306	0.8611	0.0348	0.8520	GDP I (1)	-1.9594 (<0.90)
GDP I (1)	-0.7473	-2.4777	0.1852	0.6669	0.2117	0.6455		

Korea	DF /ADF		Residuals				Phillips-Perron test	
Variables	Coefficient	Statistic	B-P Test		L-B Test			
			Statistic	p- value	Statistic	p- value	Variables	Statistics
VTR	-0.0162	-0.1472	1.1939	0.5505	1.4313	0.4889	VTR I (1)	-1.6403 (<0.90)
VTR I (1)	-1.1584	-2.7973	1.1211	0.5709	1.3564	0.5075		
BCPS	-0.0150	-0.3635	1.1680	0.5577	1.3780	0.5021	BCPS I (1)	-1.5769 (<0.90)
BCPS I (1) [at lag 1]	-0.8303	-3.4756	1.0399	0.5945	1.2211	0.5431		
GDP	0.0758	1.9754	-0.0503	0.9752	0.0597	0.9706	GDP I (1)	-0.4719 (<0.90)
GDP I (1) [at lag 1]	-0.7826	-2.7529	1.4540	0.4834	1.7113	0.4250		

Malaysia	DF /ADF		Residuals				Phillips-Perron test	
Variables	Coefficient	Statistic	B-P Test		L-B Test			
			Statistic	p- value	Statistic	p- value	Variables	Statistics
VTR	-0.0977	-0.6878	0.6295	0.7300	0.7232	0.6966	VTR I (1)	-2.4547 (<0.90)
VTR I (1)	-1.1515	-2.3528	0.0306	0.9848	0.0370	0.9817		
BCPS	0.0164	0.6416	0.1952	0.9070	0.2311	0.8909	BCPS I (1)	-2.5229 (<0.90)
BCPS I (1)	-0.7141	-2.1075	0.2444	0.8850	0.2933	0.8636		
GDP	0.0383	1.3501	0.0600	0.9704	0.0706	0.9653	GDP I (1)	-1.8048 (<0.90)
GDP I (1)	-0.7091	-1.9933	0.1824	0.9129	0.2133	0.8988		

Country-wise Unit Root Test Results ***contd..***

Mexico	DF /ADF		Residuals				Phillips-Perron test	
Variables	Coefficient	Statistic	B-P Test		L-B Test			
			Statistic	p- value	Statistic	p- value	Variables	Statistics
VTR	-0.0551	-0.7311	0.1100	0.9465	0.1320	0.9361	VTR I (1)	-1.8743 (<0.90)
VTR I (1)	-1.0823	-3.2061	0.0578	0.9715	0.0689	0.9662		
BCPS	-0.0196	-0.4140	0.0268	0.9867	0.0315	0.9844	BCPS I (1)	-1.8166 (<0.90)
BCPS I (1)	-0.8220	-2.4294	0.0144	0.9928	0.0170	0.9915		
GDP	0.0537	1.8500	0.0269	0.9867	0.0317	0.9843	GDP I (1)	-0.3193 (<0.95)
GDP I (1)	-0.6900	-2.0393	0.2854	0.8670	0.3263	0.8494		

Pakistan	DF /ADF		Residuals				Phillips-Perron test	
Variables	Coefficient	Statistic	B-P Test		L-B Test			
			Statistic	p- value	Statistic	p- value	Variables	Statistics
VTR	0.9926	7.2897	1.8793	0.3908	2.2468	0.3252	VTR I (1)	1.5367 (<1.00)
VTR I (1) [at lag 1]	-0.8429	-1.8561	0.9624	0.6180	1.1239	0.5701		
BCPS	0.0024	0.1808	0.0004	0.9998	0.0005	0.9998	BCPS I (1)	-3.7994 (<0.01)
BCPS I (1)	-1.0872	-2.9639	0.6198	0.7335	0.7437	0.6894		
GDP	0.0172	1.2550	0.1993	0.9052	0.2332	0.8899	GDP I (1)	-0.9885 (<0.90)
GDP I (1) [at lag 0]	-0.5551	-2.6886	0.579	0.9715	0.0661	0.9675		

Philippines	DF /ADF		Residuals				Phillips-Perron test	
Variables	Coefficient	Statistic	B-P Test		L-B Test			
			Statistic	p- value	Statistic	p- value	Variables	Statistics
VTR	-0.0934	-0.8658	0.1535	0.9261	0.1776	0.9150	VTR I (1)	-1.7009 (<0.90)
VTR I (1)	-0.6969	-1.6641	0.3839	0.8253	0.4461	0.8001		
BCPS	-0.0349	-1.0573	0.1146	0.9443	0.1364	0.9341	BCPS I (1)	-1.7983 (<0.90)
BCPS I (1)	-0.6759	-2.6309	0.4069	0.8159	0.4663	0.7920		
GDP	0.0192	0.7992	0.0002	0.9999	0.0003	0.9999	GDP I (1)	-0.8496 (<0.90)
GDP I (1)	-0.7959	-2.0187	0.1832	0.9125	0.2159	0.8977		

Singapore	DF /ADF		Residuals				Phillips-Perron test	
Variables	Coefficient	Statistic	B-P Test		L-B Test			
			Statistic	p- value	Statistic	p- value	Variables	Statistics
VTR	-0.0008	-0.0072	0.5484	0.7602	0.6414	0.7257	VTR I (1)	-2.394 (<0.90)
VTR I (1)	-2.1494	-4.3659	1.1037	0.5759	1.3283	0.5147		
BCPS	-0.0008	-0.055	0.2429	0.8856	0.2762	0.8710	BCPS I (1)	-1.6226 (<0.90)
BCPS I (1)	-0.9499	-2.2725	0.1136	0.9448	0.1344	0.9350		
GDP	0.0242	1.6258	0.0398	0.9803	0.0473	0.9766	GDP I (1)	-0.8627 (<0.90)
GDP I (1) [at lag 1]	-0.4916	-2.1463	0.6712	0.7329	0.7304	0.6941		

South Africa	DF /ADF		Residuals				Phillips-Perron test	
Variables	Coefficient	Statistic	B-P Test		L-B Test			
			Statistic	p- value	Statistic	p- value	Variables	Statistics
VTR	0.0815	1.4775	0.0439	0.9783	0.506	0.9750	VTR I (1)	-0.9418 (<0.90)
VTR I (1) at lag 0	-0.7883	-3.6913	3.3600	0.1864	3.8954	0.1426		
BCPS	0.314	1.6232	0.0780	0.9618	0.0924	0.9548	BCPS I (1)	-1.4919 (<0.90)
BCPS I (1)	-0.7473	-2.1747	1.0369	0.5954	1.2255	0.5418		
GDP	0.0250	0.8532	0.2766	0.8709	0.3267	0.8493	GDP I (1)	-0.7956 (<0.90)
GDP I (1) At lag 1	-0.7508	-2.8715	0.3886	0.8234	0.4625	0.7935		

Country-wise Unit Root Test Results *contd..*

Sri Lanka	DF /ADF		Residuals				Phillips-Perron test	
Variables	Coefficient	Statistic	B-P Test		L-B Test			
			Statistic	p- value	Statistic	p- value	Variables	Statistics
VTR	0.0230	0.1134	0.0781	0.9617	0.0974	0.9525	VTR I (1)	-2.1983 (<0.90)
VTR I (1)	-1.3414	-2.2312	0.1168	0.9433	0.1465	0.9294		
BCPS	0.0047	0.0977	0.0023	0.9989	0.0026	0.9987	BCPS I (1)	-1.3707 (<0.90)
BCPS I (1)	-1.0405	-2.6520	0.0320	0.9841	0.0366	0.9819		
GDP	0.0291	1.4750	0.5375	0.7643	0.6392	0.7264	GDP I (1)	-0.0479 (<0.975)
GDP I (1) [at lag 0]	-0.0687	-0.3702	2.1349	0.3439	2.4373	0.2956		

Thailand	DF /ADF		Residuals				Phillips-Perron test	
Variables	Coefficient	Statistic	B-P Test		L-B Test			
			Statistic	p- value	Statistic	p- value	Variables	Statistics
VTR	-0.0667	-0.6770	0.1798	0.9140	0.2063	0.9020	VTR I (1)	-1.7599 (<0.90)
VTR I (1)	-1.0647	-3.0264	0.1008	0.9508	0.1213	0.9412		
BCPS	-0.0015	-0.0831	0.0094	0.9953	0.0112	0.9944	BCPS I (1)	-1.4981 (<0.90)
BCPS I (1)	-0.4194	-2.1011	0.0036	0.9982	0.0044	0.9978		
GDP	0.0203	0.7570	1.2873	0.5254	1.5233	0.4669	GDP I (1)	-1.281 (<0.90)
GDP I (1)	-0.4293	-1.6322	0.4162	0.8121	0.4962	0.7803		

United Kingdom	DF /ADF		Residuals				Phillips-Perron test	
Variables	Coefficient	Statistic	B-P Test		L-B Test			
			Statistic	p- value	Statistic	p- value	Variables	Statistic
VTR	0.1149	1.3531	0.1494	0.9280	0.1788	0.9145	VTR I (1)	-0.4359 (<0.95)
VTR I (1)	-1.1449	-2.4208	0.4121	0.8138	0.4839	0.7851		
BCPS	0.0255	1.2220	0.0468	0.9769	0.0537	0.9735	BCPS I (1)	-1.5969 (<0.90)
BCPS I (1) at lag 1	-0.3934	-1.6955	1.0998	0.5770	1.2780	0.5278		
GDP	0.0509	2.0868	0.2578	0.8791	0.2983	0.8614	GDP I (1)	0.0353 (<0.975)
GDP I (1)	-0.5330	-1.9614	1.2266	0.5415	1.4373	0.4874		

USA	DF /ADF		Residuals				Phillips-Perron test	
Variables	Coefficient	Statistic	B-P Test		L-B Test			
			Statistic	p- value	Statistic	p- value	Variables	Statistic
VTR	-0.0288	0.4072	0.1225	0.9406	0.1441	0.9305	VTR I (1)	-1.2832 (<0.90)
VTR I (1)	-1.1493	-3.5443	0.2056	0.9023	0.2487	0.8831		
BCPS	0.1249	2.6346	0.0953	0.9535	0.1091	0.9469	BCPS I (1)	-1.1029 (<0.90)
BCPS I (1) at lag 1	-1.4107	-4.6913	0.6990	0.7050	0.8056	0.6684		
GDP	0.0325	2.8550	0.5261	0.7687	0.5997	0.7409	GDP I (1)	-0.0496 (<0.975)
GDP I (1) At lag 0	-0.0223	-0.2895	2.6644	0.2639	3.1319	0.2089		

Notes: (i) usually the ADF test are carried on 2 lags, B-P and L-B tests are carried on 2 lags, if not otherwise stated in the tables; (ii) ADF p-value: -2.59 at 1% level of significance, -1.94 at 5% level of significance and -1.62 at 10% level of significance. (iii) Box-Pierce (B-P) / Ljung-Box (L-B) $H_0: \rho_{ui} = 0$;

(iv) stationary is tested through ADF and when $\alpha_i \sum_{i=1}^{m} \Delta Y_{t-i} = 0$, it turns into DF test. (v) For Phillips-Perron test, figures in brackets are *p*-values.

4.5.2 Cointegration of the Variables:

The regression estimates are super consistent and would converge to their true value faster if the time series under the study are co-integrated. Granger (1986) argued that 'a test for cointegration can thus be thought of as a pre-test to avoid ''spurious regression'' situations'. This study has assessed the existence of the long-run relationship between the variables through the cointegration test developed by Johansen (1991).

Cointegration and Its Rank:

The number of significant cointegrating vectors is estimated by using maximum likelihood based λ_{max} and λ_{trace} statistics introduced by Johansen (1991,1995).

Engle and Granger (1987) have shown that under some regulatory conditions we can write a cointegrated process y_t as a Vector error Correction Model (VECM):

$$\Delta y_t = \mu_o + \Gamma_1 \Delta y_{t-1} + \Gamma_2 \Delta y_{t-2} + \ldots\ldots + \Gamma_{p-1} \Delta y_{t-(p-1)} + \Pi y_{t-1} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots \text{Eq (3)}$$

where Δ is a first difference notation, μ_o includes (non-seasonal) deterministic components, y_t is a $px1$ vector (p=7 for this study), Γ and Π are coefficient-matrices representing short-term and long-term impacts, respectively and ε_t is residual vector assumed to be independent and identically distributed as multi-normal distribution with mean zero and variance $\boldsymbol{\Omega}$. The core idea of the Johansen procedure is simply to decompose Π in to two matrices α and β, both of which are p x r matrices ($r<p$) such that $\Pi = \alpha \beta'$ and so the rows of β may be defined as the r distinct cointegrating vectors. Then a valid cointegrating vector will be given by the corresponding eigenvalue (Johansen 1995). Johansen proposes a 'Trace test' for determining the cointegrating rank 'r' such that:

$$\lambda_{trace} = -T \sum_{i=r+1}^{k} \text{In} (1 - \hat{\lambda}_i) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{Eq (4)}$$

and also proposes another likelihood ratio test to assess whether there is a maximum number of cointegrating vectors against r+1 such that:

$$\lambda_{max}(r, r+1) = -T \text{ In} (1 - \hat{\lambda}_i) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{Eq (5)}$$

with critical values given in Johansen (1995). In the case of any dispute between the statistics, they suggest to follow the outcome of the trace test, hence, we have carried on only the trace test to estimate the Cointegrating relationship amongst the variables.

The country-wise Johansen cointegration test statistics identifies the number of cointegration relations. The trace test indicates cointegration relationship at 10% level of

significance. We have also used an intercept and no trend in the cointegration relationship for all sample countries at lag 1 in a VECM framework. The results are shown in Table 4.2.

Table 4.2: Country-wise Co-integration Test Results (at *lag 1)*
[at the 10% level of significance]

Argentina	**GDP *vs.* VTR and Bank**		**GDP *vs.* VTR**		**GDP *vs.* Bank**	
Rank = r	LR	p-value	LR	p-value	LR	p-value
0	53.39	0.0001	24.66	0.0101	32.93	0.0004
1	21.86	0.0280	7.35	0.1116	4.04	0.4189
2	4.56	0.3466				

Australia	**GDP *vs.* VTR and Bank**		**GDP *vs.* VTR**		**GDP *vs.* Bank**	
Rank = r	LR	p-value	LR	p-value	LR	p-value
0	41.23	0.0087	24.52	0.0107	19.99	0.0529
1	10.24	0.6218	2.18	0.7402	2.53	0.6749
2	4.23	0.3904				

Bangladesh	**GDP *vs.* VTR and Bank**		**GDP *vs.* VTR**		**GDP *vs.* Bank**	
Rank = r	LR	p-value	LR	p-value	LR	p-value
0	41.56	0.0079	0.2641	0.0052	26.65	0.0047
1	20.31	0.0477	11.37	0.0175	9.30	0.0466
2	3.46	0.5087				

Brazil	**GDP *vs.* VTR and Bank**		**GDP *vs.* VTR**		**GDP *vs.* Bank**	
Rank = r	LR	p-value	LR	p-value	LR	p-value
0	21.89	0.6061	10.17	0.6288	12.30	0.4312
1	9.28	0.7127	2.02	0.7708	3.23	0.5493
2	2.60	0.6631				

Chile	**GDP *vs.* VTR and Bank**		**GDP *vs.* VTR**		**GDP *vs.* Bank**	
Rank = r	LR	p-value	LR	p-value	LR	p-value
0	32.31	0.0986	21.23	0.0349	14.70	0.2497
1	11.58	0.4954	2.08	0.7590	1.01	0.9352
2	1.62	0.8416				

France	**GDP *vs.* VTR and Bank**		**GDP *vs.* VTR**		**GDP *vs.* Bank**	
Rank = r	LR	p-value	LR	p-value	LR	p-value
0	27.48	0.2689	15.89	0.1829	11.93	0.4838
1	8.04	0.8187	2.76	0.6335	3.52	0.4996
2	2.67	0.6489				

Germany	**GDP *vs.* VTR and Bank**		**GDP *vs.* VTR**		**GDP *vs.* Bank**	
Rank = r	LR	p-value	LR	p-value	LR	p-value
0	32.40	0.0966	12.06	0.4519	19.69	0.0584
1	9.37	0.7044	3.88	0.4419	1.76	0.8170
2	2.45	0.6905				

Country-wise Cointegration Test Results *contd..*

Hong Kong	GDP *vs.* VTR and Bank		GDP *vs.* VTR		GDP *vs.* Bank	
Rank = r	LR	p-value	LR	p-value	LR	p-value
0	53.27	0.0001	21.73	0.0293	43.35	0.0000
1	16.77	0.1430	6.61	0.1535	9.73	0.0381
2	4.21	0.3932				

India	GDP *vs.* VTR and Bank		GDP *vs.* VTR		GDP *vs.* Bank	
Rank = r	LR	p-value	LR	p-value	LR	p-value
0	44.63	0.0030	32.75	0.0004	24.37	0.0113
1	21.26	0.0345	11.95	0.0132	1.71	0.8257
2	1.66	0.8354				

Indonesia	GDP *vs.* VTR and Bank		GDP *vs.* VTR		GDP *vs.* Bank	
Rank = r	LR	p-value	LR	p-value	LR	p-value
0	28.49	0.2226	12.12	0.4463	8.24	0.8026
1	6.11	0.9377	2.52	0.6775	2.65	0.6527
2	1.92	0.7896				

Japan	GDP *vs.* VTR and Bank		GDP *vs.* VTR		GDP *vs.* Bank	
Rank = r	LR	p-value	LR	p-value	LR	p-value
0	19.16	0.7752	8.38	0.7916	11.54	0.4993
1	9.63	0.6798	2.34	0.7113	5.26	0.2652
2	3.84	0.4486				

Korea	GDP *vs.* VTR and Bank		GDP *vs.* VTR		GDP *vs.* Bank	
Rank = r	LR	p-value	LR	p-value	LR	p-value
0	41.32	0.0085	10.79	0.5900	11.86	0.4699
1	17.16	0.1278	2.98	0.5936	1.38	0.8812
2	4.59	0.3428				

Malaysia	GDP *vs.* VTR and Bank		GDP *vs.* VTR		GDP *vs.* Bank	
Rank = r	LR	p-value	LR	p-value	LR	p-value
0	23.49	0.5007	9.87	0.6571	16.94	0.1362
1	8.02	0.8200	3.44	0.5129	1.72	0.8249
2	1.65	0.8374				

Mexico	GDP *vs.* VTR and Bank		GDP *vs.* VTR		GDP *vs.* Bank	
Rank = r	LR	p-value	LR	p-value	LR	p-value
0	103.77	0.0000	59.70	0.0000	6.22	0.9327
1	9.08	0.7306	4.29	0.3821	1.42	0.8757
2	1.26	0.9010				

Pakistan	GDP *vs.* VTR and Bank		GDP *vs.* VTR		GDP *vs.* Bank	
Rank = r	LR	p-value	LR	p-value	LR	p-value
0	22.61	0.5581	11.54	0.4995	10.46	0.6017
1	9.65	0.6780	2.10	0.7563	3.52	0.5002
2	1.84	0.7949				

Country-wise Cointegration Test Results *contd..*

Philippines	**GDP *vs.* VTR and Bank**		**GDP *vs.* VTR**		**GDP *vs.* Bank**	
Rank = r	LR	p-value	LR	p-value	LR	p-value
0	24.12	0.4599	4.55	0.9844	13.21	0.3556
1	6.81	0.9026	1.39	0.8799	3.95	0.4310
2	1.16	0.9193				

Singapore	**GDP *vs.* VTR and Bank**		**GDP *vs.* VTR**		**GDP *vs.* Bank**	
Rank = r	LR	p-value	LR	p-value	LR	p-value
0	61.37	0.0000	24.84	0.0094	42.18	0.0000
1	16.17	0.1692	4.67	0.3322	2.29	0.7209
2	2.26	0.7263				

South Africa	**GDP *vs.* VTR and Bank**		**GDP *vs.* VTR**		**GDP *vs.* Bank**	
Rank = r	LR	p-value	LR	p-value	LR	p-value
0	34.33	0.0604	19.33	0.0656	10.22	0.6246
1	9.26	0.7147	2.43	0.6938	2.48	0.6846
2	4.34	0.3752				

Sri Lanka	**GDP *vs.* VTR and Bank**		**GDP *vs.* VTR**		**GDP *vs.* Bank**	
Rank = r	LR	p-value	LR	p-value	LR	p-value
0	49.06	0.0009	29.03	0.0018	25.28	0.0080
1	10.22	0.1671	5.27	0.2644	4.68	0.3310
2	7.51	0.1042				

Thailand	**GDP *vs.* VTR and Bank**		**GDP *vs.* VTR**		**GDP *vs.* Bank**	
Rank = r	LR	p-value	LR	p-value	LR	p-value
0	38.09	0.0221	25.13	0.0085	18.87	0.0760
1	14.58	0.2572	2.90	0.6075	1.56	0.8517
2	3.00	0.5901				

UK	**GDP *vs.* VTR and Bank**		**GDP *vs.* VTR**		**GDP *vs.* Bank**	
Rank = r	LR	p-value	LR	p-value	LR	p-value
0	37.03	0.0296	20.71	0.0416	25.56	0.0072
1	14.72	0.2486	5.27	0.2648	8.47	0.0680
2	6.13	0.1872				

USA	**GDP *vs.* VTR and Bank**		**GDP *vs.* VTR**		**GDP *vs.* Bank**	
Rank = r	LR	p-value	LR	p-value	LR	p-value
0	88.12	0.0000	68.76	0.0000	81.27	0.0000
1	10.08	0.6373	2.98	0.5934	7.01	0.1293
2	2.69	0.6462				

The results so obtained shows that there exists no cointegrating relation between GDP, VTR and BCPS, GDP and VTR and GDP and BCPS in the countries like France, Indonesia, Brazil, Japan, Malaysia, Pakistan, and Philippines. Hence, causality test could not run for all these countries. For Chile, Korea and Germany, cointegrating relation appears either GDP and VTR or GDP and Bank. Apart from these countries, for all other countries there exist cointegrating relationship.

4.5.3. Granger-Causality of the Variables:

The regression analysis only deals with the dependence of one variable on the other but not the direction of the relationships. Thus, it is essential to know the influence of one variable on the other that is estimated through Granger Causality test (1969). The test involves estimating the pair of regression equations of the form:

$$\Delta Y_t = \alpha_o + a\, u_{t-1} + \sum_{i=1}^{n} \alpha_{1i}\, \Delta Y_{t-i} + \sum_{i=1}^{m} \alpha_{2i}\, \Delta X_{t-i} + \varepsilon_{1t} \quad \text{.....Eq.(6)}$$

and,

$$\Delta X_t = \beta_o + b\, u_{t-1} + \sum_{i=1}^{n} \beta_{1i}\, \Delta X_{t-i} + \sum_{i=1}^{m} \beta_{2i} \Delta Y_{t-i} + \varepsilon_{2t} \quad \text{.....Eq.(7)}$$

where, u_{t-1} is the residuals of the regression equations involving Y and X as the dependent and independent variables, ε_{1t} and ε_{2t} are uncorrelated error terms and au_{t-1} and bu_{t-1} are the error correction terms. According to Engle and Granger (1987), failing to reject Ho: $\alpha_{21} = \alpha_{22} = \ldots\ldots = \alpha_{2m} = 0$ and $a=0$ implies that X_t do not Granger cause Y_t. Similarly, failing to reject Ho: $\beta_{21} = \beta_{22} = \ldots\ldots = \beta_{2n} = 0$ and $b=0$ implies that Y_t do not Granger cause X_t. We have also tested the joint influences of all the five macroeconomic variables on the aggregate stock return and vice versa, on a multivariate setting on the line of the equations Eq. (6) and Eq. (7).

The test results of Granger Causality have shown in Table 4.3.

Table 4.3: Granger Causality Test Results

Framework: Lag 1, intercept

Country	V ⟶ GDP	GDP ⟶ V	B ⟶ GDP	GDP ⟶ B	V + B ⟶ GDP	GDP ⟶ V + B
Argentina	0.3864 (0.6828)	1.6820 (0.2031)	0.1009 (0.9043)	1.3786 (0.2665)	0.1356 (0.9682)	1.2429 (0.3103)
Australia	135.965 (0.0000)	3.4756 (0.0439)	6.6635 (0.0038)	1.2288 (0.3061)	28.4253 (0.0000)	3.2351 (0.0229)
Bangladesh	3.3527 (0.0520)	0.1398 (0.8702)	262.8628 (0.000)	3.3103 (0.0494)	86.7297 (0.000)	2.1512 (0.1018)
Chile	0.1074 (0.8985)	0.2818 (0.7564)	0.2852 (0.7538)	68.661 (0.0000)	0.1707 (0.9519)	51.550 (0.0000)
Germany	2.1719 (0.1316)	0.8633 (0.4320)	1.3732 (0.2678)	0.4087 (0.6679)	1.5369 (0.2123)	0.7005 (0.5967)
Hong Kong	0.5012 (0.6108)	0.7139 (0.4979)	9.6698 (0.0032)	24.3351 (0.0001)	10.6950 (0.0018)	24.1630 (0.0001)
India	1.7148 (0.1972)	2.9123 (0.0698)	3.4769 (0.0430)	192.6477 (0.0000)	3.3650 (0.0194)	173.9364 (0.0000)
Korea	1.7944 (0.1836)	4.5099 (0.0194)	0.1458 (0.8649)	2.7261 (0.0807)	2.5200 (0.0580)	5.0917 (0.0023)
Mexico	0.2216 (0.8026)	0.3999 (0.6739)	1.2810 (0.2916)	0.2233 (0.8011)	3.6253 (0.0139)	1.1881 (0.3326)
Singapore	11.8886 (0.4330)	1.2539 (0.2999)	0.5304 (0.5934)	118.9474 (0.0000)	0.5666 (0.6885)	43.5109 (0.0000)
South Africa	11.8886 (0.0002)	46.8559 (0.0000)	0.1540 (0.8579)	327.2268 (0.0000)	5.0081 (0.0026)	213.44 (0.0000)
Sri Lanka	1.1682 (0.3295)	5.7841 (0.0096)	0.0760 (0.9270)	22.8795 (0.0000)	2.5803 (0.0630)	23.3130 (0.0000)
Thailand	3.5634 (0.0409)	1.3476 (0.2751)	0.2450 (0.7841)	1.7365 (0.1923)	2.1302 (0.0971)	1.4738 (0.2305)
UK	0.9658 (0.3922)	0.6181 (0.5457)	0.1545 (0.8575)	0.0933 (0.9112)	2.1831 (0.0905)	4.9297 (0.0028)
USA	3.0133 (0.0642)	2.2870 (0.1190)	0.8671 (0.4298)	21.7573 (0.0000)	27.2182 (0.0000)	4.7090 (0.0037)

Notes: (i) V represents value-traded ratio; B indicates bank credit to private sector ratio; GDP equals per capita GDP. (ii) V does not Granger cause per capita GDP is indicated by V⟶GDP. (iii) *p*- values are in brackets. (iv) 1% level of significance has been considered.

Above table contains a large volume of information, thus for the sake of brevity and clarity we summarize the findings below (See Table 4.4).

Table 4.4: A Synoptic view of Finance and Growth Relationship

Finance leads growth			**Growth leads Finance**		
V ⟶ GDP	B ⟶ GDP	V+B ⟶ GDP	GDP ⟶ V	GDP ⟶ B	GDP ⟶ V+B
Australia	**Australia**	**Mexico**	**Sri Lanka**	**Chile**	**Chile**
South Africa	**Hong Kong**	**Australia**	**South Africa**	**USA**	**UK**
	India	**USA**		**Hong Kong**	**USA**
	Bangladesh	**Hong Kong**		**Singapore**	**Korea**
		Bangladesh		**India**	**Hong Kong**
		South Africa		**Sri Lanka**	**Singapore**
				Bangladesh	**India**
				South Africa	**Sri Lanka**
					South Africa

Virtually, above table includes a mix baggage of experiences that is consistent with our assumption that finance – growth relationship varies across countries and it may also change over time. Neither our study fully supports the view that there is a consensus among economists "that finance leads to economic growth" nor it totally subscribe the opinion that finance is "an inconsequential sideshow", it is economic growth that matters.

At least for six countries causality runs from finance to growth that satisfies assumption of Neo-classical theorists. Nearly in all these six countries both institution and market combanied contributes in economic growth, it confirms our assumption that these two channels offer different bunch of services and jointly their functioning can help society to develop. Thus, the theory "one particular channel is better than other" hence financial structure to be designed accordingly to make it more effective does not hold good. Of course, the direction of causality suggests, current role of stock market in South Africa economy is more important than bank. Alternatively, causality suggests for Asian countries, mostly institutional development supports economic growth. Certainly, with the emergence of universal banking concept it is believed that this difference in importance will gradually minimize.

Broadly at least for nine countries causality runs from growth to finance. Out of nine at least five belong to Asian continent and the countries are at different stages of economic development. Nearly for all these countries, if to mention a single financial sector that enjoys maximum benefit of economic growth – it is banking sector not capital market. At least for these countries "enterprise leads finance follow theory" can appropriately describe the reality.

Besides these two broad grouping, for few countries such as U.S.A, Hong Kong and South Africa bi-directional causality is apparent in our study. Along with it Germany and Argentina may be treated as special case where causal relationships between these variables are not statistically significant. Experiences of Germany may surprise researchers. It is a most developed nation of the world, where private sectors contribution in economic growth is truly impressive but the role of financial system is nearly passive. Huge dependence of private sector on Pfandbriefe (covered bonds), not on equity or bank finance may be the reason for unique findings of Germany. For Argentina, series of upheavals such as cyclical correction, bank failures, domestic political uncertainties, poor institutional development, financial contagion may have contributed for such statistically insignificant causality results.

4.6 Conclusion

Why should we bother about deepening and widening of financial system? Should we ignore Neo-classical doctrine and embark upon the proposition if economy grows finance will automatically follow? Our study fails to offer any definite answer of the above questions. If anything is sure it is that we know little about finance-growth linkage.

While experiences of some countries strongly support Neo-classical views that "finance leads to growth", for others, theory of "economic growth proceeds finance" appear sensible. Ignoring direction of causality it appears institutional finance influences or is influenced by economic growth more prominently and this finding is specifically relevant for Asian economy. This is in the line with the observations of McKinsey (2005) study. The subdued role of stock market in the test of causality may be due to the fact that in our study we considered only equity market and totally excluded securitized debt market that is offering immense services to promote private sector around the globe McKinsey (2005).

End Note:

1. Sample Countries include U.S.A, U.K, Germany, France, Australia, Hong Kong, Singapore, Malaysia, Indonesia, Philippines, India, Korea, Japan Thailand, Pakistan, Bangladesh, Sri Lanka, South Africa, Argentina, Brazil, Mexico, and Chile.

References

Adjasi,Charles K.D. and Nicholas B. Biekpe (2006): "Stock Market Development and Economic Growth: The Case of Selected African Countries", African Development Bank. Blackwell Publishing Ltd.Allen 1993;

Arestis, P. and P. Demetriades (1997): "Financial Development and Economic Growth: Assessing the Evidence", Economic Journal, 107, pp.783-799.

Arrow, Kenneth J., and Gerard Debreu, (1954): "Existence of an Equilibrium for a Competitive Economy," Econometrica, Vol. 22, No. 3 (July), pp. 265–290.

Bagehot, Walter (1873): "Lombard Street, A Description of the Money Market", Homewood, IL: Richard D. Irwin, (1962 Edition).

Barro, Robert J. (1991): "Economic Growth in a Cross Section of Countries," The Quarterly Journal of Economics, 106 (2), May, pp. 407- 443.

Beck, Throsten and Ross Levine (2002): "Stock markets, banks, and growth: panel evidence", World Bank mimeo. Downloaded.

Bencivenga, V. R. and B. D. Smith (1991): "Financial Intermediation and Endogenous Growth", Review of Economics Studies, 58: pp. 195-209.

---------- and R. M. Starr (1995): "Transactions Costs, Technological Choice, and Endogenous Growth", Journal of Economic Theory, 67: pp. 53-177.

---------- (1996): "Equity markets, transactions costs, and capital accumulation: an illustration", The World Bank Economic Review, 10 (2): pp.
241-65.

Bhide, Amar (1993): "The Hidden Costs of Stock Market Liquidity", Journal of Financial Economics, 34: pp. 1-51.

Boot, Arnoud W.A.; Greenbaum, Stuart J.; Thakor, Anjan V (1993): "Reputation and Discretion in Financial Contracting," American Economic Review, 83, pp.1165-83.

Box, G. and D.A. Pierce (1970): "Distribution of Residual Autocorrelation in Autoregressive Integrated Moving Average time Series Models", Journal of American Statistical Association, 65, pp. 1509-26.

Capasso, Salvatore (2006): "Stock Market Development and Economic Growth", September, UNU-WIDER Research Paper No. 2006/102.

Caporale, Guglielmo Maria. Howells, Peter G. A and Soliman, Alaa M. (2005): "Endogenous Growth Models and Stock Market Development: Evidence from Four Countries", Review of Development Economics, 9(2), pp.166–176.

Da Rin, Marco, and Thomas Hellmann, (2002): "Banks as Catalysts for Industrialization," Journal of Financial Intermediation, Vol. 11 (October), pp. 366–397.

Dickey, D.A. and Fuller, W.A. (1979): "Distribution of the estimators for autoregressive time series with a unit root", Journal of the American Statistical Association, pp.74, 427–431.

Demirguc-Kunt, Asli (1994): "Developing Country Capital Structure and Emerging Stock Markets," World Bank Policy Research Working Paper No. 933.

---------- (2006): "Finance and Economic Development: Policy Choices for Developing Countries", World Bank Policy Research Working Paper No. 3955, June.

---------- and Ross Levine (1996): "Stock market development and financial intermediaries: stylized facts", The World Bank Economic Review, 10 (2): pp. 291-321.

---------- (2005): "Bank-Based and Market-Based Financial Systems: Cross-Country Comparisons", World Bank, mimeo.

Devereux, M. B., and G. W. Smith (1994): "International Risk Sharing and Economic Growth", International Economic Review, 35: pp. 535-550.

Diamond, Douglas W. and Philip H. Dybvig, (1983): "Bank Runs, Deposit Insurance, and Liquidity," Journal of Political Economy, Vol. 91, No. 3 (June), pp. 401–419.

--------- and Raghuram Rajan (2001): "Liquidity Risk, Liquidity Creation, and Financial Fragility: A Theory of Banking", Journal of Political Economy, 109: pp. 289-327.

Diamond, D. W. and R. E. Verrecchia (1982): "Optimal Managerial Contracts and Equilibrium Security Prices", Journal of Finance, 37: pp. 275-287.

Dritsaki, Chaido and Melina Dritsaki-Bargiota (2005): "The Causal Relationship between Stock, Credit Market and Economic Development: An Empirical Evidence for Greece", Economic Change and Restructuring, 38: pp. 113–127.

Engle, R. F. and C. W. J. Granger (1987): "Cointegration and Error Correction: Representation, Estimation and Testing", Econometrica, Vol. 55, No. 2, pp. 251–76.

Goldsmith, Raymond, W. (1969): "Financial Structure and Development", New Haven and London: Yale University Press.

Grabel, Ilene (1995): "Speculation-Led Economic Development: A Post-Keynesian Interpretation of Financial Liberalization Programs", International Review of Applied Economics, 9(2), pp. 127-149.

---------- (1999): "Assessing the Impact of Financial Liberalisation on Stock Market Volatility in Selected Developing Countries". The Journal of Development Studies. Vol. 31, No.6, August, pp. 903-917.

Granger, C.W.J. (1969): "Investigating Causal Relations by Econometric Models and Cross Spectral Methods", Econometrica, July, pp. 424-38.

---------- (1986): "Developments in the study of cointegrated economic variables", Oxford Bulletin of Economics and Statistics, 48, pp.213–228.

Greenwood, J. and Smith, B. D. (1997): "Financial markets in development, and the development in financial markets". Journal of Dynamics and Control, 21, pp. 145–181.

Grossman, S. J. and Joseph E. Stiglitz (1980): "On the Impossibility of Informationally Efficient Markets", American Economic Review, 70: pp. 393-408.

Gujarati, D.N. (2003): "Basic Econometrics". 4th ed., McGraw-Hill, New York.

Gurley, J. G. and E. S. Shaw (1955): "Financial Aspects of Economic Development", American Economic Review, 45: pp. 515-538.

Hirshleifer, David (2001): "Investor Psychology and Asset Pricing", The Journal of Finance, Vol. LVI, No. 4, August, pp.1533-97.

Holmstrom, B. and J. Tirole (1993): "Market Liquidity and Performance Monitoring." Journal of Political Economy, 101(4, August), pp. 678-709.

Hoshi, T., A. Kashyap and D. Sharfstein (1991): "Corporate Structure, Liquidity, and Investment: Evidence from Japanese Panel Data", Quarterly Journal of Economics, 27: pp. 33-60.

Jensen, M. and K. Murphy (1990): "Performance Pay and Top Management Incentives", Journal of Political Economy, 98:pp. 225-263.

Johansen, Soren (1991): "Estimation and Hypothesis Testing of Cointegrating Vectors in Gaussian Vector Autoregressive Models". Econometrica 59 (November), pp. 1551-80.

---------- (1995): "Likelihood Based Inference in Cointegrated Vector Autoregressive models", Oxford University press, Oxford.

King, Robert, G. and Ross Levine (1993a): "Finance and growth: Schumpeter might be right", Quarterly Journal of Economics 108, pp. 717–737.

---------- (1993b): "Finance, entrepreneurship, and growth: theory and evidence". Journal of Monetary Economics, 32, pp. 513-42.

Kyle, A. S. (1984): "Market Structure, Information, Futures Markets, and Price Formation", In: International Agricultural Trade: Advanced Readings in Price Formation, Market 102 Structure, and Price Instability, Eds: G. G. Storey, A. Schmitz and A. H. Sarris, Boulder, CO: Westview.

Laffont, Jean-Jacques, and Jean Tirole (1988): "Repeated Auctions of Incentive Contracts, Investment, and Bidding Parity with an Application to Takeovers." RAND Journal of Economics, 19, (Winter), pp. 516-37.

Levine, Ross (1991): "Stock Markets, Growth, and Tax Policy." Journal of Finance, 46(4, September), pp. 1445-65.

--------- (1997): "Financial development and economic growth: views and agenda", Journal of Economic Literature, 35, pp. 688-726.

--------- (2004): "Finance and Growth: Theory and Evidence", NBER Working Paper No. 10766, September.

Levine, Ross and Sara Zervos (1996): "Stock market development and long-run growth", World Bank Economic Review, 10 (2), pp. 223-39.

---------- (1998): "Stock markets, Banks and Economic growth". American Economic Review, 88, pp.537-58.

Ljung, G.M. and Box, G.E.P (1978): "On a measure of lack of fit in time-series models", Biometrika, 65, pp. 297-303.

Lucas, Robert E., Jr. (1988): "On the mechanics of economic development". Journal of Monetary Economics, 22, pp. 3-42.

Manning, Mark J (2003): "Finance causes growth: can we be so sure?" Contributions to Macroeconomics 3. http://www.bepress.com/bejm/contributions/vol3/iss1/art12

McKinnon, Ronald I. (1973): "Money and capital in economic development". Washington, D.C. Brookings Institution.

McKinsey & Company (2005): "$118 Trillion and Counting: Taking Stock of the World's Capital Markets", McKinsey Global Institute, February.

Miwa, Yoshiro and J. Mark Ramseyer (2000): "Banks and Economic Growth: Implications From Japanese History", Harvard Law School Discussion Paper No. 289, August.

Obstfeld, Maurice (1994): "Risk-Taking, Global Diversification, and Growth." American Economic Review 84(5, December): pp.1310-29.

Robinson, Joan. (1952): "The generalization of the general theory". In: the Rate of Interest and Other Essays. Macmillan, London.

Rousseau, Peter L., and Paul Wachtel (2000): "Equity Markets and Growth: Cross-Country Evidence on Timing and Outcomes, 1980-1995." Journal of Banking and Finance, December, 24(12), pp. 1933-57

Saint-Paul, G. (1992): "Technological Choice, Financial Markets and Economic Development". European Economic Review, 36 (4), pp.763-81.

Scharfstein, D. (1988): "The Disciplinary Role of Takeovers", Review of Economic Studies, 55, pp. 185-199.

Schumpeter, Joseph. A. (1912): "The Theory of Economic Development", Cambridge, MA: Harvard University Press, 1934.

Singh, Ajit (1997): "Financial Liberalisation, Stock Markets and Economic Development", Economic Journal, May, pp. 771-82.

---------- and B. A. Weiss (1998): "Emerging Stock Markets, Portfolio Capital Flows and Long-Term Economic Growth: Micro and Macroeconomic Perspectives", World Development, Vol. 26, No. 4 (April), pp. 607–22.

Stiglitz, Joseph, E (1985): "Credit Markets and Control of Capital", Journal of Money, Credit and Banking, 17, pp. 133-52.

---------- (1994): "The Role of the state in financial markets", in M. Bruno and B. Pleskovic (eds), Proceedings of the World Bank Annual Conference on Development Economics 1993; Supplement to the World Bank Economic Review and the World bank Research Observer, Washington, DC.

Ueda Kenichi (2006): "Banks as Coordinators of Economic Growth", IMF Working Paper no. 06/264, November.

Wachtel Paul (2003): "How much do we really know about growth and finance?", FRBA Economic Review, Vol.88: pp. 33-48.

CHAPTER – V

Conclusion and Policy Implications

Present thesis has twin objectives. First, to measure objectively pattern of growth of stock markets of sample countries and second, to study development implications of this change in the stock market behaviour.

Initially we selected twenty-two countries to answer the above questions. Criteria for selecting countries were: proximity of the date of liberalization of the sample countries, availability of relevant information, stages of economic development and sequencing pattern. As our primary interest is Asia, sample consists of more countries of this region.

To measure pattern of stock market development, we relied on an Weighted average index, where weights of each variable were assigned based on the Principal Component Analysis. Our findings suggest –

- Growth of South-east Asian stock markets such as Hong Kong, Singapore, Malaysia, Korea etc. are truly impressive. These markets are growing at a faster rate than many developed markets;
- Experiences of south Asian markets such as India, Sri Lanka, and Bangladesh are totally disappointing. Sri Lanka enjoys the lowest ranking among all sample countries.
- Among the Asian countries fall of Japan in ranking though expected, the experience is important for further policy measures;
- Latin American countries, excepting Mexico, also poorly in our ranking. The findings are not surprising considering the unruly behaviour of the markets in this region;
- USA tops the list and other developed European markets performance is also noteworthy.

What makes the difference between fast and slow moving markets? Why the countries at the bottom of our ranking failing to improve their performance even in the post liberalization period? Our statistical analysis suggest –

- Inappropriate sequencing;
- Poor infrastructure such as inadequate rules and regulations, poor accounting standard, high level of corruption, inadequate property right, lack of transparency etc.;
- Inadequate openness of the economy;
- Slow growth of economic development, are the main reasons that can describe why poorly developed stock markets failing to improve its performance.

Based on the above findings we suggested some measures to improve its performance of the stock markets of sample countries that belong to different stages of economic development.

- Low-income countries with immature stock market should primarily focus on the basic requirements i.e. institutional development, infrastructure development, macroeconomic stability etc.;
- Middle-income countries where stock markets can be a potential force for economic development should focus on efficiency factor such as, technological readiness, improving skill and education of participants, enhancing institutional efficiency etc.;
- For high-income countries with developed markets we suggest the following steps- increase business sophistication, emphasize on innovation etc.

But the issue remains open – how society can be benefited from a well-functioning asset markets? All the above discussions will appear as worthless if financial development cannot influence growth adequately.

Therefore, we emphasize on the issue: Is there any relationship between finance and growth? If yes, Is it bank- or market-based financial system that can better satisfy the need of the society? Is there any best financial structure that can be followed across countries?

To answer above questions we tried Granger type causality to assess the causal relationship among the variables of our interest.

In fact, there are two groups of economists whose opinion vary widely. While some attempts to prove desperately (i) finance leads to economic growth, while others disapprove the theory and suggests (ii) economic growth precedes finance.

Our findings offer a mixed baggage of experiences that is consistent with our assumption that finance-growth relationship varies across countries and it may change over time.

- At least for six countries causality runs from finance to growth, the findings that supports Neo-classical theorists;
- In all these six countries both market and bank combined contributions in economic growth. It confirms our assumption that this two channels offer different bunch of services and jointly their efficient functioning can help society to develop;
- At least for nine countries, causality runs from growth to finance. Out of nine countries, five are Asian countries and they belong to different stages of economic development;
- Besides these two broad groupings for few countries such as Hong Kong, USA, South Africa bi-directional causality is apparent.
- Ignoring direction of causality, it appears institutional finance influences or is influenced by economic growth more prominently than that of asset markets. This finding is specifically relevant for Asian economy.

Why should we bother about deepening and widening of financial system? Should we ignore Neo-classical doctrine and embark upon the proposition if economy grows finance will automatically follow? Our study fails to offer any definite answer of the above questions. If anything is sure it is that we know little about finance-growth linkage.

At the bottom, we like to emphasis that lack of sufficient information for many developing economy very often deter us to undertake more sophisticated economic analysis to answer our research questions. We believe country-specific study of the financial system may help researchers more objectively to understand reality and to prescribe policy accordingly.

However, this is beyond our scope of the study but we welcome ant such attempt that we believe will contribute further in our understanding about finance growth relationship.

In addition, there is no denying the fact that economic growth of a country does not only depend upon stock markets and/or banking sector. The government securities markets, derivatives markets, private debt markets, venture capital, and new issue markets along with legal and institutional factors are also important for invigorating the economic development of a country. However, a comprehensive study of this nature escaped attention of serious researchers.

Select Bibliography

A. Books

Allen, F. and D. Gale (2000): "Comparing Financial Systems", Cambridge, MA: MIT Press.

Bagehot, Walter (1873): "Lombard Street, A Description of the Money Market", Homewood, IL: Richard D. Irwin, (1962 Edition).

Bentley, P (ed.) (1986): "World Guide to exchange control regulations." Wolfeboro, N.H, Longwood.

Dyck, A. and L. Zingales (2002): "The Corporate Governance Role of the Media", in The Right to Tell: The Role of Mass Media in Economic Development, Ed: R. Islam, Washington, DC: World Bank, pp. 107-140.

Edwards, Jeremy and Fischer, Klaus (1994): "Banks, Finance and Investment in Germany". Cambridge and New York: Cambridge University Press (for the Centre for Economic Policy Research).

Goldsmith, Raymond, W. (1969): "Financial Structure and Development", New Haven and London: Yale University Press.

Gujarati, D.N. (2003): "Basic Econometrics". 4th ed., McGraw-Hill, New York.

Hellmann, T., K. Murdock, and Joseph E. Stiglitz (1996): "Deposit Mobilization through Financial Restraint', in N. Hermes and R. Lensink (eds), Financial Development and Economic Growth: Theory and Experiences from Developing Countries. London: Routledge, pp. 219-46.

Hellmann, T., K. Murdock, and Joseph E. Stiglitz (1997): "Financial Restraint: Toward a New Paradigm", in M. Aoki, H.-K. Kim and M. Okuno-Fujiwara (eds), The Role of Government in East Asian Economic Development: Comparative Institutional Analysis. Oxford: Clarendon Press, pp. 163-207.

Hicks, John Richard (1969): "A Theory of Economic History", Oxford University Press.

Johansen, Soren (1995): "Likelihood Based Inference in Cointegrated Vector Autoregressive models", Oxford University press, Oxford.

Kyle, A. S. (1984): "Market Structure, Information, Futures Markets, and Price Formation", In: International Agricultural Trade: Advanced Readings in Price Formation, Market 102 Structure, and Price Instability, Eds: G. G. Storey, A. Schmitz and A. H. Sarris, Boulder, CO: Westview.

Joshi, V and I.M.D Little (1996): India's Economic Reforms 1991-2001. Oxford, Clarendon Press.

Levine, Ross (2005): "Finance and growth: Theory and evidence", in: Aghion, P., Durlauf, S. (eds.), Handbook of Economic Growth. Elsevier Science, The Netherlands.

Lombardo, D. and Pagano, M. (2006): "Legal determinants of the return on equity", in: Oxelheim L.,Corporate and Institutional Transparency for Economic Growth in Europe, Elsevier, Oxford.

Machiraju, H.R (2000): " The Working of Stock Exchanges in India", (2nd edition), New Age International (P) Limited Publishers, New Delhi.

McKinnon, Ronald I (1973): "Money and capital in economic development". Washington, D.C. Brookings Institution.

McKinnon, Ronald I (1989): "Financial Liberalisation in Retrospect: Interest Rate Policies in LDCs: In the State of Development Economics," New York: Blackwell.

McKinnon, Ronald I (1991): "The Order of Economic Liberalization" Johns Hopkins University Press.

Park Keith K. H and Van Agtmael, Antoine W (1993): "The World's Emerging Stock Markets: Structure, Development, Regulations and Opportunities" (eds.), Chicago Press.

Perkins, J.N.O (1989): "The Deregulation of the Australian Financial System: The Experience of the 1980s", Melbourne University Press.

Robinson, Joan. (1952): "The generalization of the general theory". In: the Rate of Interest and Other Essays. Macmillan, London.

Schneider, Benu (2000): "Issues in Capital Account Convertibility in Developing Countries", Prepared for Overseas Development Institute (ODI) Conference on 'Capital Account Liberalisation: The Developing Country Perspective' ODI, London, June.

Schumpeter, Joseph. A. (1912): "The Theory of Economic Development", Cambridge, MA: Harvard University Press, 1934.

Shaw, Edward S (1973): Financial Deepening in Economic Development. New York: Oxford University Press.

Stiglitz, Joseph, E (2002): "Globalization and Its Discontents". W.W. Norton.

Verspoor, Adriaan (1995a): "Economic Developments in India: Achievements and Challenges: A World Bank Country Study". The World Bank. Washington DC.

Verspoor, Adriaan (1995b): "India: Recent Economic Developments and Prospects", The World Bank, 1995.

Wachtel, Paul and Rousseau, Peter (1995): "Financial Intermediation and Economic Growth: A Historical Comparison of the United States, United Kingdom, and Canada", In Anglo-American Financial Systems: Institutions and Markets in the Twentieth Century, edited by Michael D. Bordo and Richard Sylla, pp.329-81.

B. Conference/ Mimeo/ Research /Report/Working Papers etc.

Ahluwalia, Isher J. (1996): "India's Opening Up to Trade and Investment, in Policy Reform in India", Development Center Seminars, Development Center, OECD, Paris France.

Bajpai, Nirupam and Jeffrey Sachs (1996): "India's Economic Reforms: The Steps Ahead. Development", Discussion papers no. 532. Harvard Institute for International Development, Havard University.

Bakker, Age and Bryan Chapple (2002): "Advanced Countries Experiences with Capital Account Liberalisation", IMF Occasional Paper No. 214, IMF, Washington D.C.

Beck, Thorsten and Ross Levine (2002): "Stock Markets, Banks and Growth: Panel Evidence", World Bank mimeo, Washington, D.C.: World Bank. Downloaded.

Black, S. W. and M. Moersch (1998): "Financial Structure, Investment and Economic Growth in OECD Countries", In: Competition and Convergence in Financial Markets: The German and Anglo-American Models, Eds: S.W. Black and M. Moersch, New York: North – Holland Press: pp.157-174.

Bonfiglioli, A. (2005): "How Does Financial Liberalization Affect Economic Growth?" Seminar Paper No. 736. Stockholm: Institute for International Economic Studies, Stockholm University.

Capasso, Salvatore (2006): "Stock Market Development and Economic Growth", UNU- WIDER Research Paper No. 2006/102.

Caprio, G. Laeven, L., Levine, R. (2003): "Governance and bank valuation". University of Minnesota, mimeo.

Copelman, Martina (2000): "Financial Structure and Economic Activity in Mexico." Presented at the conference "Financial Structures and Economic Development" World Bank Feb 10-11, 2000.

Cowitt Philip P (1991): "World Currency Yearbook, 1988-89", New York, Currency Data and Intelligence Inc.

Cowitt Philip P (edited) (1985): "World Currency Yearbook, 1984", New York, Currency Data and Intelligence Inc.

Cowitt Philip P Edwards Carolyn A and Boyce Elliot R (1996): "World Currency Yearbook, 1990-93", (edited), New York, Currency Data and Intelligence Inc.

Demirgüç-Kunt, Asli (1994): "Developing Country Capital Structure and Emerging Stock Markets," Policy Research Working Paper, WPS 933, July.

Demirgüç-Kunt, Asli (2006): "Finance and Economic Development: Policy Choices for Developing Countries", World Bank Policy Research Working Paper No. 3955, June.

Demirguc-Kunt, Asli and Levine, Ross (1995): "Stock Market Development and Financial Intermediaries: Stylized Facts", The World Bank Policy Research Working Paper No. 1462, World Bank.

Demirguc-Kunt, Asli and Levine, Ross (2005): "Bank-Based and Market-Based Financial Systems: Cross-Country Comparisons", World Bank, mimeo.

Eleswarapu, Venkat R. and Kumar Venkataraman (2003): "The Impact of Legal and Political Institutions on Equity Trading Costs: A Cross-Country Analysis", May, Working Paper, Downloaded.

Fisman, R.J. and Love, I. (2003): "Financial Development and Growth Revisited", National Bureau of Economic Research Paper No. 9582.

Frost, Carol, E. Gordon, and A. Hayes (2002): "Stock Exchange Disclosure and Market Liquidity: An Analysis of 50 International Exchanges", Working paper. Downloaded.

Gonzalez-Anaya, José Antonio and Grecia M. Marrufo (2001): "Financial Market Performance in Mexico", Stanford University Center for Research on Economic Development and Policy Reform Prepared for the Mexican Credit Conference October 5-6.

Hasan, Iftekhar, Wachtel,Paul. and Zhou, Mingming. (2006): "Institutional development, financial deepening and economic growth: Evidence from China", BOFIT Discussion Papers No.12, Bank of Finland, BOFIT, Institute for Economies in Transition.

IMF (2000): "Capital Controls: Country Experiences with their use and Liberalization", IMF Occasional Paper 190, IMF, Washington, D.C.

IMF Country Reports, downloaded from the official website of the IMF.

International Financial Corporation (1996b): "The IFC Indexes – Methodology, Definitions and Practices", May, Washington, D.C, World Bank.

Jain, P. (2002): "Institutional design and liquidity at stock exchanges around the world," Working paper, Indiana University.

Kaminsky, G. and S. L. Schmukler (2001): "On Booms and Crashes: Financial Liberalization and Stock Market Cycles", Discussion Paper (World Bank).

Kaminsky, G. and Schmukler, S (2001): "On Financial Booms and Crashes: Regional Patterns, Time Patterns, and Financial Liberalization", Policy Research Paper. World Bank.

Kapur, Basant K (2005): "Capital Flows and Exchange Rate Volatility: Singapore's Experience", Department of Economics, National University of Singapore.

Khan, M. S. and A. S. Senhadji (2000): "Financial Development and Economic Growth: An Overview", IMF Working Paper WP/00/209.

Levine, Ross (1999): "Napoleon, Bourses, and Growth: With a Focus on Latin America", Center For Institutional Reform and the Informal Sector Working Paper No.229

Manning, Mark J (2003): "Finance causes growth: can we be so sure?" Contributions to Macroeconomics3. ttp://www.bepress.com/bejm/contributions/vol3/iss1/art12

McKinsey & Company (2005): "$118 Trillion and Counting: Taking Stock of the World's Capital Markets", McKinsey Global Institute, February.

Miwa, Yoshiro and J. Mark Ramseyer (2000): "Banks and Economic Growth: Implications From Japanese History", Harvard Law School Discussion Paper No. 289, August.

Pagano, M. and Volpin, P. (2005): "Shareholder protection, stock market development, and politics". ECGI - Finance working paper No. 105.

Prasad, Eswar, Rogoff, Kenneth. Wei, Shang-Jin. And Kose, M. Ayhan (2004): "Financial Globalization, Growth and Volatility in Developing Countries", NBER Working Paper Series, No.10942.

Roy Mohua, Rekha Misra and Sangita Misra (2006): "A Review of Cross-Country Experience in Capital Account Liberalisation", RBI Occasional Papers, Vol. 27, No. 1 and 2, Summer and Monsoon, pp. 1-71.

Stiglitz, Joseph, E (1994): "The Role of the state in financial markets", in M. Bruno and B. Pleskovic (eds), Proceedings of the World Bank Annual Conference on Development Economics 1993; Supplement to the World Bank Economic Review and the World bank Research Observer, Washington, DC.

Stock Exchanges Official websites of the sample countries.

Torre, Augusto de la, Juan Carlos Gozzi and Sergio L. Schmukler (2007): "Stock Market Development under Globalization: Whither the Gains from Reforms?", World Bank Policy Research Working Paper 4184, April.

Ueda Kenichi (2006): "Banks as Coordinators of Economic Growth", IMF Working Paper no. 06/264, November.

VanNieuwerburgh, Stijn (1998): "The Relationship Between Financial Intermediation and Economic Growth in Developing Countries", Master's thesis, University of Gent May.

World Bank (2002): "Voices of the Firms 2000: Investment Climate and Governance Findings of the World Business Environment Survey (WBES)". World Bank, Washington D.C.

C. Articles

Adjasi,Charles K.D. and Nicholas B. Biekpe (2006): "Stock Market Development and Economic Growth: The Case of Selected African Countries", African Development Bank. Blackwell Publishing Ltd.

Arestis, P, Demetriades, P.O. and Luintel, K. B. (2001): "Financial development and economic growth: the role of stock markets". Journal of Money, Credit and Banking 33: pp. 16–41.

Arrow, Kenneth J., and Gerard Debreu, (1954): "Existence of an Equilibrium for a Competitive Economy," Econometrica, Vol. 22, No. 3 (July), pp. 265–290.

Atje, Raymond, and Boyan Jovanovic. (1993): "Stock Markets and Development." European Economic Review, 37(273, April): pp. 632—40.

Barro, Robert J. (1991): "Economic Growth in a Cross Section of Countries," The Quarterly Journal of Economics, 106 (2), May, pp. 407- 443.

Bekaert Greet (1995): "Market Integration and Investment barriers in emerging equity markets", World Bank Economic Review, vol.9, January, pp.75-107.

Bekaert, Geert and Harvey, Campbell R. (1995): "Time-varying world market integration", Journal of Finance, Vol. 50, pp.403–444.

Bekaert, Geert and Harvey, Campbell R. (2000): "Foreign Speculators and Emerging Equity Markets", Journal of Finance, Vol. 55 (2), pp. 565-613.

Bekaert, G. Harvey, Campbell R. and Lundblad, Christian T. (2001): "Emerging Equity Markets and Economic Development." Journal of Development Economics, December, 66(2), pp. 465-504.

Bekaert, G, Harvey, Campbell R. and Lumsdaine, Robin, L (2002a): "Dating the Integration of World Equity Markets." Journal of Financial Economics, August, 65(2), pp. 203-247.

Bekaert, G, Harvey, Campbell R. and Lumsdaine, Robin, L (2002b): "The Dynamics of Emerging Market Flows." Journal of International Money and Finance, June, 21(3), pp. 295-350.

Bekaert, G. Harvey, Campbell R. and Lundblad, Christian T. (2002): "Does Financial Liberalization Spur Growth?" Working paper, Duke University. (2005) Journal of Financial Economics, 77 (1), pp. 3-55.

Bekaert, Geert, Harvey, Campbell R and Christian T. Lundblad (2003): "Equity Market Liberalization in Emerging Markets." Journal of Financial Research, 26 (Fall), pp. 275-99.

Bencivenga, V. R. and B. D. Smith (1991): "Financial Intermediation and Endogenous Growth", Review of Economics Studies, 58: pp. 195-209.

Bencivenga, V. R., B. D. Smith and R. M. Starr (1995): "Transactions Costs, Technological Choice, and Endogenous Growth", Journal of Economic Theory, 67, pp. 53-177.

Bhagwati, Jagdish (1998): "The Capital Myth", Foreign Affairs, 77 (3), May-June, pp.7–12.

Bhattacharya, Utpal and Hazem Daouk (2002): "The world price of insider trading", Journal of Finance, 57, pp. 75-108.

Bhide, Amar (1993): "The Hidden Costs of Stock Market Liquidity," Journal of Financial Intermediation, August, 34(1), pp. 1-51.

Biswas, Joydeep (2005): "Foreign Portfolio Investments and Stock Market Behaviour in Liberalised Economy: An Indian Experience." Asian Economic Review, Vol. 47, No. 2, August, pp. 221-232.

Boot, Arnoud W.A.; Greenbaum, Stuart J.; Thakor, Anjan V (1993): "Reputation and Discretion in Financial Contracting," American Economic Review, 83, pp.1165-83.

Boot, A. W. A. (2000): "Relationship Banking: What Do We Know?", Journal of Financial Intermediation, 9 (1): pp. 7-25.

Box, G. and D.A. Pierce (1970): "Distribution of Residual Autocorrelation in Autoregressive Integrated Moving Average time Series Models", Journal of American Statistical Association, 65, pp. 1509-26.

Boyd, J. H. and E. C. Prescott (1986): "Financial Intermediary-Coalitions", Journal of Economics Theory, 38: pp. 211-232.

Buckberg, Elaine (1995): "Emerging Stock Markets and International Asset Pricing", World Bank Economic Review, vol.9, January, pp. 51-74.

Caporale, Guglielmo Maria, Peter G. A Howells, and Alaa M. Soliman (2004): "Stock Market Development And Economic Growth: The Causal Linkage", Journal Of Economic Development 33 Volume 29, Number 1, June, pp.33-50.

Caporale, Guglielmo Maria. Howells, Peter G. A and Soliman, Alaa M. (2005): "Endogenous Growth Models and Stock Market Development: Evidence from Four Countries", Review of Development Economics, 9(2), pp.166–176.

Cho, Yoon Je (1986): "Inefficiencies from Financial Liberalization in the Absence of Well-Functioning Equity Markets", Journal of Money, Credit and Banking, 18 (2), May, pp. 191-199.

Claessens, S. Demirguc-Kunt, A. and Huizinga, H. (2001): "How Does Foreign Entry Affect Domestic Banking Markets?" Journal of Banking and Finance. 25, pp. 891- 911.

Claessens, S. Djankov, Fan J. Lang, L. (2002): "Expropriation of minority shareholders in East Asia". Journal of Finance, 57.

Clemente, Lilia (1994): "Investing in Asia's Emerging Markets", The Columbia Journal of World Business, Summer. pp. 93-111.

Da Rin, Marco, and Thomas Hellmann, (2002): "Banks as Catalysts for Industrialization," Journal of Financial Intermediation, Vol. 11 (October), pp. 366–397.

Davies, Andrew (2006): "Testing for international equity market integration using regime switching cointegration techniques", Review of Financial Economics, Vol. 15, Issue 4, pp. 305-321.

Demetriades, P. and Hussein,K. (1996): "Does Financial Development Cause Economic Growth? Time Series Evidence from 16 Countries", Journal of Development Economics, Vol.51: pp. 387-411.

Demirguc-Kunt, Asli and Levine, Ross (1996): "Stock Market Development and Financial Intermediaries: Stylized Facts." The World Bank Economic Review, 10 (2), pp. 241-65.

Demirgüç-Kunt, Asli and V. Maksimovic (1996): "Stock Market Development and Firm Financing Choices." World Bank Economic Review, 10: pp. 341-370.

Demirgüç-Kunt, Asli and V. Maksimovic (1998): "Law, Finance, and Firm Growth", Journal of Finance, 53: pp. 2107-2137.

Devereux, M. B., and G. W. Smith (1994): "International Risk Sharing and Economic Growth", International Economic Review, 35: pp. 535-550.

Dey, Malay (2005): "Turnover and Return in Global Stock Markets", Emerging Markets Review, 6, pp. 45-76.

Diamond, D. W. (1984): "Financial Intermediation and Delegated Monitoring", Review of Economic Studies, 57, pp.393-414.

Diamond, Douglas W. and Philip H. Dybvig, (1983): "Bank Runs, Deposit Insurance, and Liquidity," Journal of Political Economy, Vol. 91, No. 3 (June), pp. 401–419.

--------- and Raghuram Rajan (2001): "Liquidity Risk, Liquidity Creation, and Financial Fragility: A Theory of Banking", Journal of Political Economy, 109: pp. 289-327.

Diamond, D. W. and R. E. Verrecchia (1982): "Optimal Managerial Contracts and Equilibrium Security Prices", Journal of Finance, 37: pp. 275-287.

Dickey, D.A. and Fuller, W.A. (1979): "Distribution of the estimators for autoregressive time series with a unit root", Journal of the American Statistical Association, pp.74, 427–431.

Dritsaki, Chaido and Melina Dritsaki-Bargiota (2005): "The Causal Relationship between Stock, Credit Market and Economic Development: An Empirical Evidence for Greece", Economic Change and Restructuring, 38, pp. 113–127.

Edirisuriya, Piyadasa (2003): "Financial Sector Reforms, Regulatory Structure and Banks: Australian and Japanese Experience", Downloaded.

El-Wassel,K.A.(2005): "Understanding the Growth in Emerging Markets", Journal of Emerging Markets, 4:3.

Engle, R. F. and C. W. J. Granger (1987): "Cointegration and Error Correction: Representation, Estimation and Testing", Econometrica, Vol. 55, No. 2, pp. 251–76.

Federer, P. (1993): "The Impact of Uncertainty on Aggregate Investment Spending", Journal of Money, Credit and Banking, 25(1), pp. 30-45.

Figlewiski, Stephen (1982): "Information Diversity and Market Behavior." Journal of Finance, Vol. 37, No. 1, March, pp. 87-102.

Filer, Randall K, Jan Hanousek, Nauro F. Campos (2000): "Do Stock Markets Promote Economic Growth?" December, Downloaded.

Fong, Wai Mun and Seng Kee Koh (2002): "The Political Economy of Volatility Dynamics in the Hong Kong Stock Market", Asia-Pacific Financial Markets, Vol.9, pp. 259–282

Forbes, K. and Rigobon, R. (2002): "No Contagion, only Interdependence: Measuring Stock Market Co-movement", Journal of Finance, Vol. 57, pp.2223-2261.

Grabel, Ilene (1995): "Speculation-Led Economic Development: A Post-Keynesian Interpretation of Financial Liberalization Programs", International Review of Applied Economics, 9(2), pp. 127-149.

Grabel, Ilene (1999): "Assessing the Impact of Financial Liberalisation on Stock Market Volatility in Selected Developing Countries". The Journal of Development Studies. 31 (6), August, pp. 903-917.

Granger, C.W.J. (1969): "Investigating Causal Relations by Econometric Models and Cross Spectral Methods", Econometrica, July, pp. 424-38.

Granger, C.W.J. (1986): "Developments in the study of cointegrated economic variables", Oxford Bulletin of Economics and Statistics, 48, pp.213–228.

Greenwood, J. and Smith, B. D. (1997): "Financial markets in development, and the development in financial markets". Journal of Dynamics and Control, 21, pp. 145–181.

Grossman, S. J. and Joseph E. Stiglitz (1980): "On the Impossibility of Informationally Efficient Markets", American Economic Review, 70: pp. 393-408.

Gurley, J. G. and Shaw, E. S. (1955): "Financial Aspects of Economic Development", American Economic Review, 45: pp. 515-538.

Gursoy, Cudi Tuncer and Muslumov Alovsat (2004): "Stock Markets and Economic Growth: A Causality Test". Downloaded.

Hellmann, T., K. Murdock, and Joseph E. Stiglitz (2000): "Liberalization, Moral Hazard in Banking and Prudential Regulation: Are Capital Requirements Enough?". American Economic Review, 90 (1), pp.147-65.

Henry, Peter Blair (2000a): "Stock Market Liberalization, Economic Reform, and Emerging Market Equity Prices", Journal of Finance, April, 55(2), pp. 529-64.

Henry, Peter Blair (2000b): "Do Stock Market Liberalizations Cause Investment Booms?" Journal of Financial Economics, October/November, 58(1-2), pp. 301-34.

Hermes, N. and R. Lensink (1998): "Banking Reform and the Financing of Firm Investment: An Empirical Analysis of the Chilean Experience, 1983-92". Journal of Development Studies, 34, pp. 27-43.

Hirshleifer, David (2001): "Investor Psychology and Asset Pricing", The Journal of Finance, Vol. LVI, No. 4, August, pp.1533-97.

Holmstrom, B. and J. Tirole (1993): "Market Liquidity and Performance Monitoring." Journal of Political Economy, 101(4, August), pp. 678-709.

Hoshi, T., A. Kashyap and D. Sharfstein (1991): "Corporate Structure, Liquidity, and Investment: Evidence from Japanese Panel Data", Quarterly Journal of Economics, 27: pp. 33-60.

Holmstrom, Bengt and Jean Tirole (1993): "Market Liquidity and Performance Monitoring." Journal of Political Economy, 101(4, August), pp. 678-709.

Honda, E (2003): "Financial Deregulation in Japan", Japan and the World Economy, Vol. 15, pp. 135-140

Husain, Fazal (2000): "Financial Sector Reform in Pakistan", Downloaded.

Husain, Fazal and Abdul Qayyum (2005): "Stock Market Liberalizations: The South Asian Experience", March. Downloaded.

Jensen, M. and K. Murphy (1990): "Performance Pay and Top Management Incentives", Journal of Political Economy, 98:pp. 225-263.

Johansen, Soren (1991): "Estimation and Hypothesis Testing of Cointegrating Vectors in Gaussian Vector Autoregressive Models". Econometrica 59 (November), pp. 1551-80.

King, Robert, G. and Ross Levine (1993a): "Finance and growth: Schumpeter might be right", Quarterly Journal of Economics 108, pp. 717–737.

King, Robert, G. and Ross Levine (1993b): "Finance, entrepreneurship, and growth: theory and evidence". Journal of Monetary Economics, 32, pp. 513-42.

Ito, Hiro (2005): "Financial Development and Financial Liberalization in Asia: Thresholds, Institutions and the Sequence of Liberalization". Downloaded.

Jaramillo, F., F. Schiantarelli, and A. Weiss (1996): "Capital Market Imperfections Before and After Financial Liberalization: An Euler Equation Approach to Panel Data for Ecuadorian Firms'. Journal of Development Economics, 51, pp. 367-86.

Jung, W. S (1986): "Financial development and economic growth: International evidence". Economic Development and Cultural Change, Vol. 34, pp. 333-346.

Kaminsky, G. and Reinhart, C (2002): "Financial Markets in Times of Stress" Journal of Development Economics 69, pp. 451-470.

Kim E. Han (1998): "Globalization of Capital Markets and the Asian Financial Crisis" Journal of Applied Corporate Finance, Vol. 11, No. 3, Fall, pp. 30-39.

Kim Han E. and Vijay Singal (2000): "Stock markets openings: Experience of Emerging Economies", The Journal of Business, Vol. 73, No.1 January, pp.25-66.

King, Robert. G. and Ross Levine (1993b): "Finance, Entrepreneurship, and Growth: Theory and Evidence", Journal of Monetary Economics, 32: pp. 513-542.

Korajczyk, Robert, A (1996): "A Measure of Stock Market Integration for Developed and Emerging Markets." The World Bank Economic Review, 10(2), pp. 267-89.

Kurtzman, Joel. Yago, Glenn and Phumiwasana, Triphon. (2004): "The Global Costs of Opacity" MIT Sloan Management Review, October.

Kyle, Albert S and Xiong, Wei (2001): "Contagion as a Wealth Effect", The Journal of Finance, Volume 56, Number 4, August, pp. 1401-1440.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R.W. (1997): "Legal determinants of external finance". Journal of Finance, 52, pp. 1131-1150.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R.W. (1998): "Law and finance". Journal of Political Economy, 106, pp. 1113-1155.

La Porta, Rafael. Lopez-de-Silanes, Florencio. Shleifer, Andrei.and Vishny, Robert W. (1998): "Law and Finance", The Journal of Political Economy, Vol. 106, No. 6. (December), pp. 1113-1155.

Laffont, Jean-Jacques, and Jean Tirole (1988): "Repeated Auctions of Incentive Contracts, Investment, and Bidding Parity with an Application to Takeovers." RAND Journal of Economics, 19, (Winter), pp. 516-37.

Leuz, C., Nanda, D., and Wysocki, P.D., (2003): "Investor protection and earnings management: An international comparison." Journal of Financial Economics, 69, pp. 505-527.

Levine, Ross (1991): "Stock Markets, Growth, and Tax Policy." Journal of Finance, 46(4, September), pp. 1445-65.

Levine, Ross (1997): "Financial development and economic growth: views and agenda", Journal of Economic Literature, 35, pp. 688-726.

Levine, Ross (2002): "Bank-Based or Market-Based Financial Systems: Which is Better?" Journal of Financial Intermediation, 11, pp. 398–428.

Levine, Ross and Sara Zervos (1993): "What we have Learned about Policy and Growth from Cross-country Regressions?" American Economic Review, Vol. 83, pp. 426-430.

Levine, Ross and Sara Zervos (1996): "Stock market development and long-run growth", World Bank Economic Review, 10 (2), pp. 223-39.

Levine, Ross and Sara Zervos (1998): "Stock markets, Banks and Economic growth". American Economic Review, 88, pp.537-58.

Ljung, G.M. and Box, G.E.P (1978): "On a measure of lack of fit in time-series models", Biometrika, 65, pp. 297-303.

Luintel, Kul and Mosahid Khan (1999): "A Quantitative Reassessment of the Finance-Growth Nexus: Evidence form a Multivariate VAR.", Journal of Development Economics. 60: pp. 381-405.

Lucas, Robert E., Jr. (1988): "On the mechanics of economic development". Journal of Monetary Economics, 22, pp. 3-42.

Morck, R. and M. Nakamura (1999): "Banks and Corporate Control in Japan", Journal of Finance, 54, pp. 319-40.

Naughton, Tony (2000): "The Role of Stock Markets in the Asia-Pacific Region", Asian-Pacific Economic Literature, pp. 22-34. Downloaded.

Obstfeld, Maurice (1994): "Risk-Taking, Global Diversification, and Growth." American Economic Review, 84 (5), December, pp. 1310-29.

Pagano M. (1993): "Financial markets and growth: An overview", European Economic Review, 37, pp. 613-622.

Park, Won-am Fal. (2001): "Was Korea's Financial Crisis Self-fulfilling?" The Journal of Korean Economy, Vol. 1, pp. 301-323.

Pethe, A. and A. Karnik, (2000): "Do Indian Stock Market Matter?", Economic and Political Weekly, January 29.

Rajan, Raghuram G. and Zingales, Luigi. (1998): "Financial Dependence and Growth." American Economic Review, June, 88(3), pp. 559-86.

Ram, R. (1999): "Financial Development and Economic Growth: Additional Evidence". Journal of Development Studies, 35(4), pp. 164-74.

Ray, Hirak (2007): "Macro-economic variables and Stock market Behaviour: An Indian Experience", Artha Vijnana, A Journal of Gokhale Institute of Politics and Economics, Pune, India (forthcoming).

Reid W. Click, and Plummer, Michael G. (2005): "Stock market integration in ASEAN after the Asian financial crisis", Journal of Asian Economies, Volume 16, Issue 1, February 2005, pp. 5-28.

Rodrik, Dani (1998): "Who Needs Capital Account Convertibility?" Princeton Essays in International Finance, 207: pp. 55–65.

Rousseau, P.L. and Sylla, R. (2005): "Emerging Financial Markets and Early US Growth", Explorations in Economic History, 42, pp. 1–26.

Rousseau, Peter L., and Paul Wachtel (1998): "Financial intermediation and economic performance: historical evidence from five industrialized countries". Journal of Money, Credit and Banking, 30, pp. 657-78.

Rousseau, Peter L., and Paul Wachtel (2000): "Equity Markets and Growth: Cross-Country Evidence on Timing and Outcomes, 1980-1995." Journal of Banking and Finance, December, 24(12), pp. 1933-57.

Roy, Malay Kanti (2001): "Stock Market in a Liberalised Economy: Indian Experiences". Economic and Political Weekly. Vol. 36, No. 4, January. pp. 367-376.

Saint-Paul, G. (1992): "Technological Choice, Financial Markets and Economic Development". European Economic Review, 36 (4), pp.763-81.

Samal Kishor, C (1997): "Emerging Equity Markets In India: Role of FIIs" Economic and Political Weekly. Oct. 18. Vol. 32, No 42.

Scharfstein, D. (1988): "The Disciplinary Role of Takeovers", Review of Economic Studies, 55, pp. 185-199.

Schenk, Catherine R (2004): "Regulatory reform in an emerging stock market: the case of Hong Kong", Financial History Review 11.2 (2004), pp. 139–63.

Shleifer, Andrei, and Robert W. Vishny. (1986): "Large Shareholders and Corporate Control." Journal of Political Economy, 94, pp. 461-88.

Singh, Ajit (1997): "Financial Liberalisation, Stock Markets and Economic Development", Economic Journal, May, pp. 771-82.

Singh, Ajit and B. A. Weiss (1998): "Emerging Stock Markets, Portfolio Capital Flows and Long-Term Economic Growth: Micro and Macroeconomic Perspectives", World Development, Vol. 26, No. 4 (April), pp. 607–22.

Spears, Annie. (1991): "Financial Development and Economic Growth - Causality Tests," Atlantic Economic Journal, 19 (3), September, pp. 66-75.

Stiglitz, Joseph, E (1985): "Credit Markets and Control of Capital", Journal of Money, Credit and Banking, 17, pp. 133-52.

Stiglitz, Joseph, E (2000): "Capital Market Liberalization, Economic Growth, and Instability". World Development, 28 (6): pp.1076-85.

Stiglitz, Joseph, E and Weiss, A. (1981): "Credit Rationing in Markets with Imperfect Information", American Economic Review, 71(3), pp. 393-410.

Thornton, John (1996): "Financial Deepening and Economic Growth in Developing countries", Applied Economic Letters, 3(4), pp.243-46.

Uchida, H., and Tsutsui, Y (2005): "Has competition in the Japanese banking sector improved?", Journal of Banking & Finance, Vol. 29, pp. 419–439.

Wachtel, Paul and Rousseau, Peter L (1995): "Financial Intermediation and Economic Performance: Historical Evidence from Five Industrial Countries," Journal of Money, Credit, and Banking, November, 30(4), pp. 657-78.

Wachtel Paul (2003): "How much do we really know about growth and finance?", FRBA Economic Review, Vol.88: pp. 33-48.

Wei, Shang-Jin (2000): "Local Corruption and Global Capital Flows", Brooking Paper on Economic Activity, No. 2.

Weinstein, David E and Yishay Yafeh (1998): "On the costs of a Bank-centered Financial System:Evidence from the changing Main Bank Relations in Japan", Journal of Finance,53 (2), pp. 635-72.

Yang, Doo-Yang (2002): "Economic reform in post crisis Korea", The Journal of East Asian Affairs. The Research Institute for International Affairs, 16: pp.255-281.

Yoon, Seok (2005): "Comparative Analysis of Economic Policies for Korea and Malaysia after the Financial Crisis", American Journal of Applied Sciences, Vol. 2 (9): pp.1315-1320.

Zhang, X (2003): "How Does Globalisation Affect Regional Inequality within A Developing Country? Evidence from China", The Journal of Development Studies, April, 39(4), pp.

Zhu, A., Michael Ash, and R. Pollin (2004): "Stock Market Liquidity and Economic Growth: A Critical Appraisal of the Levine/Zervos Model, International Review of Applied Economics, 18, pp. 63-71.

****