FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH IN INDIA: AN ANALYSIS

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Dissertation submitted in partial fulfillment of the requirements for the degree of Master of Philosophy in Applied Economics of the Jawaharlal Nehru University.

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M.Phil Programme in Applied Economics

2004-2006

CENTRE FOR DEVELOPMENT STUDIES
June, 2006

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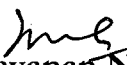
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ACKNOWLEDGEMENT

ABSTRACT OF THE DISSERTATION

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The relation between financial development and economic growth has been exhaustively debated over a long period of time. Much of the earlier studies in the field of finance and growth appear to have made use of bank based measures of financial development and it is only in the recent times that the prominence has been shifted to stock market based measures as well. In addition, the literatures gave emphasis on cross-country verifications and very little work is done with respect to country-specific cases. Given this limitation in the field of finance and growth, the present study attempts to take up the case of India to examine the significance of financial development at both macro and micro level. At the macro level, financial development is analyzed in terms of banking and stock market development indicators separately and jointly. That is, indicators representing banking and stock markets are first indexed separately (banking development index and stock market development index) and in combination (i.e. financial development index) through Principal Component technique. All possible combinations of the indicators of banks, stock markets and economic growth are attempted by utilizing Cointegrated Vector AutoRegression approach to find out the relationship that exists between financial development and economic growth. The results support the case of existence of a significant long-run association between financial development and economic growth. The micro level study advances on the sources of firms' financing (i.e. internal and external), given the overall financial development in India. Here, the analysis is done at three levels: first, at the firm level, secondly, at disaggregated level incorporating different industry groups and thirdly, linking financing patterns of firms with size component. The broad finding is that external financing of firms outpaces internal financing with some variations under different industry groups. It is also found that firms tend to go for external financing irrespective of their size with major dependence being on borrowings from banks and other financial institutions, while stock markets also assumes importance.

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CHAPTER - 1

INTRODUCTION

1.1 Introduction

Financial sector development is conducive to the process of economic growth in an economy. The significant relationship between financial development and economic growth is discussed very extensively in numerous literatures at both theoretical and empirical level. The term financial development refers to the well functioning financial institutions and markets, such as commercial and investment banks, and bonds and stock exchanges. Economic growth, on the other hand, is defined as the increase in the value of goods and services produced by an economy. It is conventionally measured as the percent rate of increase in real Gross Domestic Product, or GDP. The development of a country's financial superstructure, that is, of its commercial deposit and savings banks, insurance companies, development banks, stock and bond markets, credit cooperatives and other financial institutions are related to the growth of its flow of national income and of its stock of wealth. In other words, financial development stimulates, through the increase of intermediation, growth and structural change in the real economy. Financial system agglomerates capital from many small savers, allocates it to most important users and monitors to ensure that the capital is utilized well. Furthermore, financial system transfers, pools and reduces risk, increases liquidity, and also conveys information.

Financial systems are considered to be the central part of modern economics. The significance of financial system in the economy is to undertake financial intermediation. The basic task of financial intermediaries is to raise funds from the surplus units and pass them on to the deficit units[1] as loans. The functions that the financial system mainly performs[2] include (i) facilitation of trading, hedging, diversifying and pooling of risk, (ii) resource allocation, (iii) monitoring managers

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[1] Surplus units are those economic agents whose income is greater than their current expenditure, and Deficit units are those economic agents whose income is less than their current expenditure.

[2] In line with Levine (1997) paper.

and exerting corporate control, (iv) mobilization of savings, and finally (v) facilitation of goods and services exchange.

Specifically, the significant role attached to the financial system in fostering growth is in terms of uncertainty and risk. With the element of risk (i.e. with known probabilities), financial development helps to trade, hedge, diversify and pool risk. Another channel through which financial sector can make an impact on growth is via market frictions as well as the existence of imperfect or incomplete markets, which all create information costs. Financial development helps reduce such costs to individuals. It is the financial houses that can perform the gathering and processing of investment opportunities and funding better than individuals; however, these are institutional features which might differ from country to country and could also link up with the structure of corporate governance.

Contribution of financial development towards economic development gets reflected with both the availability of financial resources and the accessibility to these resources. Also, there are certain factors to be kept in mind regarding such interlinkages and the relative effectiveness of policy instruments for the design and implementation of efficient development finance mechanisms. The thrust of financial and economic policies should focus on creating conditions for productive utilization of capital flows (Schadler, 1994). The focus of the domestic economies recently relates to the provision for conditions that enable sustainable and substantial openness and financial liberalization, with the removal of regulatory instruments, including those of risk management. However, in these conditions, short-term capital flows can pose greater risks than rewards if these flows are not properly moderated (Stiglitz, 2000).

1.2 Historical Perspective on Financial Development

Walter Bagehot (1873) and John Hicks (1969) argued that financial system plays a critical role in igniting industrialization in England by facilitating the mobilization of capital for "immense works". Economists overstress the role of

financial factors in economic growth (Lucas 1988: 6) while there is also skepticism regarding the part played by financial systems by ignoring it (Chandavarkar 1992).

The financial development over a period of time is really an interesting phenomenon. Theory put forward by classical economists generally ignored finance as a factor explaining growth (for example Stern 1989; Meir & Seers 1984); rather growth was seen to be predominantly influence by real factors. A missing link that could be found in their framework is the lack of explanation on the transformation of savings into investment in the economy. Later on, while emphasizing the role of public policy in promoting economic growth, Keynesian school focused their attention on the objective of maintaining a short run stability of output around full employment level. In such an analysis, financial sector was accorded a subdued role so that it can generate interest rate effect to support the investment activity in the economy. The acceptance of the so called "money illusion" hypothesis in Keynesian literature led to the popularization of forced savings and low interest rate mechanism as a means to promote growth. This resulted in boosting up of institutionalization of financial repression[3] in a number of developing countries throughout 1950s and 1960s. Even the neo-classical growth theory lacked a strong foundation on finance and maintained that as long as savings continue, it takes the form of real investment. In general, this literature failed to recognize the importance of financial innovation as a major endogenous source of productivity growth in an economy. Apart from this dominant Post-Keynesian approach, a much more positive view of the growth of private financial intermediaries emerged, arguing that financial development was a neglected but integral and essential element in overall development (Gurley and Shaw 1955, 1960, 1967; Patrick 1966; Goldsmith 1969; McKinnon 1973; Shaw 1973). The significant role of financial intermediation is based on the incentive to save and credit availability, thereby allocating capital effectively from surplus to the deficit sectors. In tune with this, Shaw (1973) discussed the counter productivity of government intervention to assist financial development in terms of government's responsibility for financial repression in

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[3] Financial Repression refers to a variety of onerous administrative controls or taxation regimes that are thought to have impeded the development of efficient financial system.

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developing countries. Furthermore, a new impetus arising out of the endogenous growth literature aimed at providing a natural framework for integration of financial system into the theory of growth.

In relation to the importance of finance in growth process, a question that usually emerges is whether finance causes growth or whether their relative growths are coterminous. It was Schumpeter (1912) who first attempted at an inquiry into this kind of a relationship by asserting the importance of financial intermediary services to innovation and economic growth. Basic focus of this literature concerns itself with the problem of causal role that financial sector plays in economic development and also regarding the mere origination of financial intermediaries from rapid industrialization. The latter point of view dominated till mid-1960s, put forward also by Robinson (1952: 86) who declared, "where enterprise leads, finance follows".

The seminal work by Tobin (1965) analyzed the impact of finance on growth by focusing on monetary growth. He was of the view that an increase in the growth rate of money stock could increase real capital formation by reducing real interest rates and increasing the value of physical assets through inflation. Shaw (1973) and McKinnon (1973) worked in the same genre by incorporating the concept of inside money versus outside money and establishing how financial widening could have a favourable impact on growth.

1.3 Linkage between Financial Development and Economic Growth: A Bird's Eye View

Financial factors, such as capital flows and formation and efficient functioning of financial institutions, have been playing a significant role in economic growth and development for several decades. The impact of financial variables and factors on economic growth and the real capital stock (physical assets) of the economy have been of interest to the macroeconomist (Fry 1997). Rather than just being an intermediary, the financial system has a much greater role to engage in. In

an entrepreneurial economy, these financial systems give equal importance to the so-called functions of creating savings (through finance) and allocating savings (through funding). Finance creates the mean for commanding resources that will permit entrepreneurs to implement their production and investment decisions with funding followed by an incentive for both banks and wealth holders to hold securities and additionally reduces the financial fragility inherent in growing monetary economies.

Economic development contributes to the development of financial institutions and vice versa; the relative magnitudes of the feedback effects vary with economic system and time period. The cause and effect relationships in many countries were more pronounced in favour of a greater role for financial institutions: financial institutions led to economic growth[4]. The role of modern financial institutions includes the following: financial product innovation, capital productivity maximization and risk management, entrepreneurship for financial services and relevant product design, and dynamic evolution with changes in the institutions (Scholtens and van Wensveen, 2000).

The mainstream literature on finance and economic development owes much on the seminal works of Gurley and Shaw (1955; 1960). According to them, development is associated with debt issue at some points in the economic system and corresponding accretion of finance is accompanied by the institutionalization of savings and investment that diversifies the channel for flow of loanable funds and multiplies varieties of financial claims. Development also implies, as cause and effect, change in market prices of financial claims and in other terms of trading in loanable funds (Gurley and Shaw 1955: 515).

The question of association between financial development and economic growth has preoccupied the growth literature for quite some time. The main finding that has emerged on this question by early as well as recent studies is that there is indeed an association in the data both across countries and within countries

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[4] Shan et al (2001) provides a review of the related studies.

overtime, even though the relationship is neither linear nor very precise.[5] However, the most contentious issue was regarding the direction of causality that exists between financial and growth variables.

While examining the factors that could contribute to financial development, it is important to understand what would be the factors that lead to obstacles to financial development? To this end, one has to look into the pattern of financial repression and liberalization, government ownership of banks, legal factors and also the purported political constraints.

A few influential economists began to draw attention to the contribution of the financial structure to growth and the benefits of liberalization, in particular, Goldsmith (1969) and McKinnon (1973). Less Developed Countries (LDCs) are commonly found to have a thin or no organised financial markets (Goldsmith 1969, McKinnon 1973; World Bank 1989). The mainstream view is that this institutional underdevelopment is due to the long history of financial repression in developing countries (Fry 1989: 233). It is believed that financial liberalization could promote financial development which is alleged to increasing savings and therefore investment.

In the 1970s the discussions were concentrated on the phenomenon of financial repression, a policy conducted by many governments to generate growth and revenue through artificially low interest rates and inflationary monetary policies. Contrary to financial repression policies, McKinnon (1973) and Shaw (1973) argued out the role of the financial sector in raising the volume of savings via creation of appropriate incentives.

Thereafter appeared critiques for the financial liberalization policies known as Neo-Structuralist School (Taylor, 1983; van Wijnbergen, 1983 a, b) in the early 1980s. Their views were based on unrealistic assumptions in such a manner that the

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[5] An extensive survey is given in Fry (1995). Exception among them is importantly by De Gregorio and Guidotti (1995)

unorganized money markets are competitive and considered aggregate credit and investment volume by excluding investment efficiency. Financial liberalization is also criticized on theoretical grounds of market failures in financial markets (Stiglitz, 1989).

Financial systems that manage risks efficiently contribute to accelerated economic growth (King and Levine, 1993b). Also, as Levine (1997: 715) argued, "countries with financial institutions that are effective at relieving in information barriers will promote faster economic growth through more investment than countries with financial systems that are less effective at obtaining and processing information". The critical issue here is to design a cost effective mechanism of reducing informational asymmetries among all parties involved in financial transactions.

An altogether different strand of literature emerged in the 1990s as a part of endogenous growth theory, most of which are AK type[6] (Romer, 1986). King and Levine (1993a) developed Schumpeterian model of technological progress akin to Romer (1990), emphasizing the role of innovation. This endogenous growth literature emphasizes the sustainability of increase in growth rates. Yet a distinct strand of literature concentrates on the components of financial development, that is, stock markets and banking development and its impact on economic growth (Levine and Zervos, 1998; Demirguc-Kunt and Levine, 2001). Extension of this kind of studies is done using panel data context (for instance Rousseau and Wachtel 2000, Beck et al 2000).

Industry and firm level data have also been brought to bear on the question of financial development and economic growth relationship. To cite a few, the influential work by Rajan and Zingales (1998) uses industry level data over a cross-country framework to come to the premise that better developed financial system ameliorates market frictions that make it difficult for firms to obtain external

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[6] AK model assumes only one type of goods, which is produced with capital as the only input factor. $Yt = AKt$ with Yt being output in period t produced by capital Kt and with A symbolising capital productivity. The AK model is considered to be a workhorse for many applications. It is used, for instance, to derive the optimal size of the financial system in Santomero and Seater (2000).

finance. A similar attempt is made with firm level data by Demirguic Kunt and Maksimovic (1998) to examine whether financial development influences the degree to which firms are constrained from investing in profitable growth opportunities. Their analysis mainly focuses on the use of long-term debt and external equity in funding firm's growth. In summary, it is found that both banking system development and stock market development are positively associated with excess growth of firms.

Thus, as far as the empirical side is concerned, most of the studies demonstrated the existence of a positive correlation between financial development and growth of the economy as a whole, but the question of "what is the cause and what is the effect" (Patricks 1966) remains still unresolved. But the debate on finance- growth linkage has its own significance both at present as well in the future.

Given the enormity of theoretical and empirical studies on the finance-growth linkage with more so at the cross-country level and a few concentrating on country-specific cases, the need arises to probe more into the latter. With this intention, the present study tries to undertake the case of India to examine the significance of financial development (i.e. banking sector and stock markets) at both macro as well as micro level (i.e. by making use of firm level data).

1.4 Objectives of the Study

The major objectives of the present study are:

- To trace the development of financial sector in India in terms of banking and stock market indicators.

- To find the association between financial development and economic growth at the macro level.

- To examine the influence of financial development on the financing choices of firms at the micro level.

1.5 Database and Methodology of the Study

The objective of the present study is to look into the significance of financial development at the macro and micro level in the context of India. Here, the term financial development is used to represent banks and stock markets development. Macro level analysis is undertaken by taking into consideration three important indicators each for banking sector and stock markets, such as (i) bank liquid reserves to bank asset ratio, (ii) domestic credit provided by the banking sector and (iii) liquid liabilities in the case of banking sector and (i) market capitalization, (ii) value traded ratio and (iii) turnover ratio in the case of stock market sector (all these variables, except bank liquid reserve to bank asset ratio and turnover ratio (both expressed in percentages) are taken as ratio to Gross Domestic Product (GDP) to obtain a unit free specification across variables for comparability throughout the analysis). The indicator chosen for measuring economic growth is the annual growth rate of Gross Domestic Product (GDP) at constant prices. In all there are seven variables at our disposal. The banking sector and economic growth variables are taken from The World Bank's World Development Indicators (WDI, CDROM, 2005) while the indicators for stock markets are obtained from International Finance Corporation's Emerging Markets Database, 2000 CDROM and reports for the year 2001, 2002 and 2003. At the macro level, an overall banking development index is constructed from individual component indices by means of Principal Component analysis and a similar one constructed for stock market development. Also an overall financial development index is computed by taking into account all the variables of banking sector and stock markets together. Different permutation and combinations were then attempted to find the association that exists between financial development indicators and the economic growth indicator with the help of Cointegrated Vector Auto Regression (VAR) approach.

Subsequent to the observation of the association between financial development and economic growth at macro level, the next step is to move forward looking into the impact of financial development on the financing choices of firms in Indian context. For this purpose, a sample of listed and permitted firms obtained

from CMIE Prowess database is used to compute the internal and external sources of financing of firms. This is done to illustrate the kind of financing which the firms usually go for and inferences made based on the study results.

1.6 Scheme of the Study

The present study is organized in the following manner: First chapter provides a brief introduction to the concepts and relationship between financial development and economic growth and the controversies arising out of it as well as the study objectives. The second chapter concentrates on an in-depth review of relevant literatures citing the research gaps followed by an account in the third chapter of the analysis of trends in the banking and stock market development of India. In the fourth chapter, data analysis is attempted at the macro level by making use of suitable econometric technique. The fifth chapter makes an assessment of the impact of financial development on the financing choices of firms (i.e. at the micro level) by focusing on the sources of financing and finally, the conclusions are put forth in the sixth chapter.

CHAPTER - 2

REVIEW OF LITERATURE

2.1 Introduction

Following the brief introduction in the previous chapter regarding the relationship between financial development and economic growth, now we turn to have an in-depth analysis of the issue in this chapter. The role that financial sector development plays in fostering economic growth has been a hot subject of debate for a long time and a plethora of literature in this field focuses on different dimensions of the issue, most important among them being the direction of causation, that is, does economic growth lead to more highly developed financial systems, or does financial development lead to greater economic growth? Adherents to the first view argue that financial markets and institutions appear when needed: when economies grow, business demand for financial services increases and the financial sector expands in response. The second view is that financial development is not only a result but also an important determinant of economic development. Researchers holding this view accept that the financial sector responds to the increased demand for financial services that occurs as an economy develops. However, it is stressed that there may also be independent changes in the level of financial development; for example in response to changes in government policies and that such changes may spur further economic growth. In particular, the argument is that a poorly functioning financial system may hamper development, but an efficient one could boost the rate of growth above what it otherwise would have been.

There is a growing body of literature in the context of financial development and economic growth that includes cross-country comparisons, individual country cases, industry level studies as well as firm level studies. Given this, the present chapter aims to categorize the debates and arguments arising out of the important literatures under two broad heads namely, theoretical and empirical studies. Within this broad category, a discussion is made with reference to studies done at

macroeconomic level and at microeconomic level. At the macro level, a review is done on the basis of the studies pertaining to banking sector and stock markets separately as well as to combination of both banks and stock markets (referred to as Financial Development in a broader sense). And at the micro level, studies related to industry or firm specific characteristics in the light of financial development are discussed.

2.2 Theoretical Studies

On the theoretical front, there are various efforts made to link financial development with economic growth. It was Schumpeter (1912) who made a pioneer contribution to the relationship between finance and economic development focusing on the services (including savings mobilization, evaluating projects, managing risks, monitoring managers and facilitating transactions) provided by financial intermediaries and argued out the essentiality of financial intermediaries for technological innovation and development. The relationship between finance and growth seems to be the one in which financial sector leads growth by successfully identifying and funding high yielding projects.

Before the 1960s, most of the theories had been tremendously backing the hypothesis of financial development followed from growth and not vice versa. A country's level of economic development in the process of industrialization determined the role of its banking sector (Gerschenkron 1962) i.e., the more developed the country, the less is the requirement of having an active financial sector. The reason behind such a hypothesis is that the banking sector is expected to provide both capital and entrepreneurship to steer industrialization process. Rondo Cameron et al. (1967)[7] was of the view that financial systems may be growth-inducing and growth-induced by according crucial role to quality of its services and the efficiency with which it is provided. In contrast to this thought, Gurley and

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[7] He provided detailed case studies of the historical finance (banking development)-economic growth interaction in the successful industrialization process in England, Scotland, France, Belgium, Germany, Russia and Japan in the 19th century. Except Germany and France, the financial sector in all other countries actively promoted industrialization, while in England, inappropriate policies could not prevent rapid financial development and innovation.

Shaw (1967: 257) argued that 'as countries rise along the scale of wealth and income, their financial structure usually becomes increasingly rich in financial assets, institutions and markets'.

The simplest case where financial development follows economic growth as a result of increased demand for financial services was originally put forward by Robinson who argued that "where enterprises leads, finance follows" (Robinson, 1952: 86). This positive association between financial development and economic growth is insufficient and the necessity was to identify "what is the cause and what is the effect?" For this Patrick (1966) undertook a theoretical explanation of the casual nature of relationship between financial development and economic growth in underdeveloped countries. He identified two patterns namely "demand-following" and "supply-leading". "Demand-following"[8] phenomenon is one in which the creation of modern financial institutions, their financial assets and liabilities, and related financial services is in response to the demand for these services by investors and savers in the real economy implying that finance is essentially passive and permissive in growth process. "Supply-leading"[9] phenomenon, on the other hand, refers to the creation of financial assets, liabilities, and related financial services in advance of demand for them, especially the demand of entrepreneur in the modern growth inducing sectors thereby implying that the financial sector precedes and induces real growth. It is to say that the direction of causality changes over certain stages of development. The basic assertion of Patrick is as follows:

"Before any sustained modern economic growth gets underway, supply leading may be able to induce the real innovation type investment. But as the process of real growth occurs, the supply-leading impetus gradually becomes less important and the demand-following financial response becomes dominant" (Patrick: 1966: 177).

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[8] 'Demand- following' hypothesis is empirically supported by Ireland (1994) and Demetriades and Hussein (1996).

[9] Supply leading hypothesis is tested by Gelb (1989), Ghani (1992), King and Levine (1993a), De Gregorio and Guidotti (1995) and Levine and Zervos (1996)

However, Patrick's study is backed by scanty quantitative evidence on the subject drawing on actual data of both developed and developing countries. A case study of Hong Kong conducted by Stammer (1972) to comment on Patrick's study contradicts by maintaining that financial sector can perform something of a supply-leading role in the early stages of economic development. The same experience may even suggest that economic development once underway can to a considerable extent be self-financing. Furthermore, under favourable conditions and at a certain stage in the development process, direct finance may be a more useful substitute for external finance through the financial intermediaries than is usually thought to be the case.

In the late 1970s, there were debates on the details of financial repression, that is, a policy conducted by many governments to generate growth and revenue through artificially low interest rates and inflationary monetary policies. In other words, financial repression is the combination of indiscriminate interest rate ceilings and high and accelerating inflation. This financial repression is a phenomenon that was conferred in the theoretical works of Keynes (1936) and Tobin (1965) by advocation of government interference in the credit markets. Thereafter, the McKinnon – Shaw school criticized the financial repression advocates on the grounds that financial repression is harmful for long run growth and also reduces the amount of funds available for investment. Both McKinnon (1973) and Shaw (1973) developed models of economic development in which financial liberalization and development accelerate the rate of economic growth. They also highlighted some of the deleterious effects of financial repression - interest rate ceilings, high reserve requirements, directed credit policies, and discriminatory taxation of financial intermediaries - on economic growth (Fry 1995; 23). The policy prescription for a financially repressed economy examined by McKinnon and Shaw is to raise institutional interest rates or to reduce the rate of inflation. Abolishing interest rate ceilings altogether produces the optimal result of maximizing investment and raising still further investment's average efficiency (Fry, 1995; 26). The basic dissimilarity among the two is that while McKinnon stress on "complementarity hypothesis", Shaw focuses on "debt-intermediation" view. The complementary

hypothesis of McKinnon focussed on the part played by deposits in encouraging self-financed investment. It is believed that an increase in the deposit rate not only generates demand for capital via savings accumulation but also leads to a rise in internally financed investment. On the contrary, the debt intermediation view of Shaw was based on increasing lending potentiality of financial intermediaries through deposit accumulation. According to him, a rise in deposit rate results in greater inflow of deposits in banks, hence stimulating externally financed investment. Such a distinction is indication of the fact that both McKinnon and Shaw's theory are complementary in nature.

However, contradicting Keynes and Tobin, McKinnon (1973) and Shaw (1973) argue in favour of interest rate liberalization and abolition of other financial repression policy measures. This framework was then later on extended by Kapur (1976), Galbis (1977), Malthieson (1980), and Fry (1980) illustrating the effects of interest rate liberalization as a means of stabilization policy. Amid the first generation financial repression models, the most intricate attempt was that of Kapur and Malthieson who developed open economy models which pertains to a labour surplus developing economy with the Harrod-Domar type production technology[10] and allows financial conditions to affect solely the quantity of investment. Vicente Galbis (1977) showed that financial repression fosters economic dualism in a model based on Harrod-Domar production functions. He constructed a two-sector model to analyse the effect of financial repression on the average efficiency of investment in the economy. The two sectors include a traditional sector with lower rates of returns to capital and a modern sector with higher rates of returns to capital. Investment is entirely self-financed in the former sector while, banks use deposits entirely to extend loans to the latter sector. This change in the composition of investment raises the average efficiency of investment. It is also postulated that low real rates of interest impede economic growth through their effects on the level and the productivity of investment (see also World Bank, 1989). Nevertheless, the empirical evidence on interest rate elasticities in savings and investment functions is

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[10] Harrod-Domar model explains economy's growth rate in terms of the level of savings and investment productivity of capital. Their production function exhibit constant returns to scale i.e. marginal product of capital is constant.

unsurpassed and unsupportive of the repressionist hypothesis[11] (Fry, 1980; Giovannini, 1983; Gupta, 1987; Khatkhate, 1988).

Another strand of literature emerged during the late eighties which criticized the financial liberalization known as Neo-Structuralist school comprising of Taylor (1983) and van Wijnbergen (1982, 1983 a, b). These models feature curb markets of developing economies, in which money lenders and indigenous banks intermediate between savers and investors. Neo-Structuralists view these markets as "often competitive and agile" (Taylor 1983, 92). To put it differently, here importance was given to unorganized money markets in determining whether financial liberalization can accelerate growth or not. Moreover, there were market imperfection arguments, which articulate that disequilibria in the credit markets may have reasons other than government intervention.[12] Adverse selection is the problem that occurs before the loan is negotiated. Lenders are attracted to give to those borrowers where there are high probabilities of repaying the loans. Yet the most anxious borrower usually has riskier projects than others and consequently the borrowers are more likely to default. This may lead banks not to raise the interest rate to its market clearing level. As a result, credit rationing[13] may occur. Adopting the Stiglitz-Weiss (1981) analysis, Cho (1986) argued that financial liberalization emphasizing the abolition of interest rate ceilings and the promotion of freer competition among financial intermediaries overlooks endogenous constraints to efficient credit allocation. Specifically he suggested that the absence of a well functioning equities market could prevent the efficient allocation of capital even if banking system has been liberalized (also prescribed by McKinnon (1973) and Shaw (1973).

The literature on finance and economic development has taken a new form by incorporating endogenous growth and endogenous financial institutions referred to as second generational growth models (provided by Greenwood and Jovanovic, 1990;

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[11] For recent literature survey see Arestis and Demetriades (1993) or Gibson and Tsakalotos (1994).

[12] Details are given in Stiglitz and Weiss (1981).

[13] Credit rationing is equilibrium out come of the unfettered rational behaviour of lenders when information costs are significant. If there is excess of demand for loans at a certain level of interest rates, a lender may find it profitable to ration credit than to raise the interest rate.

Bencivenga and Smith, 1991; King and Levine 1993 a, b; Roubini and Sala-i-Martin, 1992; Pagano, 1993; Berthelemy and Varoudakis, 1996 and so on). Most of the model construction follows AK type (Romer, 1986), which assumes that there are constant rates of returns to a sufficiently broad concept of capital.[14] In particular, the literature on finance in endogenous growth models suggests various rationales for the existence of financial institutions. The main components are some form of uncertainty, costly information, transaction costs, and economies of scale in information collection. But none of these can explain the emergence and spread of financial intermediaries during the process of economic development. Besides significance also lies in the inclusion of the possibility of reciprocal externalities between finance and growth that allow for multiple equilibria and poverty traps.[15] Later on, emphasis shifted towards the increasing role of stock markets in the process of economic development (say for instance Atje and Jovanovic 1993; Saint-Paul 1992) and in terms of mutual exclusive banks and markets (Greenwood and Smith, 1997). The exception to this is Blackburn et al. (2005) who did a more intense study by taking care of coexistence of both stock markets and banks determined by state-dependent moral hazard conditions. A similar attempt made by Chakraborty and Ray (2004) using endogenous growth model that did not invariably conclude which system (bank based or market based) is better and rather gave more emphasis to the efficiency of financial and legal systems. But as a matter of fact, they found that the bank-based system has inherent advantages over market-based systems in terms of overcoming agency problems and provision of greater external finance to firms. Most of the works related to the field of stock market exclusively as well as jointly with banking sector are empirically examined. Therefore empirical evidences relating to financial institutions and markets are considered elaborately in the forthcoming section.

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[14] One point to be noted here is that all the financial development models using endogenous growth ignore the dynamic process of financial liberalization or stabilization.

[15] Refer to Greenwood and Jovanovic (1990), Berthelemy and Varoudakis (1996).

2.3 Empirical Studies

Shifting attention to the empirical front, it is found that plenty of literatures are recognized relating economic growth with different aspects of financial sector. A seminal work is attempted by Goldsmith (1969) who examined the relationship between finance and growth across countries. He used the value of financial intermediary assets, relative to GNP, as a measure of financial development. Examining data on 35 countries over 103 years (1860 - 1963) it was found that, in general, financial and economic development appeared to occur simultaneously. Although his measure of financial development would be correlated with the extent of financial services, it is less likely that it would be closely related to the quality of those services. Unfortunately, the paucity of data on the quality of financial services makes its measurement problematic for any study of financial development. A further difficulty in Goldsmith's study is that he did not control for the many other factors that, at least in part, determine the rate of economic growth. Economic theory indicates that a nation's propensity to save, supply of human capital, fiscal and monetary policy, political and economic stability, the rule of law, the rate of population growth and the initial level of GDP are all possible determinants of an economy's rate of growth.

A keen look at the studies relating to financial development and economic growth usually surrounds the causality[16] issue. One such study is by Gupta (1984) who utilised industrial output data to measure the level of economic development and M2 (broad money stock) for financial development. Despite the limitations of the span of data considered in gauging the number of observations (Campbell and Perron, 1991), the study shows that the industrial output of developing countries reflects only a small component of total output.

Jung (1986) probed further into the finance-growth causality issue through investigation of international evidence for 56 countries along with the temporal behaviour. Here basic indicators of M1 (narrow money or currency ratio) and M2 (Broad money or monetization variable) explains the complexity and real size of financial sector and real Gross National Product (GNP) per capita or Gross

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[16] The causality issue in assessing finance-growth linkage was theoretically put forth by Patricks (1966).

Domestic Product (GDP) in 1975 prices for economic growth were obtained from International Financial Statistics. Both simple and unidirectional concepts of causality gave evidence of Less Developed Countries (LDCs) having a supply-leading causality pattern more frequently than the demand-following pattern thereby supporting Patrick's argument. But the temporal causality pattern exhibited mixed results on Patrick's hypothesis. When currency ratio is used as measure of financial development, LDCs were characterized by causal direction running from financial to economic development (supply leading) especially in the case of higher than average growth rate of GNP (GDP) and Developed countries (DCs) by reverse causality. But in the case of monetization variable, there appears to be no such distinction between developed and less developed countries in terms of causal directions. Thus there is a moderate support provided for Patrick's hypothesis. But given the small number of observations employed i.e. as low as fifteen in some cases, results based on asymptotic theory can hardly be expected to hold. Later on to generate information regarding the causality issue, Odedokun (1996) selected a sample of 71 developing countries for the period 1960s to 1980s and the findings seems to strongly support "finance causes growth" hypothesis. Usage of time series regression indicated nearly 85% of the countries display that financial intermediation promotes economic growth as that of other factors such as export expansion and capital formation ratio, and is more important in this context than labour force growth. There was an evidence of growth promoting effects in less developed countries. A similar kind of study was performed by Rousseau and Watchel (1998) taking historical evidence from five industrialised countries (USA, UK, Canada, Norway, Sweden) for the period 1870-1929 when they experienced rapid industrialisation driven by financial factors. Both Vector Error Correction Mechanism and Vector Auto Regression models detected a leading role of financial intermediation variables in real sector activity without significant feedback effects.

An additional re-examination of the causality issue from a time series perspective is pursued by Demetriades and Hussein, (1996), using recently developed econometric techniques for sixteen developing countries. Highly developed countries are excluded in view to investigate the extent to which

financial development can contribute to the process of economic development. Countries were chosen on the basis of having at least 27 continuous annual observations on the variables of interest and its population exceeding 1 million in 1990. The indicators used for financial development include ratio of bank claims on private sector to nominal GDP (together known as "financial deepening" denotes an increase in both ratios). For economic development, real GDP per capita is taken in domestic currency as opposed to US dollars so as to avoid the problems associated with making comparisons of GDP per capita across countries. A test of cointegration based on both Engle and Granger (1987) two-step procedure and Johansen (1988) maximum likelihood method is carried out. In contrast to the previous study, the results here accounted for very little support to view that finance is a leading sector to economic development process and quite a few countries provides support to economic growth systematically causing financial development. Most evidence seems to favour a bi-directional[17] causality between financial development and economic growth. It was apparent that the results are country-specific and there are dangers from lumping together in cross-section equation countries with different experiences in relation to financial development reflecting different institutional characteristics, different policies and their implementation. A similar finding of bi-directional causality was reported by Luintel and Khan, 1999 via choosing a sample of ten mostly developing countries over a period of 36-71 years applied under a multivariate VAR framework.[18] Despite such innumerable studies, the issue relating to direction of causality is still questionable.

Concentrating more on the role of financial deepening[19] in economic growth, Darrat (1999) analysed three Middle Eastern countries namely Saudi Arabia, Turkey

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[17] Bi-directional causality in relation to finance- growth linkage could be also referred in Greenwood and Smith 1997.

[18] Shan, Morris and Sun (2001) undertook a sample of 9 OECD countries and China using the same framework and found bi-directional causality in half of the countries and reverse in other three.

[19] Financial Deepening is used to describe the development and expansion of financial institutions' such as banks, stock markets, and insurance companies' relative to the size of a country's economy. A study on the effects of various banking sector controls on the process of financial deepening conducted by Demetriades and Luintel (1996) concluded that with the exception of a lending rate ceiling, these controls influence financial deepening negatively, independently of the well known effect of real interest rate. Further, exogeneity tests suggest that financial deepening and economic growth are jointly determined. Therefore, policies affecting financial deepening may also have an influence on economic growth.

and United Arab Emirates (UAE) for the period 1964-1993 from IMF's International Financial Statistics. Two proxies were used to measure the degree of financial deepening i.e., Currency ratio 'K' (measured by ratio of currency to narrow money stock M1) and monetization variable 'Z' (ratio of broad money stock M2 to nominal GDP) while economic growth is represented through growth rate of real GDP 'G' in 1990 prices. A multivariate Granger Causality test within an error correction framework applied to test for the supply-leading hypothesis as against the demand-following hypothesis. The result supported the supply-leading hypothesis but the strength and clarity of evidence varied across countries. In the case of Turkey, both measures of financial deepening supported the supply-leading hypothesis in short and long run horizons. In short run, UAE supported the supply-leading hypothesis while in the long run, it followed a 'demand-following hypothesis'. Results in case of Saudi Arabia reveal no short run relationship between financial deepening and economic growth whereas there is a bi-directional causality over the long run period. Thus the government policies promoting efficient financial institutions persist over a long period of time.

Moreover, recent evidence on account of the finance and growth linkage appears to support view of financial development leading to economic growth (Khan, 2000). Here roles of financial system such as mobilizing savings and allocating it, reducing risks, generate liquidity facilitating trade and exerts corporate control and monitor managers assumes significance. It is suggested that a well functioning financial system permit a higher level of savings and investment and therefore economic growth. The causality is examined in the study by providing contrasting studies of Goldsmith (1969), King and Levine (1993 a, b) and Rajan and Zingales (1998). But still whether financial development causes economic growth has been difficult to determine and calls forth the need for a clear understanding of this mechanism.

A country specific study on the issue of causality, brought into the fore by Patrick on the basis of his two contra hypothesis namely demand following and

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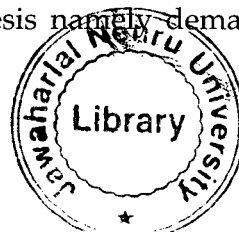
supply leading, was tested by Murinde and Eng (1994) in the context of Singapore which resulted in supporting the evidence of supply-leading hypothesis. Similar findings were made by Alaoui Moustain, Fatima (2004), Mckibbin, Warwick. J and James B. Ang (2005) for Morocco and Malaysia respectively. Furthermore, Waqabaca (2004) analysed the relationship between financial development and economic growth in Fiji using time series data from 1970 to 2000. To show that Fiji's financial sector has grown both in size and activity as well as efficiency over a three-decade period, a broad set of indicators (financial) was used on the basis of a cross country study by Beck, Demerguic -Kunt and Levine (1999). It was found that the causality was more of a demand- following relationship. This study is an indication of the fact that the causal link from economic growth to financial development is found in countries with less sophisticated financial system.

To progress on the same lines Bhattacharya and Sivasubramanian (2003) took up the causality issue in the case of India and supported a unidirectional causality from financial sector development to economic growth. These studies are limited by not making use of trend break (i.e. any significant policy change such as financial liberalization) in the analysis. Furthermore, the adoption of different indicators of financial development and different channels of economic growth could yield quite different results.

2.4 Resurgence of the Debate on Finance and Growth

A resurgence into the empirical work considering financial system and economic growth was made by King and Levine (1993a) who endeavoured a cross-country study in consistency with the Schumpeterian view, on 80 countries for the period 1960-1989 (three-decade) period through incorporation of four measures each for financial development and economic growth. The financial indicators are ratio of size of formal financial intermediary sector to GDP, the importance of banks relative to the central bank, the percentage of credit allocated to private firms and the ratio of credit issued to private firms to GDP. Growth indicators include real per capita GDP growth, the rate of physical capital accumulation, ratio of domestic

investment to GDP and a residual, measure of improvements in the efficiency of physical capital allocation. A contemporaneous correlation and regression analysis is exercised using indicators of financial development and economic growth. It is found that (i) the various indicators of financial development are strongly and robustly associated with growth, the rate of physical capital accumulation, and improvements in the efficiency of capital allocation and (ii) the pre-determined components of financial development significantly predict subsequent value of growth indicators. However, the study is subjected to a number of limitations pertaining to cross section technique utilized and to the causal interpretation attempted. Cross-country studies include unrealistic assumption that each economy has a stable growth path (Quah, 1993), omitted variable bias, sample selection bias and inappropriate weighting of countries. Another point relates to the non-examination of the role of different financial markets (such as stock markets, bond markets, insurance market and so on) in the study. In terms of causality, (i) financial development indicators are correlated across time in a given country and (ii) the cross section nature of the technique cannot allow different countries to exhibit different patterns of causality. So it is likely that in some countries finance is a leading sector whilst in other it lags behind real sector. In addition, conditioning on contemporaneous financial development destroys the association between lagged financial development and economic growth completely. Hence the question of causality cannot be satisfactorily addressed in cross-section framework.

In tune with King and Levine (1993a), a study by Beck et al (2000) found that the route to economic growth is not merely through the enhancing role of Financial Institutions (FI) (measured as ratio of FI credit to the private sector relative to Gross Domestic Product) with respect to savings and physical capital accumulation. Rather the enhancement of 'total factor productivity' (TFP) growth lended support to the classical view, often known as the Schumpeterian view, that the level of Financial Institutions development affects the rate of economic growth by influencing the pace of productivity and technological change.

All the studies so far listed deals only with banking sector development and its impact on economic growth but more recently the importance of stock markets is also realised.[20] A pioneering work in this field is that of Atje and Jovanovic (1993) who tested the implication of their model empirically for a sample of 40 developing and developed countries. Using two proxies of financial development, one measuring bank intermediation and one approximating stock market activity, only the latter turns out to perform well. They found no evidence for level effects. Therefore, it was concluded that stock markets improve the long run growth in per capita Gross Domestic Product. Harris (1997) contradicted this finding by emphasizing that stock market activity has at best weak explanatory power for long-run growth in per capita output. By making use of current instead of lagged investment in the regression specification and multiplying the initial level of stock market activity (value traded) with lagged investment as well through entering the latter also as a separate variable, Atje and Jovanovic (1993) wanted to account for endogeneity of the variables. Harris inspite of using the same econometric model pointed out the inappropriateness of their approach because lagged and current investment are not sufficiently correlated with each other and also proposed the use of instruments to account for endogeneity of current investment. A much weaker effect of stock markets was found. Splitting the sample into developed and developing countries, it was found that stock market does not seem to promote long run growth in the latter but have some explanatory power in the former.

There are several channels through which stock markets can influence economic growth. Stock markets may affect economic activity through the creation of liquidity that makes the investment less risky and more attractive (Levine 1996). This was arrived at by applying graphical representation of the extent of liquidity via usage of some measures of stock markets namely, total value of shares traded on a country's stock exchanges as a share of GDP, value of traded shares as a percentage of total market capitalization and value traded ratio divided by stock price volatility for 38 countries, including both industrial and developing countries.

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[20] Studies emphasizing the role of stock markets include Demirguc-Kunt and Levine (1996), Singh (1997), and Levine and Zervos (1998)). Also the World Bank Economic Review had dedicated its May 1996 issue to the role of stock markets in economic growth.

The stock market indicators were taken for the period 1976 while subsequent economic growth is from 1976-93 obtained through International Finance Corporation and found that stock market liquidity helps forecast economic growth even after accounting for a variety of non-financial factors that influence growth. Furthermore, a case is also made for stock markets versus banks. The results suggested that 'countries with both liquid stock markets and well-developed banks grew much faster than countries with both illiquid markets and underdeveloped banks'. It is believed that both stock markets and banks promote growth independently of each other.

The most enduring debates in economics is whether financial development causes economic growth or whether it is a consequence of increased economic activity was examined by Filer et al. (1999) via applying a Granger causality framework to test the relationship of stock market development to economic growth. The study is based on 64 countries over the period ranging 1985 to 1997 (i.e. total 847 countries/ years observation, since missing values, only over 750 observations were taken for analysing any given financial variable). Indicators used for stock market development include market capitalization over GDP, turnover velocity and change in number of domestic shares listed. The annual percentage increase in number of listed companies examined as an indicator of financial deepening. The countries are divided into three groups according to per capita income. Overall the results indicated a strong relationship between stock market activity and future economic growth for low and lower middle income countries with more developed alternative financial mechanisms.

It is said that efficient stock markets, like well functioning banking systems play a complementary role in financing investment to that of banks, and may also help to exercise corporate control through mergers and acquisitions. If stock markets are informationally efficient i.e. stock prices truly reflect the expected future profitability of companies, resources flow to the most efficient and productive companies, which are then able to implement their investment plans. On the other hand, if the stock prices are excessively volatile and are prone to speculation,

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bubbles, and price manipulation, then stock markets may be unable (or have negative effects) towards contribution to economic growth (Singh 1997).

A time series regressions over individual country case was undertaken to assess the evidence of relationship between financial development and economic growth by including indicators of stock market development and volatility (Arestis and Demetriades, 1997). Four variables for Germany and U.S. were utilized employing the quarterly data for the period 1979(1) - 1991(4). The first three variables are identical to both countries such as log of real GDP per capita, stock market capitalization ratio, measured by ratio of stock market value to GDP, and an index of stock market volatility. Fourth variable for Germany is log of ratio of M2 to nominal GDP, and for U.S. is log of ratio of domestic bank credit to nominal GDP. The entire analysis was based on the application of cointegrated Vector Auto Regression (VAR) approach giving emphasis to trace statistics in interpretation. The results indicate a uni-directional causality running from financial development to real GDP in Germany and stock market capitalization affects real GDP only through the banking system. The stock market volatility has a clear negative effect on output. A reverse causality runs in the case of U.S. i.e. real GDP positively contributing to both banking system and capital market development. An attempt is also made to test whether financial liberalization could stimulate growth and investment taking Korea as an example following the same methodology. Five variables are used in the analysis: log of ratio of bank deposits to nominal GDP as proxy to financial depth, log of real GDP per capita, the ex-ante real deposit rate of interest, log of capital stock per head and summary measure of financial repression (which is weighted index of Principal Components of five banking sector controls as ceiling on deposit rate, ceiling on lending rate, percentage of total credit covered by directed credit programme, minimum reserve requirement on demand and time deposits). It was found that financial repression positively affects economic development in Korea. The results are however subjected to caution as the effects of financial liberalization depend on institutional context of the economy.

Agarwal (2001) looked at the impact of stock markets on investment across different variables for African Countries. The study contains a sample of 9 African countries over a 6 year (1992-97) period by making use of Emerging Market Database (EMDB) from International Financial Corporation (IFC). The variables include market capitalization, turnover ratio, foreign direct investment, investment, primary school enrolment and growth. Most of the variables are positively correlated with growth except that of value of shares traded ratio indicating that it is not an effective measure of stock market liquidity.

Coming back to Indian studies, a comprehensive empirical work was done by, Nagaraj (1996) who suggested that the enormous stock market activity in the 1980s basically involved portfolio substitution by households and institutions from bank deposits towards stock market instruments. The external finance (through capital markets) to corporate sector is replaced by corporation's internal funds during the decade starting from the 1980s, partly due to a decline in corporate profitability. The decline in profitability does not indicate a fall in efficiency, rather it simply reflects greater product market competition as a result of liberalization.

The possible functions of the stock market that are characterized to help economic growth include savings growth, efficient allocation of investment resources and better utilization of existing resources (Singh, 1997). Moreover, as far as savings mobilization is concerned "(t) here is little or no evidence of an increase in aggregate savings for India or other developing countries as a result of the growth in the stock markets or greater new-issue activity on these markets". (Singh, 1997; 254.).

A similar argument for Indian stock markets holds for Nagaishi (1999) study who suggests that (i) Indian stock market has not played any prominent role in domestic savings mobilization since the 1980s, (ii) insignificant Foreign Portfolio Investment in India compared to Mexico, Korea and Thailand and further deregulation of Indian markets would lead to same problems faced by these countries such as volatile movement of domestic stock prices and unstable Balance

of Payment (BOP) positions, (iii) Bank credit to commercial sector has no positive correlation with indicators of stock market development. All these findings relating to stock market development and economic growth exhibit a dubious functional relationship in the Indian context.

On the same line, an attempt made by Pethe and Karnik (2000) to examine the inter relationship between stock prices and important macro economic variables ended up with a weak causality indicating that Indian stock markets are still demand-driven and industry-led.

Now, shifting focus towards the studies relating to banks and stock market development on economic growth, it is observed that both markets and banks provide complementary growth enhancing financial services to the economy (Boyd and Smith, 1998; Levine and Zervos, 1998; Huybens and Smith, 1999). Moreover literature on modeling of co-evolution of banks and markets are also in advancement (Boyd and Smith, 1996; Allen and Gale, 2000). Micro-level (firm data) establishment of the same fact could be drawn from Demirguc-Kunt and Maksimovic (1996).

Allen and Gale (1997, 2000) argue that bank based systems offer better intertemporal risk sharing services than markets with beneficial effects on resource allocation. But they were also of the view that banks may be ineffective in non-standard environments involving innovative products and processes.

A comprehensive view of Levine (1997) includes firstly, financial markets and intermediaries perform five basic functions such as mobilizing savings, allocating resources, facilitating risk management, monitoring managers, exerting corporate control and facilitating the exchange of goods and services. Secondly, two channels through which financial function may effect economic growth are capital accumulation and technological innovation. Thirdly, the five functions listed above are not substitutes rather they are complement in nature. There is also a special consideration of complementarity between stock markets and financial

intermediaries as the functions of the two overlap each other. Thus there is a need for building up theories that could incorporate simultaneous emergence of stock markets and banks and also suggest empirical proxies for the functions performed by the different components of the financial systems.

The questions of whether well functioning stock markets and banks promote long run economic growth was further assessed by Levine and Zervos (1998) taking measures of stock market liquidity, size, volatility and integration with world capital markets, stock of broad money to GDP (measure of banking development) and channels of economic growth such as rate of real per capita physical capital stock growth, productivity growth and ratio of private savings to GDP. The data consists of 47 countries over the 1976-1993 period and the methodology adopted is that of least square regression and use of instrumental variables. Findings suggest that even after controlling for many factors associated with growth, stock market liquidity and banking development are both positively and robustly correlated with contemporaneous and future rate of economic growth, capital accumulation, and productivity growth. There is no support for the contention that stock market liquidity, international capital market integration or stock return volatility reduce private saving rates or hinder economic growth. Also there was establishment of the existence of a positive link between financial development and economic growth in the paper thereby revealing the fact the financial factors is an integral part of the growth process. But these results are not robust to alternative specifications because of the incomplete manner in which they control for outliers in their data. When properly controlled for outliers stock market liquidity no longer exerts any statistically observable influence on GDP growth (Zhu et al, 2002)

Further, the macro economic determinants of stock market development were studied particularly market capitalization (Garcia and Liu, 1999). Two approaches were used to assess stock market capitalization, i.e. institutional and macroeconomic. While the former looks at institutional factors such as property rights, clearance and settlement issues, transparency and inside informational problems, taxation issues, and accounting standards, the latter includes factors such

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as income growth, savings and investment, financial development and inflation. It also examined the relationship between financial intermediary development and stock market development. The study is done for East Asian and Latin American countries (15 countries pooled) from 1980 to 1995. Regression results on determinants of market capitalization indicate that real income level, savings rate, financial intermediary development and stock market liquidity are important predictors of stock market capitalization, while macroeconomic stability does not prove to be significant. There was also a confirmation of complementarity rather than substitutability between financial intermediaries and stock markets.

Beck and Levine (2002) also studied the impact of stock markets and banks on economic growth using a panel data set for 1976-98 averaging over a five year period applying Generalized Method of Moments (GMM) estimators. For measuring stock market, turnover ratio, value traded and market capitalization are taken while bank development is measured by bank credit. The results show that the development of stock markets and banks have a statistically significant positive impact on economic growth which are not due to simultaneity bias, omitted variables or country specific effects. Superiority of this study lies in controlling for the country specific effects and potential endogeneity.

Moreover, there is also law and finance view stressing that legal system is the primary determinant of the effectiveness of the financial system in facilitating innovation and growth (La Ports et al.1997, 1998, 1999, 2000). La Porta et al (2000) reject the entire bank-based vs. market-based debate. They argue that legal systems that effectively protect outside investors, both equity and debt holders, promote overall financial development and it is this overall financial development and not financial structure per se that is critical for firm, industry, and national economic success.

From the discussion so far it is clear that stock markets and banks influence economic growth but the extent of its linkage with economic growth is very country specific.

2.5 Finance and Growth: Industry and Firm Level Studies

Relationship between financial development and economic growth is better understood by employing industry and firm level data both for cross country as well as country specific section. The basic idea behind doing such an analysis is to find the extent to which financial development could lead to the growth of firms or industry in the countries. Firm-level analysis is important because in an imperfectly competitive world comprising newly-created enterprises operating in new technological areas, as well as established firms operating in a predictable environment, the availability of external finance, and the terms on which it can be obtained, can potentially influence the dynamics of growth at the micro level.

To begin with the finance-growth direction related studies, Demirguc-Kunt and Maksimovic (1996) undertook a firm level study to estimate the effect of stock market development on firms financing choices. For this, thirty industrial and developing economies are selected for the period 1980 to 1991. Indicators of stock market development include market capitalization, and value traded as a ratio to GDP while that of banking sector comprise of banks' liquid liabilities to GDP, deposit bank domestic assets to GDP. These variables are indexed separately and also there is a control of other variables such as tax levels in each economy and macroeconomic factors such as inflation rate and growth rate of GDP. Moreover, two variables are used to proxy firms' requirement of debt financing i.e. ratio of earnings to total assets and ratio of dividends to total assets. With all this variables in hand, a controlled model for financial structure is constructed which exhibited a statistically significant negative correlation of stock market development to both long term and short term debt to total equity of firms and a positive relationship between the size of banking sector and the leverage. A break up of the sample indicated that in developed markets, further development leads to substitution of equity for debt financing and in the developing economies, large firms are leveraged with stock market development without having any significant affect for the smaller firms. Also Demirguc-Kunt and Maksimovic (2000) concentrated on the difference of firms' access to external financing in a bank based and a market-based

system. Using data for publicly traded firms in 40 countries, the proportion of firms' relying on external financing is calculated. Their findings suggest that development of a country's legal system predicts access to external finance and it differs for stock market and banking systems. While the long term financing relates to stock markets, the short term financing is attributed to banking systems.

A pioneering effort in this field relates to U.S. publicly traded firms by Rajan and Zingales (1998). They argued that industries that are naturally heavy users of external finance should benefit disproportionately more from greater financial development than industries that are not naturally heavy users of external finance[21].[22] It is noted that better developed financial system ameliorates market frictions that make it difficult for firms to obtain external finance. In short, financial development reduces the costs of external finance to firms. Moreover, industries that are relatively more dependent on external finance grow disproportionately faster in countries with more developed financial markets.

Wurgler (2000), utilizing different strategy, also made a contribution by employing industry level data in a cross-country framework with 65 countries for examining the relationship between financial development and economic growth over the period 1963-1995. Investment elasticity was calculated to measure the extent to which a country could increase investment in growing industries and decrease investment in declining ones. This study indicates the extent to which a country's financial system reallocates the flow of credit. A slight deviation from Rajan and Zingales was that of Demirguc-Kunt and Maksimovic (1998) for the usage of firm level data rather than industry level data and estimated the extent to which individual firms are in need for external financing as opposed to industries. By controlling the differences arising out in firm level data (such as technological differences, or investment opportunities etc.) over a sample of different countries, Kunt and Maksimovic calculated the rate at which each firm grow using only its internal funds and only its internal funds and short-term borrowings. Later on the

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[21] Industries need for external finance is defined as the difference between investments and cash generated from operations.
[22] Rajan and Zingales study was criticized by Fisman and Love (2003) on methodological grounds.

percentage of firms that grow at rates exceeding each of the two estimated rates are arrived at thereby, yielding the estimate of proportion of firms in each economy relying on the growth of external finance. Beck, Demirguc-Kunt and Maksimovic (2001) confirmed this finding with the help of an extended sample. Furthermore, a recent study by Beck, Demerguic-Kunt and Maksimovic (2005) utilizing the firm level data investigated whether financial development eases financing constraints and found that financial development weakens the impact of various barriers to firm growth and the small firms benefit the most from financial development. Contrary to this was the finding of Kumar, Rajan and Zingales (2001) who linked financial development with larger firms.

In short, what is evident from most of the studies is that financial development removes barriers to firm expansion and exerts a beneficial impact on them thereby improving the corporate governance of the firms.

2.6 Conclusion

Financial Development has been assessed as an important determinant of economic growth and also its variation among countries. The dependence may not be linear and there could be country specific threshold levels for positive linkages between financial development and economic growth.[23] Positive correlation between financial development and economic growth is country specific and it is likely to be affected by the differences in economic structure and institutional characteristics.[24] Accordingly, financial development is a too generic term to gauge the impact on growth; one must specify the particular financial markets concerned. Much empirical support has been found for the "finance promotes growth" view, but time series evidence is less clear-cut than broad cross section analysis.

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[23] Details are given in Berthelemy and Varoudakis (1996).

[24] Arestis and Demetriades (1997), and Demetriades and Hussein (1996). Chandavarkar (1992) called for the need of probing into country specific characteristics.

Moreover, cross sector growth studies face inherent constraints in realizing the full systems estimation.[25] It is therefore desirable to conduct the study of association between financial systems development and economic growth in a time series framework. And appropriate estimation technique would be the one that takes into account presence of simultaneous relationships in the system. It is Johansen Full Information Maximum Likelihood. Such a model would contain multiple vectors capturing the direct and indirect effect of financial sector and real per capita output while also capturing feedback effects (if present).

The description of relevant literature in this chapter calls forth the need for studying individual countries deliberately and also to be cautious regarding the generalisation of results.[26] Keeping this viewpoint, the present study undertakes the task to analyse the significance of financial development in India especially in the liberalization[27] era at both macro as well as micro level. The term financial development is referred here to include two broad sectors namely, banking sector development and stock market sector development. At the macro level, indicators proxying banks and stock markets are first ought to be indexed using principal component analysis and then the association of these indices of banks and stock market in combination and separation is allowed to test for its association with economic growth indicator via Cointegrated Vector Auto Regression approach. Later on, a micro level analysis is also proposed to drive back the influence of financial development on the firms financing patterns. But before proceeding with these analyses, it is necessary to know the trends and pattern of the indicators that are used to mirror financial development and economic growth, which is detailed in the following chapter.

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[25] In a cross country data and models of the kind that have been used in most studies, when the regression structure is permitted to vary across three sub-groups, a huge parametric heterogeneity is observed and the overall indication is that of a negligible or negative association between financial development and growth (*Ram, 1999*).

[26] Chandavarkar (1992) supports the need for country specific study.

[27] Since the liberalization signals were started from the year 1980, the entire period of study reflects a liberalization era.

CHAPTER - 3

TRENDS IN BANKING SECTOR AND STOCK MARKET DEVELOPMENT IN INDIA

3.1 Introduction

With the background of relevant literature examined in the previous chapter, the objective of the present chapter is to examine the pattern of banking sector development and stock market development over a period of time in the context of India. The entire financial system in India is broadly classified into two heads, namely, organized and unorganized sector. Organized sector includes commercial banks, development and cooperative banks, stock markets and non-banking financial institutions (such as insurance companies, mutual funds, leasing companies and so on). On the contrary, informal credit market gets its status accorded in the unorganized sector.

The Indian financial system has shown a tremendous widening and deepening since the launching of the first phase of financial sector reforms in 1992-93. The financial sector reforms aimed at promoting a diversified, efficient and competitive financial system with the ultimate objective of improving the allocative efficiency of available resources through operational flexibility, improved financial viability and institutional strengthening.

3.2 Banking Sector

3.2.1 A Brief Historical Perspective

The Indian banking system assumes significance as it has led to the increase in monetization of the economy. It was with the reconstitution of three presidency banks - the Presidency Bank of Bengal (1809), Bombay (1840) and Madras (1843) under Presidency Banks Act of 1876 that the organized commercial banking began in India with the setting up initiative coming up from the government. The

amalgamation of three presidency banks, thereby establishing the Imperial Bank of India Ltd. came into effect in January 1921. Imperial bank was primarily a commercial bank, transacting all the business formerly carried out by the Presidency banks; however, it was also entrusted with Central Banking functions. The bank was the sole banker to the government and all treasury balances were kept with Imperial Bank[28]. The banks conducted clearinghouses in the country and provided remittance facilities to banks and the public. Government authorities and the Royal Commission on Indian Currency and Finance (The Hilton Young Commission) in 1926 was appointed after realizing the need for central banks to study the currency and finance situation in India and to make recommendation regarding the establishment of Central Bank. Indian Legislative Assembly in March 1934 passed RBI Act and Reserve Bank of India (RBI)[29] came into effect from April1, 1935 with major functions being issue of currency; banker to Central Government and State Government and Bankers Bank. Further in 1954, Committee of Direction on All-India Rural Credit Survey recommended the establishment of State Bank of India (SBI) as strong, integrated, state partnered commercial banking institution with effective machinery of branches spread over the country for stimulating banking development. Thereby, on July1, 1955, Imperial Bank was taken over by government and renamed as State Bank of India. Initially seven State Banks were made subsidiaries of State bank by SBI (Subsidiary Bank) Act, 1959. One important step taken by government was to nationalize fourteen major Scheduled Commercial Banks in July 19, 1969 each with a deposit of Rs. 50 crores or more. The main objective was to bring about enlargement of resources for economic growth, development of agriculture and industry in backward regions as well as making bank credit available to priority sector that had been neglected in the past. Six more Scheduled Commercial Banks were nationalized with a deposit of Rs. 200 crores or above by April 15, 1980. The basic reason behind nationalization is that the credit markets are imperfect and with nationalization it was thought that banks could be made to lend to agriculture, small enterprises and artisans in rural and semi-urban areas.

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[28] It is to be noted that the Imperial Bank was not a Central Bank.

[29] RBI was a private sector institution on lines of leading foreign central banks of the time. RBI nationalized with passage of RBI (Transfer to Public Ownership) Act, 1948. From January 1, 1949 the RBI became a State-owned institution.

3.2.2 Developments in the Banking Sector

After the initiation of financial sector reforms, competition in the banking sector has increased. The intuition behind financial sector reforms was that the financial system has a crucial role to play in the mobilization of savings and their allocation to the most productive uses. Banking sector reforms have become an integral part of the liberalization process. Regarding this, there were two committee

3.1: Commercial Banking Performance

Important Indicators	June 1969	June 1971	June 1981	March 1991	March 2001	March 2003
Number of Commercial Banks	89	82	187	276	301	294
(a) Scheduled Commercial Banks	73	73	183	272	296	289
of which: Regional Rural Banks	-	-	102	196	196	196
(b) Non-Scheduled Commercial Banks	16	9	4	4	5	5
Number of Offices in India[1]	8262	12013	35707	60220	65919	66535
Population per office (in thousands)	65	46	19*	14	15	16
Aggregate deposits[2] of Scheduled Commercial Banks in India (Rs. Crore)	4646	6216	40549	201199	989141#	1311761#
(a) Demand deposits	2104	2743	8290	38300	159407	187837
(b) Time deposits	2542	3473	32259	162898	829734	1123924
Credit[3] of Scheduled Commercial banks in India(Rs. Crore)	3599	4763	26551	121865	529272	746432
Per capita Deposit of Scheduled Commercial banks (Rs.)	88	113	587	2368	9758	12554
Per capita Credit of Scheduled commercial Banks (Rs.)	68	87	385	1434	5221	7143
Credit-Deposit Ratio (per cent)	77.5	76.6	65.5	60.6	53.5	56.9
Investment-Deposit Ratio[4](per cent)	29.3	29.1	35.1	37.7	37.1	41.3
Cash-Deposit Ratio[5](per cent)	8.2	6.5	13.6	17.6	8.4	6.3

Notes:

1. Include rural, semi-urban, urban and metropolitan.

2 & 3 As per return under Section 42(2) of the Reserve Bank of India Act, 1934. Deposits are net of inter-bank deposits and credit is exclusive of due from banks and bills discounted under New Bill Market Scheme.

4. Investment in Government and other approved securities as proportion to aggregate deposits.

5. Cash in hand & balance with RBI as a proportion to aggregate deposit.

 # Includes Resurgent India Bonds (RIB) (Rs.17945 crores) and also India Millennium Deposits (IMD) (Rs. 25662 crores)

* Based on estimated mid- year population figures supplied by office of Registrar General India. For 1969, based on 1971 census and from 1981 to 1989 based on 1981 census.

Source: RBI, Basic Statistical Returns of Scheduled Commercial Banks in India, Various issues.

set up, namely Narasimham and the other is that of Verma Committee. Narasimham Committee had two phases i.e. Phase I (1992) and Phase II (1998) with former aiming at 'operational flexibility' and 'functional autonomy' to enhance efficiency, productivity and profitability, while the latter concentrated on the structural changes to strengthen the banking systems foundation. Moreover interest rates were liberalized in the 1990s and direct lending through use of instruments of Statutory Liquidity Ratio was reduced. Verma Committee's basic focus was on the ailment of commercial banking in India. Verma Committee identified three public sector banks – Indian Bank, UCO Bank, and United Bank of India as weakest of the twenty-seven public sector banks in terms of Non Performing Assets and accumulated losses.

Table 3.1 indicates the performance of commercial banks in India over different decades starting from June 1969 (i.e. the period of nationalization of banks). It is quite evident that the total number of commercial banks has increased over the period from 89 in June 1969 to 294 in March 2003 of which, the number of scheduled commercial banks are maximum when compared to non-scheduled commercial banks. Moreover, the aggregate deposits and credits also show an upward trend i.e., from say Rs. 4646 crores in June 1969 to Rs. 1311761 crores in March 2003 and Rs. 3599 crores in June 1969 to Rs. 746432 crores in March 2003 respectively. It is the time deposits that account for the increase in aggregate deposits more in relation to demand deposits. Most important, the investment in government and approved securities as a proportion to aggregate deposits had a steady increase from 29.3% in June 1969 to 41.3 % in March 2003, which is an indication of greater investment practice. There has been a continuous decline in the credit –deposit ratio from 77.5 percent in June 1969 to 53.5 percent in March 2001 followed by an increase to 56.9 percent in March 2003. The decline in credit deposit ratio could be attributed to the rising Statutory Liquidity Requirements. Furthermore, if we look at the entire discussion from the post-financial liberalization era (i.e., from 1991 onwards) perspective too, results remain the same. Thus it can be concluded that the commercial banking in India has achieved greater strides over the years.

In relation to this, the financial assets of banks and financial institutions can also add to the success. Table 3.2 provides for asset position of the entire banking sector. A closer look at the table indicates that the percentage share of banks (commercial

Table 3.2: Financial Assets of Banks and Financial Institutions in India
(As at the end of March)

(Rs. Crores)

Institution	1980-81	1988-89	1990-91	1993-94	1996-97	1999-00	2003-04
I. Banks	46987	176461	232786	373511 (-19.3)	564824 (-11)	888781 (16.7)	1696574 (16.9)
1. All Scheduled Commercial Banks*	44622	168480	222613	358407	542001	851100	1643447
2. Non-Scheduled Commercial Banks**	9	53	77	93	2	-	-
Total Commercial Banks (1+2)	44631	168533	222690	358500	542003	851100	1643447
3. State Co-operative Banks+	2356	7928	10096	15011	22821	37681	53127
II. Financial Institutions++	16650	83651	122655	213819 (-18)	327958 (-17.4)	522466 (12.5)	700340 (21.2)
4. All-India term-lending Institutions#	6143	37874	52054	80995	131636	229109	195247
5. State Level Institutions@	1733	7204	10048	13229	20948	24518	60942
6. Investment Institutions$	8534	36980	58566	115762	169491	261885	433178
7. Other Institutions $#	240	1593	1987	3833	5884	6954	10973
III. Aggregate (I + II)	63637	260112	355441	587330 (-18.8)	892782 (-13.3)	1411247 (15.1)	2396914 (18.1)
IV. Percentage Share							
Percentage Share of Banks to Aggregates	73.8	67.8	65.5	63.6	63.3	63	70.8
Percentage Share of Financial Institutions to Aggregates	26.2	32.2	34.5	36.4	36.7	37	29.2

Notes:
P: Provisional. >>: Figures repeated.
*: As per returns under Section 42 of the RBI Act, 1934 and since 1991 relate to the reporting Friday of March, except the ICICI Bank Ltd., for which the data relate to end-March 2002.
**: As per returns under Section 27 of the Banking Regulation Act, 1949. Data relate to the last Friday of March.
+: The data since 1990 are in respect of last Reporting Friday of March.
++: Figures pertain to the accounting year of the respective financial institution.
#: Term-lending institutions include IDBI, NABARD, ICICI, IFCI, EXIM BANK, IIBI, NHB and IDFC. Data exclude ICICI merged with ICICI Bank Ltd. since May 2002 and IDBI from 2004-05 which was converted into a bank since October 2004.
@: State level institutions include SFCs and SIDCs.
$ Investment Institutions include UTI, LIC, GIC and its former subsidiaries.
$#: Other institutions include DICGC and ECGC.
Note: 1. Figures in parentheses indicate percentage variation over the previous year. 2. Data of financial assets of banks include: (i) Cash in hand and balances with the Reserve Bank, (ii) Asset with the Banking System (iii) Investments, (iv) Bank Credit (total loans, cash credits, overdrafts and bills purchased and discounted) and (v) Dues from banks.
Source: RBI, Report on Trend and Progress of Banking in India.

and cooperative together) to aggregates (i.e. total of banks and financial institutions) has stood at a higher rate in comparison to that of the percentage of financial institutions to total with rates of 70.8 percent and 29.2 percent respectively in the financial year 2003-04. Even though the share of banks had leaps and bounds in the post liberalization era, it always contributed more than the financial institutions. These developments show the readiness of financial institutions to adopt objectives of development, economic and social and also to bring about greater mobilization of resources for meeting emerging needs of the economy that is a necessary concomitant of development. To conclude, it can be said that liberalization period has brought a major change in the structure and character of the banking sector.

3.3 Capital Markets

The Indian capital market has witnessed a wide spread equity cult over the years. Since the 1980s, the demand for equities has been on the rise and it is responding to not only by stable and established companies but also by built overnight operators. The reason obviously could be pointed towards the new economic reforms adopted by the government with too much money chasing too few scrips. The process of capital market reforms continued and coupled with an effective regulatory framework aimed at improving market efficiency making stock market transactions more transparent, curbing unfair trade practices and bringing the capital market up to international standards.

Capital market consists of primary and secondary markets. In the primary market, large sums of new capital raised each year, facilitates the transfer of investable funds from their owners to productive channels. Here public issue through prospectus trades the securities. Offer of sales, private placement and right issues are methods employed for issuing of securities. The secondary market, on the other hand is a place where the buyer and seller of securities meet with the idea that the transaction will result. Thus market forces of demand and supply determine price for stock traded in secondary market. Securities Contract (Regulation) Act, 1956 defines stock exchange as "an association, organization or body of individuals, whether incorporated or not, established for the purpose of assisting, regulating and

controlling of business in buying, selling and dealing in securities". The secondary market deals with already issued second hand securities, and granted stock exchange quotations. The listing of securities in stock exchanges renders liquidity of investment to investor, also provides with ready marketability and information regarding the particular security etc.

3.3.1 Brief Historical Perspective of Indian Stock markets

Indian stock market is one of the oldest in Asia and its history dates back nearly 200 years. The earliest records of security dealings in India are meager and obscure. The East India Company was the dominant institution in those days and business in its loan securities used to be transacted towards the close of the eighteen-century. In the 1830s, business on corporate stocks and shares in bank and cotton presses took place in Bombay. The 1850s witnessed a rapid development of commercial enterprises, brokerage business attracted many men into the field, and by 1860, the number of brokers increased to 60. In 1860-61, the American Civil War broke out and cotton supply from the US to Europe ceased; thus 'share mania' in India began. The number of brokers increased from 200 to 250. The end of American Civil War brought disillusionment and many failures and brokers who thrived out of the war in 1874 found a place in a street (now appropriately called as Dalal Street) where they would conveniently assemble and transact business. In 1887, the formal establishment of the "Native Share and Stock Brokers Association" took place in Bombay. In 1895, the stock exchange acquired a premise in the same street and it was inaugurated in 1899. Thus, consolidation of stock exchange at Bombay took place. Stock exchanges that gained importance next to Bombay include Ahmedabad (1894), Calcutta (1908), and Madras (1937).

The Second World War, which broke out in 1939, touched off a brief sharp boom that was followed by a slump. There was a radical change in 1943 and many new associations were constituted for the purpose and organization of stock exchanges in all parts of the country assumed the proportions of the craze. At present, there are 24 stock exchanges in India. Twenty-one of them being regional

ones with allocated areas. Three others set up in the reform era viz., National Stock Exchange (NSE), Over the Counter Exchange of India (OTCEI) and Inter Connected Stock Exchange of India Limited (ISE), have mandate to nationwide trading network. The NSE, OTCEI, ISE and majority of the regional stock exchanges have adopted the screen based trading system to provide automated and modern facilities for trading in a transparent, fair and open manner with access to investors across the country.

Furthermore, with a view to safeguarding and stimulating investors' interests in capital issues, the Securities and Exchange Board of India (SEBI) issue guidelines that related to good/ bad deliveries, tightened the entry norms for companies accessing capital markets and introduced weekly settlements. These apart, the SEBI notified regulations relating to venture capital funds, amended mutual funds regulations and promoted 'On-line Screen Based Trading' as the criteria for recognition of new stock exchanges.

3.3.2 Developments in the Capital Markets

To start with, mobilization of resources is an integral part of the development process in India. The following table ensures the mobilization of resources through the primary markets since the liberalization period of the 1990s.

Table 3.3: Mobilization of Resources from the Primary Market (1990-91 to 1999-2000)

(Rs. in Crore)

Issues	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00
Corporate Securities	14219	16366	23537	44498	48084	36689	37147	42125	60192	72450
Domestic Issues	14219	16366	23286	37044	41974	36193	33872	37738	59044	68963
Non-Government. Public Companies	4312	6193	19803	19330	26417	16075	10410	3138	5013	5153
PSU Bonds	5663	5710	1062	5586	3070	2292	3394	2982	-	-
Govt. Companies	-	-	430	819	888	1000	650	43	-	-
Banks & Financial Institutions	-	-	356	3843	425	3465	4352	1476	4352	2551
Private Placement	4244	4463	1635	7466	11174	13361	15066	30099	49679	61259
Euro Issues	-	-	251	7454	6110	496	3275	4387	1148	3487
Government Securities	11558	12284	17690	54533	43231	46783	42688	67386	106067	113336
Central Government	8989	8919	13885	50388	38108	40509	36152	59637	93953	99630
State Governments	2569	3364	3805	4145	5123	6274	6536	7749	12114	13706
Total	25777	28650	41227	99031	91315	83472	79835	109511	166259	185786

Source: National Stock Exchange of India Limited
Accessed through www.indiastat.com on 28th April 2006.

The table above shows that except for two years, the issues have been on an increase over the entire period from 1990-91 to 1999-2000 and the major contributors of these issues includes government securities, domestic issues, and central government issues. Moreover in the recent years, in addition to the traditional methods of raising resources through public issues and right issues, 'private placement' has also gained ground. Inherent advantages for tapping private placement market are first; it is a cost and time effective method of raising funds. Secondly, it can be structured to meet the needs of the entrepreneurs. Moreover, private placement does not require detailed compliance of formalities as required in public and right issues. Abolition of capital issues control and the introduction of free pricing of issues led to unprecedented upsurge of activity in the primary capital market as the corporate mobilized huge resources. Sharp increase in resource mobilization was due to spurt in equity issues with 'premium'. Primary capital market witnessed depressed conditions since 1995-96. This could be due to factors operating both on demand side and supply side. Investors remained away from market in the supply side while demand side includes strict disclosure standards and entry point norms. Thus, this stringent entry and disclosure norms for public issues coupled with low cost of issuance, ease of structuring instruments and saving of time lag in issuance has led to rapid growth of private placement market in recent years.

In relation to primary market, there is secondary market also whose status and behaviour in India are examined below. However, before going into the details, it would be better to get familiarized with some of the key terms in this respect. This is taken up below.

A measure for stock market size is better represented by market capitalization, which is usually defined as the value of a corporation as determined by the market price of its issued and outstanding common stock. It is calculated by multiplying the number of outstanding shares by the current market price of a share. Liquidity of stock market is well understood by indicators such as value traded and turnover ratio. Value traded, on one hand, is the total monetary value of all trading in a security for the market day. It is calculated by multiplying the volume traded by the average sale price. Turnover ratio, on the other hand, is the

value traded of shares in a year as a percentage of market capitalization of listed shares on an Exchange.

Now we turn to examine the status and behaviour of the Indian secondary market. In comparison with the top 20 countries in terms of listed companies (i.e., firms whose shares are quoted on the Official List of the Stock Exchange) India ranks first followed by U.S and others (Figure 3.1).

Market capitalization and value traded on major Indian Stock exchanges (i.e. Bombay Stock Exchange and National Stock Exchange) are found to be increasing over the period 1980 to 2003 with the exception of booms in some period such as 2000 (Figure 3.2).

Figure3.1: Total number of Stock Market listed companies among the top 20 Countries in the year 2003.

Source: Global Stock Market FactBook by Standards & Poors, 2004

Figure 3.2 :Performance of Indian Stock Market Size and Liquidity over two decades
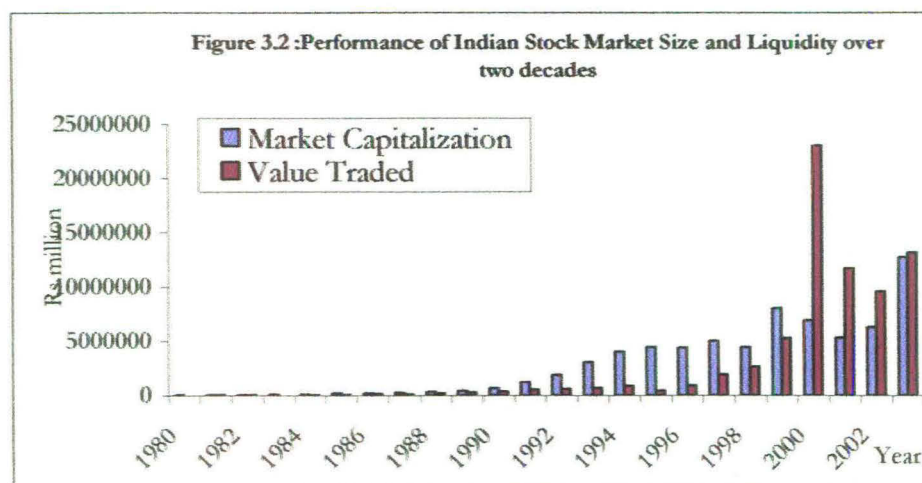
Source: International Finance Corporation's Emerging Market DataBase 2000, CDROM

To make it clearer, major indicators of stock market development such as market capitalization and value traded as a percentage to GDP and turnover ratio are given below:

Table 3.4: Indicators of Stock Market Development

Year	Market capitalization/ GDP (%)	Value Traded/ GDP (%)	Turnover Ratio
1981	3.6	3.6	108.3
1985	6.8	2.3	48.3
1990	13.2	7.5	65.9
1995	34.9	6.03	17.1
2000	32.4	111.6	308.2
2001	23.1	52.2	191.4
2002	25.7	38.6	165.0
2003	50.4	51.4	138.5

Source: Emerging Stock Market Fact book, Standards & Poor; various years.

It is found that with gradual reforms[30] initiated in the 1980s Market Capitalization increased at an impressive rate along with the number of listed companies. However, both value traded and turnover ratios have showed a downward trend since 2001, slightly picking up in the recent years. As an additional point it has to be stressed that Indian stock markets have a very large base of shareholders. India has second largest investor base in the world after USA. Therefore, it can be inferred that on the whole, the Indian capital markets witnessed a dramatic upsurge in the late half of the 1980s.

The prime financial development ratios used in most of the studies previously include finance ratio, financial interrelations ratio, new issue ratio and intermediation ratio. Finance ratio is ratio of Primary Issues (i.e., issues by all sectors other than banks and other financial institutions) to National Income. Here National Income refers to Net National Product at factor cost. While Financial Interrelations Ratio is the ratio of Total Issues to Net Domestic Capital Formation, New Issue Ratio is the ratio of Primary Issues to Net Domestic Capital Formation. Finally,

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[30] G.S. Patel Committee formed in May 1984 suggested a uniform structure and organization of all stock exchanges, closer supervision of day-to-day functioning of stock markets, broad based membership of stock exchanges, computerization of dealings in securities, strict curbs on insider trading and simple transfer procedures.

Intermediation Ratio is the ratio of Secondary (i.e., issues by banks and other financial institutions) Issues to Primary Issues.

Given these definitions, of the classic financial development ratios, we find that the financial ratios showed sharp increase over time reflecting a deepening of Indian financial system (Table 3.5). Financial Interrelation ratio moved up steadily from the 1950s till the 1980s showing increased role of financial system in the process of net domestic capital formation. Finance and intermediation ratio steadily increased throughout the entire period reflecting financial liberalization.

Table 3.5: Selected Financial Development Ratios

Year	Finance Ratio	Financial Interrelations Ratio	New Issue Ratio	Intermediation Ratio
1961-62	0.077	1.261	0.835	0.511
1971-72	0.095	1.323	0.772	0.713
1981-82	0.197	2.037	1.284	0.587
1991-92	0.275	2.922	1.618	0.806
1992-93	0.209	2.183	1.186	0.84
1993-94	0.249	2.825	1.489	0.898
1994-95	0.25	2.433	1.161	1.096
1995-96	0.29	2.26	1.328	0.702

Source: RBI, Flow of fund account of Indian economy (Aug, 2000) from 1951-52 to 1995-96.

3.4 Different Phases of Financial Sector Development in an Economy: A Framework

The financial liberalization process has lead to progress in the financial sector by providing prominent support in terms of ownership, regulation and competition thereby strengthening financial stability. Under the reform period, new regulatory bodies such as those for securities markets, insurance and pension funds have been legislated. Meanwhile, prudential regulation of banks has been in vogue for decades. From the discussion of the previous section, it is quite clear that banking sector and stock markets have played a key role since the liberalization phase. It is for this reason that in the present study, the term financial development is used to denote the development of the banks and stock markets, as they constitute channels

of development financing. It is also worth looking into the inter-relationship between the banks and stock markets functioning i.e., to see whether they are complement or substitute to each other in the development process. Keeping this view, Kumar and Testsekos (1992) proposed a general theory following Rostow's (1960) stages of growth to relate stock markets to a sequential process of economic growth in a historical manner. As the five stages projected by Rostow starting from traditional society, pre-conditions to take off, take-off, drive to maturity to the age of high mass consumption, corresponding stages are illustrated for financial development of a country (see figure 3.3). The conceptual foundation of the theory is predicated on the notion that the financial sector development is a necessary condition for economic growth. While other factors such as investment, manufacturing activity, export development, absorption of technology, and human capital and institutional development, are undoubtedly necessary, the financial sector is the vital catalyst that activates the interrelationship between them.

Figure 3.3: Phases of Financial Sector Development
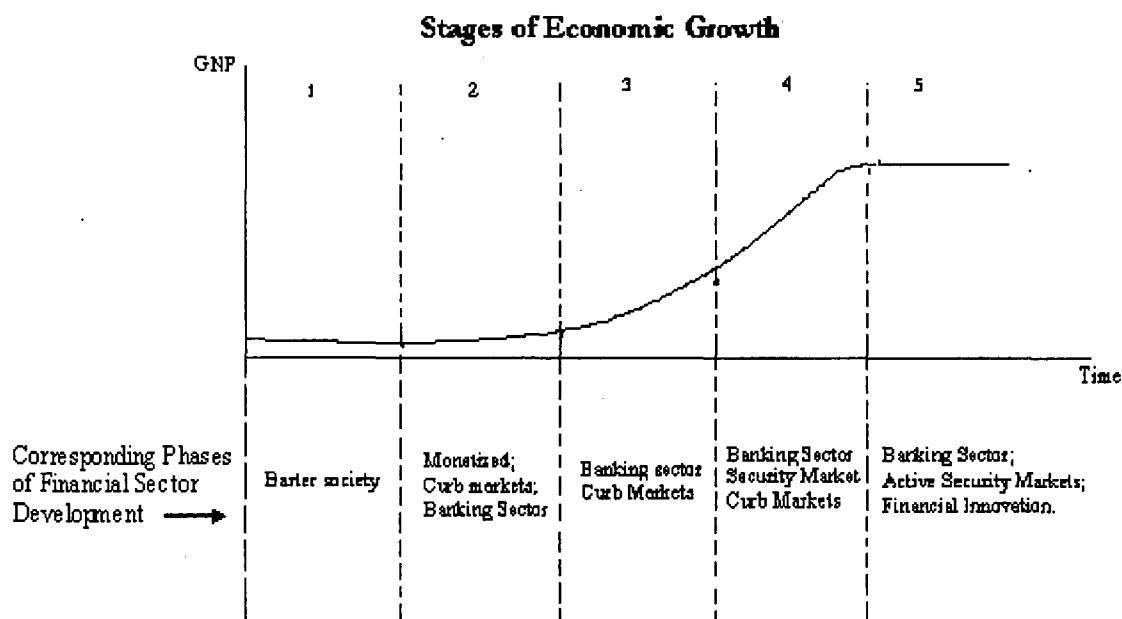
The first stage symbolizes a barter economy (with no financial sector) or what is usually referred to as non-monetized production and consumption. The economy becomes monetized in the second stage with a rudimentary banking sector

and a predominant curb (informal credit market). In the third stage, expansion of banking sector takes place as savings and investment increases, but the curb market activity still persists. Demand for increased investments enable banks to grow in the fourth stage followed by the development of stock markets with the activities of curb markets tending to diminish. Finally, as the economy reaches the fifth stage, the banking sector becomes established, stock markets expand and function actively, and financial innovation occurs in the form of new instruments.

Thus, it is in the last two stages that financial sector develops and expands. As the stock markets intermediate in financial sector more efficiently, the allocation of investment in the real economy improves and output increases further. In turn, this creates new demand for intermediation services from the stock markets with concomitant increased growth in the economy. To put it differently, it is evident from the figure that there is a feedback effect between real output growth and increased stock market activities.

The existence of such a stage-study adds strength to our present attempt to relate financial development (in terms of banks and stock markets) with economic growth in the context of India especially during the post liberalization period. To this extent, certain indicators are chosen for both banks and stock markets, the details of which are given in the following section.

3.5 Behaviour of the Chosen Indicators[31]

To recapitulate, one of the objectives of the present study is to observe the development of Indian financial sector in the liberalization era. For this, indicators are used to represent the financial sector in India over a period of time, i.e., from the 1980s to 2005, for which data were taken from the World development indicators CDROM, 2005 and International Finance Corporations' Emerging Markets Database on calendar year basis. A macro level analysis is done in the next chapter to find out the possible association between financial development on one hand and economic

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[31] The definitions of all the indicators are taken from "Word Development Indicators Report, 2004".

growth on the other. As already explained, the term 'financial development' is referred to here in terms of stock markets and banks in the narrower sense. There are three proxies used for stock market and banks respectively. For stock markets, the variables selected are market capitalization (MC), value traded (VT) and turnover ratio (TR) and for banking sector, bank liquid reserves to bank asset ratio, domestic credit provided by the banking sector and liquid liabilities (M3). Indicators such as market capitalization, value traded, domestic credit provided by the banking sector and liquid liabilities are represented as a ratio of GDP to enable comparability. The concept of economic growth is measured in terms of the annual growth rate of gross domestic product (GDP). The behaviour of these indicators over the period are given below:

3.5.1 Banking Sector Development Indicators

(i) *Ratio of bank liquid reserves to bank assets* is the ratio of domestic currency holdings and deposits with the monetary authorities to claims on other governments, non financial public enterprises, the private sector, and other banking institutions. Figure 3.4 shows the trend of bank liquid reserves to

Fig 3.4: Bank Liquid Reserves to Bank Asset Ratio: Trend
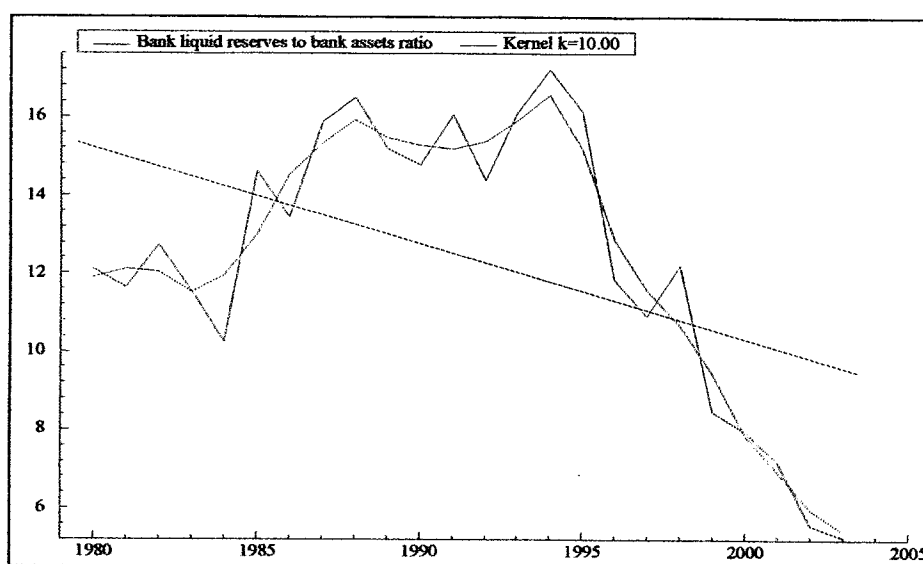
Note: —— Actual Series —— Smoothed Series —— Regression Line

Source: World Bank's "World Development Indicators" CDROM 2000 and issues of 2001, 2002 and 2003

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bank assets ratio from the period 1980 to 2003. In all the figures following the discussion, actual plot is smoothened with the help of Kernel based Smoother[32] and a trend line is fitted to indicate the movement of the variables over time. Figure 3.4 show that the variable bank liquid reserves to bank assets exhibit a downward trend as clearly seen from the trend line over the 23 years. This reveals that there is a greater accumulation of bank assets in relation to liquid reserves available.

(ii) *Liquid Liabilities* are also known as broad money, or M3. They include bank deposits of generally less than one year plus currency. Liquid liabilities are the sum of currency and deposits in the central banks (M0) *plus* transferable deposits and electronic currency (M1) *plus* time and savings deposits, foreign currency transferable deposits, certificates of deposit, and securities repurchase agreement (M2) *plus* travelers' checks, foreign currency time deposits, commercial paper,

Fig 3.5: Liquid Liability as a proportion to GDP: Trend

Note: —— Actual Series —— Smoothed Series —— Regression Line

Source: World Bank's "World Development Indicators" CDROM 2000 and issues of 2001, 2002 and 2003

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[32] Kernel smoothing is one way of fitting `smoothed' lines that track the general movements in scatter plots which can be drawn together with regression lines if desired. Setting the bandwidth changes the smoothness of the fit.

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and shares of mutual funds or market funds held by residents. The ratio of liquid liabilities to GDP indicates the relative size of these readily available forms of money— money that the owners can use to buy goods and services without incurring any cost. We find in Figure 3.5 that the liquid liability as a percentage of Gross Domestic Product in India reflects a steady increase over the time span covering 1980 to 2003 with slight dips in the years of 1990 and 1995 despite financial liberalisation. The reason that could be attributed to such a dip is the growth of non-banking financial companies' deposits faster than the broad money even through the relatively tight monetary policy (RBI 2003). The reduction of the cash reserve requirement was offset by relative reduction of the RBI holdings of the government debt. The growth of money base was largely due to an increase in the international reserves. However, the fitted trend line is an indication of the existence of an increasing trend of liquid liabilities as a proportion to GDP.

(iii) *Domestic Credit provided by banking sector* includes all credit to various sectors on a gross basis, with the exception of credit to the central government, which is net. The banking sector includes monetary authorities, deposit money banks, and other banking institutions for which data are available (including institutions

Fig 3.6: Domestic Credit provided by Banking Sector a proportion to GDP: Trend
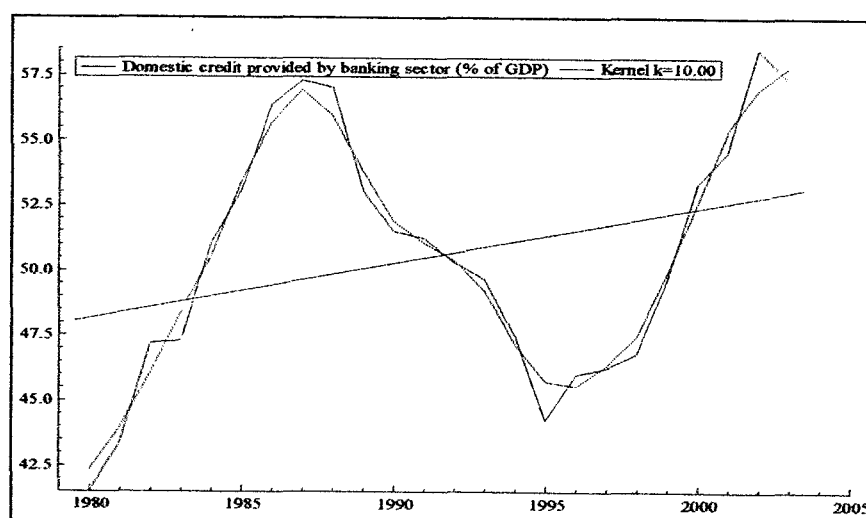
Note: ——— Actual Series ——— Smoothed Series ——— Regression Line

Source: World Bank's "World Development Indicators" CDROM 2000 and issues of 2001, 2002 and 2003.

that do not accept transferable deposits but do not incur such liabilities as time and savings deposits). Examples of other banking institutions include savings and mortgage loan institutions and building and loan associations. Figure 3.6 illustrates that the indicator namely, domestic credit provided by the banking sector as a proportion to GDP had an increasing trend except for the first half of the 1990s where it tapers off. This sluggishness in the credit could probably be due to the introduction of liberalisation of the financial sector with new policy initiatives especially the component of interest rate deregulation.

3.5.2 Stock Market Development Indicators

(i) *Market capitalization* (also known as market value) as already explained, is the share price times the number of shares outstanding. The market capitalization of Indian stock markets has improved considerably from 1980 to 2003 after a slight fall in some intervening years, (Figure 3.7).

Fig 3.7: Market Capitalization a proportion to GDP: Trend
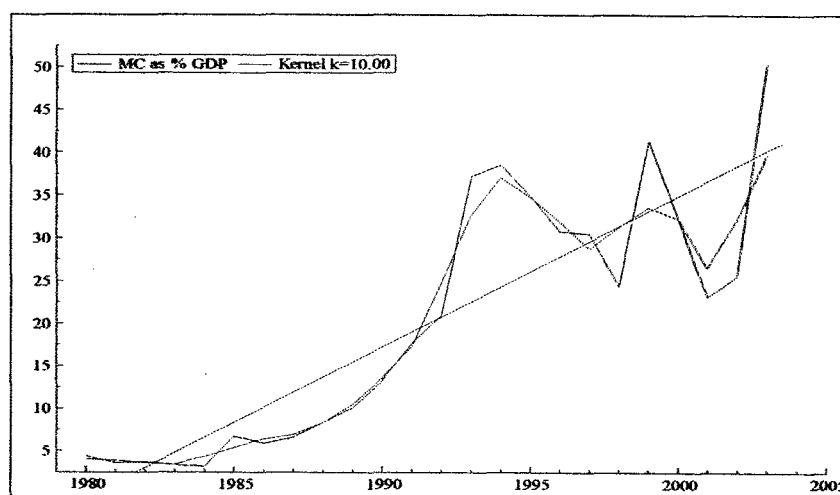
Note: ——— Actual Series ——— Smoothed Series ——— Regression Line

Source: World Bank's "World Development Indicators" CDROM 2000 and issues of 2001, 2002 and 2003

(ii) *Turnover ratio* as we have already defined, is the total value of shares traded during the period divided by the average market capitalization for the period. Average market capitalization is calculated as the average of the

end of period values for the current period and the previous period. The turnover ratio in the Indian context was very wavy from 1980 to 1995 with a sudden dip during the first half of the 1990s followed by a rise till 2000. Thereafter it declined drastically. But as far as the overall trend is considered, there is an upward rise during the time span taken.

Fig 3.8: Turnover Ratio: Trend
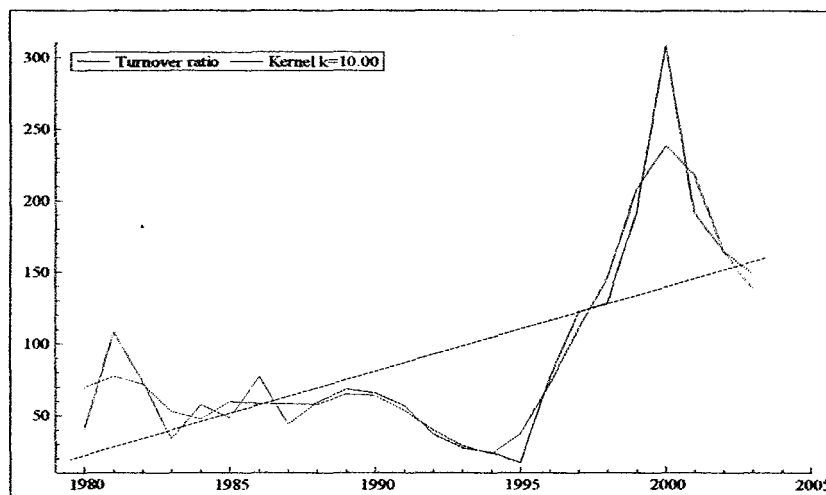
Note: —— Actual Series —— Smoothed Series —— Regression Line

Source: World Bank's "World Development Indicators" CDROM 2000 and issues of 2001, 2002 and 2003

*(iii)*Value traded is the total value of shares traded during the period expressed as a percentage of Gross Domestic Product (GDP).

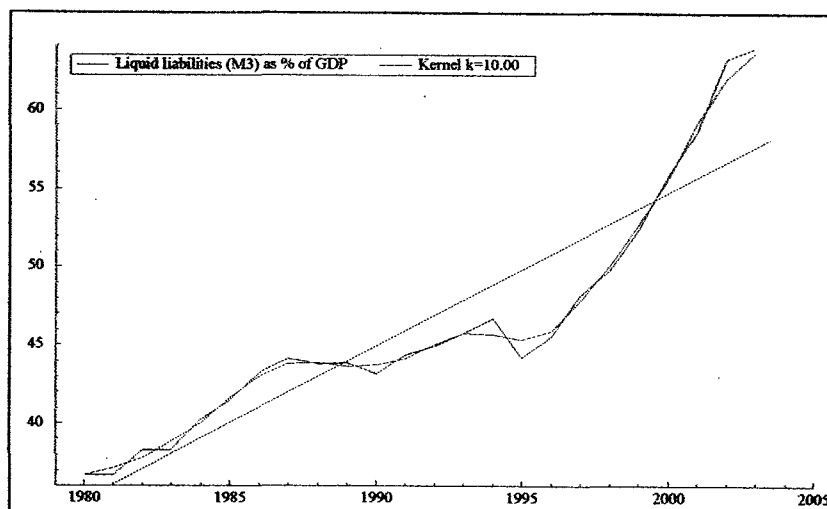**Fig 3.9: Value Traded as a proportion of GDP: Trend**
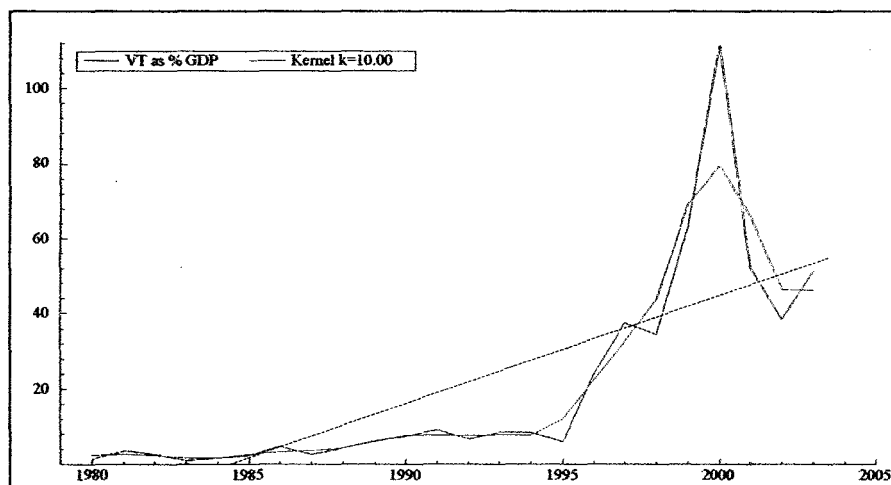
Note: —— Actual Series —— Smoothed Series —— Regression Line

Source: World Bank's "World Development Indicators" CDROM 2000 and issues of 2001, 2002 and 2003

Figure 3.9 shows that the value of shares traded as a proportion to GDP remained more or less stagnant till the late 1980s with a sudden hike until the year 2000. Thereafter a slowdown in the value traded is observed. But the overall trend here also is one increasing over the years.

3.5.3 Economic Growth Indicator:

Growth Rate of Gross Domestic Product (GDP) where GDP is defined as the sum of value added by all resident producers plus product taxes (less subsidies) not included in the valuation of output. It is seen that the trend of the growth rate of the Gross Domestic Product for the entire period remained more or less similar with a very marginal enhancement.

Fig 3.10: Growth Rate of Gross Domestic Product: Trend
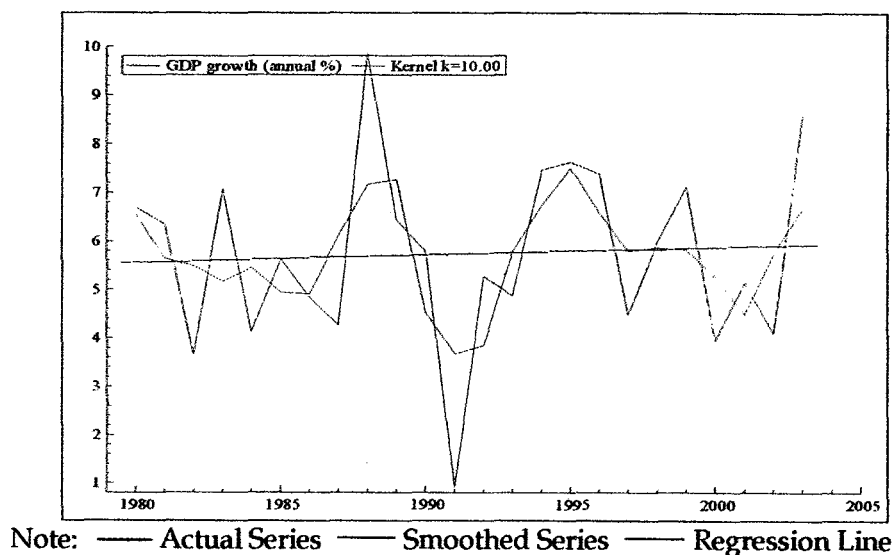
Note: ———— Actual Series ———— Smoothed Series ———— Regression Line

Source: World Bank's "World Development Indicators" CDROM 2000 and issues of 2001, 2002 and 2003

To sum up, the Figures from 3.4 to 3.9 show the performance of the Indian financial sector indicators over a two and a half-decade from 1980 to 2005. It is interesting to note that except the ratio of the bank liquid reserves to bank assets (Figure 3.4), all the other indicators (from Figure 3.5 to 3.9) show an upward trend over the period considered. The growth rate of GDP (Figure 3.10) exhibited a slight increase over a two-decade period. Thus these indicators are a reflection of the fact

that the there is a wide network of institutions, instruments, and markets indicating widening and deepening of the Indian financial sector.

3.6 Conclusion

The present chapter has attempted to introduce and explain the main economic and financial variables that we use in our subsequent analysis as also to track-out their behaviour over time in the Indian context. Given this, we turn to an analysis in the next chapter of the financial development in India in terms of banking sector development as well as stock market development. Three indicators each for banking sector and stock markets are utilized, so in all there are six indicators for financial sector development. A method of index construction namely principal components is used to aggregate the indicators of banking and stock markets as banking sector index and stock market index. All the indicators taken together are also applied to develop a financial sector development index. To be very precise, principal component analysis aims at reducing a large set of variables to a small set that still contains most of the information in the large set. The technique of principal component analysis enables us to create and use a reduced set of variables, which are called principal factors. A reduced set is much easier to analyze and interpret. The procedure of index construction using Principal component technique is elaborated in the next chapter. In addition, Cointegrated Vector Auto Regression technique is adopted to examine the long-term association between financial development and economic growth at the macro level.

CHAPTER - 4

FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH IN INDIA:
A MACRO LEVEL ANALYSIS

4.1 Introduction

In the previous chapter, we have presented a brief analytical account of the development of banks and stock markets in India, especially during the post financial liberalisation era. With this background, the present chapter now attempts to investigate empirically the association between financial development and economic growth in the context of India over the period 1980 to 2003. As we have already explained, the concept of financial development is narrowed to consider only the banking sector and stock markets. An index is created via principal component method for both these sectors separately (i.e. bank index and stock market index) and together (i.e. financial development index) by making use of some indicators representing the size and liquidity of banking sector as well as that of stock market. Later the index constructed is used to examine the long run relationship between financial development and economic growth variable, i.e. growth rate of Gross Domestic Product (GDP) with the help of cointegrated Vector Auto Regression (VAR) approach. Almost all the important permutations and combinations are attempted to test for the association between banking variables and stock market variables with the economic growth variable. The details of the analysis are given below:

4.2 Construction of Financial Sector Development Index:

We make use of the method of Principal Component to construct the financial development indices. Principal component technique is a tool of multivariate analysis used to reduce a large number of inter-correlated variables into a much smaller number of variables, preserving as much as possible of the original variation, while also having useful statistical properties such as independence. This method is designed to reduce the dimensionality from say p variables to something much less while preserving the variance-covariance structure intact. The variance-covariance structure is explained through a few linear combinations of the original variables. Following Principal Component Analysis

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(PCA), it is possible to interpret the first few principal components in terms of the original variables, and thereby have a greater understanding of the data.

The first principal component is the linear combination that accounts for (or 'explains') the most variation. The second principal component is the linear combination that accounts for most of the remaining variation, while being uncorrelated to the first principal component. Each subsequent principal component accounts for as much as the remaining variation while being uncorrelated with previously determined principal components. To reproduce the total system variability of the original p variables there appears the requirement of p principal components. However, if the first few principal components account for a large proportion of the variability (for instance 80-90 percent), the objective of dimension reduction is achieved. In other words, all the original p variables are replaced by the first few principal components.

4.2.1 Principal Component Technique:

The Principal Component (PC) technique is detailed as follows: Let there be p random variables such that X_1, X_2... X_p where (for the moment) we make no assumption of multivariate normality. Considering the p linear combinations

$$Y_1 = l_{11}X_1 + l_{12}X_2 + \ldots + l_{p1}X_p$$

$$Y_2 = l_{21}X_1 + l_{22}X_2 + \ldots + l_{p2}X_p$$

$$\vdots \qquad \vdots \qquad \vdots$$

$$Y_p = l_{1p}X_1 + l_{2p}X_2 + \ldots + l_{pp}X_p$$

Alternatively, $Y_i = I_i^T X \qquad i = 1, 2 \ldots, p$

where
$$I_i = \begin{bmatrix} l_{1i} \\ l_{2i} \\ . \\ . \\ l_{pi} \end{bmatrix}$$

and
$$X = \begin{bmatrix} x_1 \\ x_2 \\ . \\ . \\ x_p \end{bmatrix}$$

If Σ denotes the variance- covariance matrix of X then,

$Var(Y_i) = I_i^T \Sigma I_i$

$Cov(Y_i, Y_k) = I_i^T \Sigma I_k$

Requirement of uncorrelated linear combinations of Y_i maximizes $Var(Y_i)$. Also after imposing a restriction that the coefficient vectors have unit length (i.e. $I_i^T I_i = 1$), we have

$PC_1 = I_1^T X$ that maximizes $Var(I_1^T X)$ subject to $I_1^T I_1 = 1$

$PC_2 = I_2^T X$ that maximizes $Var(I_2^T X)$ subject to $I_2^T I_2 = 1$ and $Cov(I_1^T X, I_2^T X) = 0$

$$\vdots \qquad \vdots \qquad \vdots \qquad \vdots \qquad \vdots \qquad \vdots$$

$PC_i = I_i^T X$ that maximizes $Var(I_i^T X)$ subject to $I_i^T I_i = 1$ and $Cov(I_i^T X, I_k^T X) = 0$ where

$K < i$.

PCA is intrinsically tied to eigenvalue / eigenvector theory as follows:

Let $(\lambda_1, e_1), (\lambda_2, e_2) \dots (\lambda_P, e_p)$ be the eigevalue / vector pairs of Σ

where $\lambda_1 \geq \lambda_2 \geq \dots \geq \lambda_p \geq 0$.

Then the ith principal component is given by

$$Yi = e_{i\,T} X$$

$$= e_{1i}X_1 + e_{2i}X_2 + \dots + e_{pi}X_p$$

where $\qquad Var(Y_i) = \lambda_I \quad$ and $\quad Cov(Y_i, Y_j) = 0$.

Since the variance of each principal component is equal to the corresponding eigenvalue, and the total system variability is just the sum of all eigenvalues, we have

Proportion of variance = $\dfrac{\lambda_k}{\lambda_1 + \lambda_2 + \ldots + \lambda_p}$

explained by PC_K.

Hopefully PC_1, PC_2, (and possibly PC_3) will explain 80-90 percent of the variation especially when graphical displays are used. If p is large, there is every chance to be pleased with a substantial decrease in the dimensionality (for example if we start with 25 variables and PC_1 PC_5 explains 95 percent of the variation). The coefficients of each PC vector measure the importance of each variable. It is often possible to interpret the first few PCs in terms of an 'average' (or 'overall') effect, a 'contrast' between groups of variables etc.

In short, it can be said that the principal components are those linear combinations of the original variables which maximize the variance of the linear combination and which have zero covariance (and hence zero correlation) with the previous principal components.

4.2.2 Results of the Principal Component Analysis

The index of banking sector and stock market development both separately (banking index and stock market index) and together (financial development index) are constructed on the basis of components explaining maximum variance. Variables proxying for the banking sector development include bank liquid reserves to bank asset ratio (BLRBA), domestic credit provided by the banking sector as a percentage of Gross Domestic product (DCBS as % of GDP), and liquid liabilities as a percentage of GDP (LL as % of GDP) while those of stock market development are: market capitalization as a percentage of GDP (MC as % GDP), value traded as a percentage of GDP (VT as % GDP) and turnover ratio (TR). The period under study is 1980 to 2003. The results are reported in Table 4.1 to 4.3, each Table being given in two parts (a) and (b). The first one (Table 4.1 (a)) represents total variance explained and second one (Table 4.1 (b)) the component matrix. In Table 4.1 (a), the column of

'total' gives the eigenvalue, or amount of variance in the original variables accounted for by each component and the 'percentage of variance' column explains the ratio of the variance accounted for by each component to the total variance in all of the variables. The column of 'cumulative percentage' provides the percentage of variance accounted for by the first 'n' components. In addition, the second table (Table 4.1 (b)) represents the component matrix and depending on the values for each case and each component, the component score is computed by multiplying the case's original variable values by the component's score coefficients. The resulting component score variables will be representative of the total number of original variables indicating an index. The construction of three indices namely banking index, stock market index and financial development index are based on the following results.

Table 4.1 (a) and Table 4.1 (b) below show the principal components of banking sector variables namely bank liquid reserves to bank asset ratio (BLRBA), domestic credit provided by the banking sector as a percentage of Gross Domestic product (DCBS as % GDP) and liquid liabilities as a percentage of GDP (LL as % GDP).

Table 4.1 (a) Banking Variables - Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	Percentage of Variance	Cumulative %	Total	Percentage of Variance	Cumulative %
1	1.977	65.903	65.903	1.977	65.903	65.903
2	0.793	26.436	92.339			
3	0.230	7.661	100.00			

Extraction Method: Principal Component Analysis.

Table 4.1 (b) Banking Variables - Component Matrix

	Component
	1
BLRBA	-0.792
DCBS as % GDP	0.693
LL as % GDP	0.932

Extraction Method: Principal Component Analysis.

The percentage of variance accounted for by each component to the total variance in all of the variables is 65.9 percent, 26.4 percent and 7.7 percent

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respectively. Since the first component explains the maximum variation of nearly 66 percent, the component matrix gives the corresponding component figures for all the three variables namely, -0.792, 0.693, and 0.932. Depending on these values for each case and each component, the index is computed by having a linear combination of the case's original variable values and the component's score coefficients. That is,

Banking Sector Development Index = -0.792 BLRBA + 0.693 DCBS as % GDP + 0.932 LL as % GDP.

The resultant index values are given in Table 4.4.

On the same lines of construction of banking sector index, a stock market index also is arrived at by taking into consideration the following variables: market capitalization as a percentage of GDP (MC as % GDP), value traded as a percentage of GDP (VT as % GDP) and turnover ratio (TR). The percentage of variance accounted for by each component to the total variance in all of the variables in this case is 76.7 percent, 22.6 percent and 0.7 percent respectively (Table 4.2 (a) and (b)).

Table 4.2 (a) Stock Market Variables - Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	Percentage of Variance	Cumulative %	Total	Percentage of Variance	Cumulative %
1	2.301	76.689	76.689	2.301	76.689	76.689
2	.678	22.591	99.280			
3	0.022	.720	100.000			

Extraction Method: Principal Component Analysis.

Table 4.2 (b) Stock Market Variables - Component Matrix

	Component
	1
MC as % GDP	0.708
VT as % GDP	0.985
TR	0.911

Extraction Method: Principal Component Analysis.

Here too, the first component explains the maximum variation of nearly 77 percent and the corresponding component matrix figures for all the three variables are 0.708, 0.985, and 0.911. These variables are then used to construct a stock market

index by calculating a linear combination of the case's original variable values and component's score coefficients. That is

Stock Market Development Index = 0.708 MC as % GDP + 0.985 VT as % GDP + 0.911 TR.

The index values are reported in Table 4.4.

In addition to these two sectoral indices, we also construct an overall financial development index that incorporates all the variables considered in the banking sector as well as in the stock market sector together.

Table 4.3 (a) Financial Development Variables - Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	Percentage of Variance	Cumulative %	Total	Percentage of Variance	Cumulative %
1	3.767	62.782	62.782	3.767	62.782	62.782
2	1.008	16.798	79.581	1.008	16.798	79.581
3	.824	13.740	93.320			
4	.338	5.636	98.957			
5	0.046	.760	99.717			
6	0.017	.283	100.000			

Extraction Method: Principal Component Analysis.

Table 4.3 (b) Financial Development Variables - Component Matrix

	Component	
	1	2
BLRBA	-0.806	0.023
DCBS as % GDP	0.417	0.881
LL as % GDP	0.923	0.139
MC as % GDP	0.648	-0.424
VT as % GDP	0.934	-0.177
TR	0.894	-0.041

Extraction Method: Principal Component Analysis.

In Table 4.3 (a), the first three variables denote the banking sector indicators while the last three indicate stock market indicators. Each component accounts for variance of 62.8 percent, 16.8 percent, 13.7 percent, 5.6 percent, 0.8 percent and 0.3 percent respectively. The maximum variance, as in the above two cases, is explained by the first component to the tune of nearly 63 percent. With respect to the

component matrix, the Table 4.3 (b) shows two principal components i.e. PC_1 and PC_2 but since the first component explains the maximum variation, the index of financial development is constructed by making use of the PC_1 components, the values of which are -0.806, 0.417, 0.923, 0.648, 0.934, and 0.894. Thus the financial development index is calculated by taking into consideration the aggregate sum of the first component values of each variable multiplied by its corresponding original values. That is,

Financial Development Index = -0.806 BLRBA + 0.417 DCBS as % GDP + 0.923 LL as % GDP + 0.648 MC as % GDP + 0.934 VT as % GDP + 0.894 TR.

The index values are given in Table 4.4.

Table 4.4 Indices of Banking Sector Development, Stock Market Development and Financial Development

Year	Bank Index	Stock market Index	Financial Development Index
1980	53.41	41.40	81.81
1981	55.00	104.82	145.11
1982	58.31	72.73	115.87
1983	59.31	34.14	79.06
1984	64.78	56.58	105.50
1985	63.84	51.11	98.37
1986	68.76	78.87	129.59
1987	68.26	47.29	97.84
1988	67.26	64.12	113.29
1989	65.61	76.25	124.50
1990	64.19	76.79	123.86
1991	64.18	73.10	120.03
1992	65.34	55.08	103.69
1993	64.34	59.65	106.51
1994	62.79	57.47	103.35
1995	59.06	46.26	89.79
1996	64.98	115.58	162.89
1997	68.32	170.09	219.23
1998	69.19	168.79	219.03
1999	76.55	266.50	319.80
2000	82.82	413.59	468.21
2001	86.72	242.18	305.91
2002	95.03	206.55	278.47
2003	95.13	212.46	283.13

Source: Estimated using the Principal Component Technique

Thus, we have now three different indices, namely, banking sector development index, stock market development index and financial development

index, which are further used to examine the long run relationship with economic growth indicator (i.e. growth rate of Gross Domestic Product). These constructed indices over the period 1980 to 2003 are detailed in Table 4.4. The banking sector development index indicates a continuous rise in the index number from 53.41 in 1980 to 95.13 in 2003 with slight fluctuation during the period 1988 to 1993. However, there has been ebb and flow in the stock market development index over the same period that reflects its high volatility characteristic. However, the stock market development index shows an impressive upward trend from 41.4 in 1980 to 212.46 in 2003. The variability arising in both banking sector and stock market influence the overall financial development index (See Table 4.4).

To further substantiate the trends in banking sector development index, stock market development index and financial development index, a diagram is attempted for the Table 4.4 (See Figure 4.1). It is apparent from the figure that both banking sector development index and stock market development index were growing at the same pace until the year1995 with more ups and downs in the latter. Since 1996, a striking increase is found in the stock market development index in comparison to the banking sector development index; same so for the case of overall financial sector development index.

Figure 4.1 Trends in the Indices of Banking Sector, Stock Markets and Financial Development
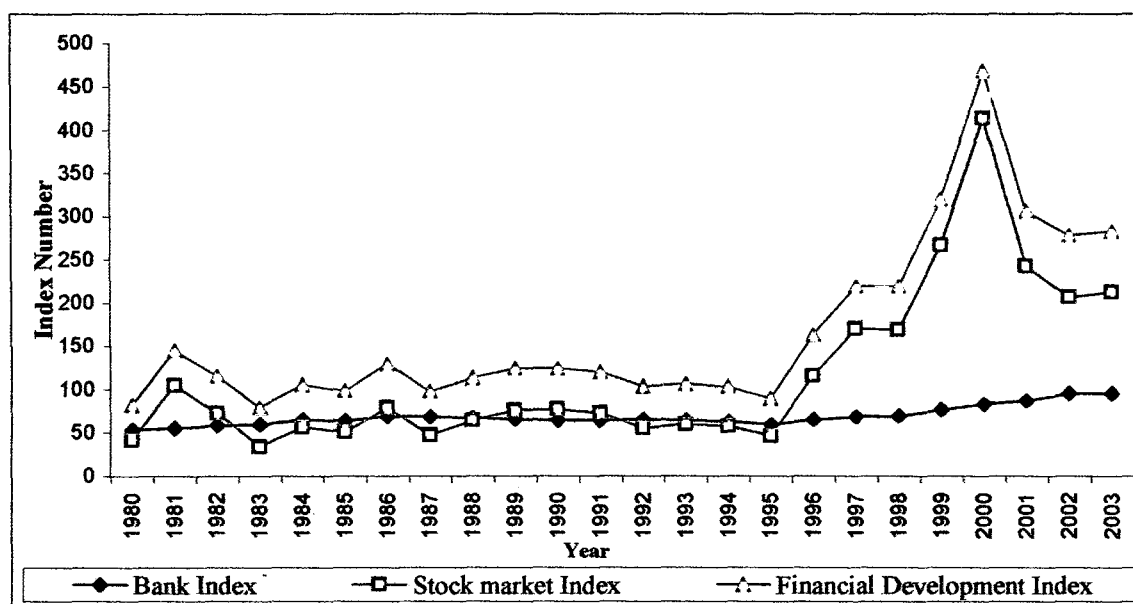
Source: Based on Table 4.4

4.3 Financial Development and Economic growth

After the construction of the indices using principal component analysis, the next step is to find the association that possibly exists between the financial development indicators and economic growth indicator. For this exercise, an application of cointegrated Vector Auto Regression (VAR) technique is undertaken as detailed below:

4.3.1 Time Series Analysis

Non-Stationarity Problem

Any standard estimation or testing procedures in a dynamic time series model requires that the various variables under consideration are stationary, since majority of the econometric theory rests on the assumption of stationarity. So the notion of stationary process plays an important role in the analysis of time series data. As stationary time series process is one whose probability distributions are stable overtime in the following sense: i.e., if we take any collection of random variables in the sequence and then shift that sequence ahead h time periods, the joint probability distribution must remain unchanged. Therefore the formal definition of stationarity is:

Stationary Stochastic Process: The stochastic process $\{x_t: t = 1,2...\}$ is stationary if for every collection of time indices $1 \leq t_1 < t_2 < .... < t_m$, the joint distribution of $(x_{t1}, x_{t2}....x_{tm})$ is the same as the joint distribution of $(x_{t1+h}, x_{t2+h},....x_{tm+h})$ for all integers $h \geq 1$.

There are different forms of stationarity i.e. weak and strong. A weakly stationary process or covariance stationarity is the one in which we are concerned with the means, variances and covariance of the series, and is sufficient to impose that these moments are independent of time, rather than the entire distribution. A

stochastic process having a finite mean and variance is covariance stationary if for all t and t-s

(i) $E(y_t) = E(y_{t-s}) = \mu$

(ii) $E[(y_t - \mu)^2] = E[(y_{t-s} - \mu)^2] = \sigma^2 y \quad [var(y_t) = var(y_{t-s}) = \sigma^2 y]$

(iii) $E[(y_t - \mu)(y_{t-s} - \mu)] = E[(y_{t-j} - \mu)(y_{t-j-s} - \mu)] = \gamma_s$

         i.e. $[cov(y_t, y_{t-s}) = cov(y_{t-j}, y_{t-j-s}) = \gamma_s]$

That is, a stationary process has a constant mean, a constant variance, and a constant covariance structure that are unaffected by a change of time origin. A strictly stationary process could be defined by an equation such as $Fx_{t_1}, x_{t_2}, ..., x_{t_T}(x_1, ..., x_T) = Fx_{t_1+k}, x_{t_2+k}, ..., x_{t_T+k}(x_1, ..., x_T)$ for any $t_1, t_2 ... t_T \in Z$, any $k \in Z$ and $T = 1, 2, ...$, and where F denotes the joint distribution function of the set of random variables. It should be evident from the definitions of weak and strict stationarity that the latter is a stronger definition and is a special case of the former. In the former case, only the first two moments of the distribution has to be constant (i.e. the mean and variances (and covariances)), whilst in the latter case, all moments of the distribution (i.e. the whole of the probability distribution) have to be constant. Both weakly stationary and strictly stationary processes will cross their mean value frequently and will not wander a long way from that mean value.

If two series are non-stationary, we may experience the problem of "spurious"[33] regression. This occurs when we regress one non-stationary variable on a completely unrelated other non-stationary variable, but yield a reasonably high value of R^2, apparently indicating that the model fits well. Most importantly therefore, we are not able to perform any hypothesis tests in models which inappropriately use non-stationary data since the test statistics will no longer follow the distributions which we assumed they would (eg, a 't' or 'F' statistics), so any inferences we make are likely to be invalid.

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[33]In a regression specification with two variables namely X_t and Y_t such that, $Y_t = \alpha + \beta X_t + \varepsilon_t$, characterized by high R^2, highly autocorrelated residuals and significant value for β is well known problem of non-sense and spurious regression (Granger and Newbold, 1974)

A deterministic trend process will have random variations about a linear (usually upward) trend. An expression for a deterministic trend process y_t could be $y_t = \alpha + \beta t + u_t$ where $t = 1, 2...$ is the trend and u_t is a white noise disturbance term. This is called deterministic non-stationarity because the source of the non-stationarity is a deterministic straight-line process. A variable containing a stochastic trend will also not cross its mean value frequently and will wander a long way from its mean value. A stochastically non-stationary process could be a unit root or explosive autoregressive process such as

$$y_t = \phi y_{t-1} + u_t \quad \text{where } \phi \geq 1.$$

When $\phi = 1$, we have $y_t = y_{t-1} + u_t$. In this case, we can show, through successive substitution and assuming that the initial value of y_t at t= 0 (that is y_t) is zero, such that

$$y_t = u_t + u_{t-1} + \ldots\ldots = \sum_i u_i \text{ , for } i = 1, 2, \ldots., t.,$$ that is in terms of the cumulation of all the

past shocks. Thus, the shock persists and the process is non-stationary.

The process when $\phi = 1$, that is, $y_t = y_{t-1} + u_t$, is called a unit root process and hence non-stationary. The change in y_t, that is the first difference Δy_t $(y_t - y_{t-1}) = u_t$ is however a stationary white noise process. Thus, in this case y_t can be made stationary through first differencing. Therefore, to find whether a series is non-stationary or not is equivalent to checking for a unit root in the series.

Unit Root Tests

Before proceeding with unit root testing procedure it is essential to understand its rationale. In nutshell, the necessity of studying non-stationarity arises due to the following reasons:

(a) The stationarity of a series can strongly influence its behaviour and properties. For a stationary series shocks[34] to the system will gradually die away i.e. the effect of a shock during time t will have smaller effect in time t+1, a smaller effect still in time t+2, and so on. This can be contrasted with the case of non-stationary data, where the persistence of shocks will be infinite, so that in a non-stationary series, the effect of a shock during time t will not have a smaller effect in time t+1, and in time t+2, etc.

(b) As previously explained the usage of non-stationary data leads to spurious regression. In such a case when standard regression techniques are applied the result could be a regression that looks good under standard measures (significant coefficient estimates and a high R^2), but which is really valueless.

(c) If variables employed in a regression model are not stationary, then it can be proved that the standard assumptions for asymptotic analysis will not be valid. In otherwords, the usual 't-ratios' will not follow a t-distribution, and the F-statistic will not follow a F-distribution and so on.

Now, to explain the unit root let us reflect on a model: $y_t = a + \beta t + \rho y_{t-1} + u_t$, (1) where u_t is white noise. Let us consider the following probabilities:

1. When $\beta \neq 0, |\rho| < 1$, y_t has a linear trend and hence is a trend stationary series.

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[34] Shocks denote a change or an unexpected change in a variable or perhaps simply the value of the error term during a particular time period.

2. When $\beta = 0$, then $y_t = a + \rho\, y_{t-1} + u_t$. (2). There appear two cases: i) if $|\rho| < 1$, y_t is a stationary series; and ii) if $\rho = 1$, y_t is a difference-stationary series with a drift term.

3. When $a = \beta = 0$, then $y_t = \rho\, y_{t-1} + u_t$, (3). Here the two cases are: i) if $|\rho| < 1$, y_t is stationary; and ii) if $\rho = 1$, y_t is a difference-stationary series without drift.

Subtracting y_{t-1} from (3) on both sides we get,

$\Delta\, y_t = \gamma\, y_{t-1} + u_t$, (3.a) where $\gamma = (\rho - 1)$

Also null hypothesis of Ho: $\gamma = 0$ corresponds to Ho: $\rho = 1$.

Similarly, (1) and (2) can be rewritten as

$\Delta\, y_t = a + \beta t + \gamma\, y_{t-1} + u_t$, (1.a)

$\Delta\, y_t = a + \gamma\, y_{t-1} + u_t$. (2.a)

Now, to find out whether a series y_t has unit root (y_t is a nonstationary, integrated, process), the regression (3) is run to find out if $\rho = 1$ statistically, against the one-sided alternative $|\rho| < 1$, or, equivalently, then (3.a) is estimated to find out if $\gamma = 0$, on the basis of e.g., the t-statistic. Dickey and Fuller (1979), however, show that this statistic does not follow Student's t-distribution, even in the limit as the sample size increases infinitely. Different from the conventional t-statistic, the distribution of this statistic is known as (Dickey-Fuller) τ (tau) statistic whose critical values have been tabulated by Dickey and Fuller, and later on extended to a much wider range of sample sizes by MacKinnon (1990), both through Monte Carlo simulations. In case the estimated τ- value is sufficiently more negative (i.e., less) than the critical value at the chosen significance level, the null of unit root is rejected and hypothesis of stationarity is accepted. This test is referred to as Dickey-Fuller unit root test.

Dickey and Fuller (1979, 1981) while obtaining the asymptotic distributions assumed that the errors u_t were independently and identically distributed that is, iid $(0, \sigma^2)$. Moreover, where the errors are non-orthogonal (i.e., serially correlated), improper limiting distributions will be attained. Dickey and Fuller (1979) and Said and Dickey (1984) made an attempt towards the modification of DF test by means of

AR correction. The new Augmented Dickey-Fuller test (ADF) is carried out by estimating an auto regression of (y_t or) $\Delta\ y_t$ on its own lags and y_{t-1} using OLS:

$$Y_t = \rho Y_{t-1} + \sum_{i=1}^{p} \beta_i \Delta Y_{t-i} + u_t \quad \text{(or)} \quad \Delta Y_t = \gamma Y_{t-1} + \sum_{i=1}^{p} \beta_i \Delta Y_{t-1} + u_t \text{ when } \gamma = 0, \rho = 1.$$

The t- test statistic for the unit root null follows the same DF distribution (τ – statistic) as above, so that the same critical values can be used.

Cointegration

As already mentioned, the regression of a non-stationary time series on another non-stationary time series may result in spurious regression. Therefore, such series should be used for finding the association by running regression in the first difference of the variables.[35] But differencing of a non-stationary variable can lead to loss of valuable long-run information. Given this, there arises the need to preserve both long-run information present at the level variables as well as to check for spurious regression of the integrated variables. Both these incompatible objectives could be arrived at via implementation of cointegration technique. The notion of cointegration was put forward by Granger (1981) and Engle and Granger (1987) the elaboration of which is as follows:

A time series is integrated, if it requires differencing to make it stationary, and a set of integrated series is cointegrated if some linear combination of those non-stationary series is stationary. Considering two variables Y_t and x_t which are indeed I(1) processes[36], verified through some unit root tests, a simple method of testing whether they are cointegrated is to estimate the 'cointegrating regression':

$$Y_t = a + bx_t + u_t, \quad (1)$$

and then the residual u_t is tested to be I(0) or not.

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[35] Plosser and Schwert (1978) favoured empirical evidences pro first differencing in regression model.
[36] A process is said to be integrated of order d (I(d)) (d=1,2...) if its d-th difference $\Delta^d \xi_t$ is I(0). In particular, a process $\{\xi_t\}$ is integrated of order 1 (I(1)) if the first difference, $\Delta^d \xi_t$ is I(0).

The earlier cointegration tests incorporated such residual-based procedures. Two simple tests of the null hypothesis that y_t and x_t are *not* cointegrated, that is the u_t is I(1) was discussed by Engle and Granger (1987). First test i.e. Durbin-Watson Cointegrating Regression (DWCR) test is based on DW statistic from the relationship between yt and xt and tests on the null hypothesis that the residual u_t is I(1), whether DW is significantly different from zero using the critical values provided by Sargan and Bhargava (1983: Table 1). Also, the R^2 value will be very high for cointegrated variables. The second test directly examines residuals through an ADF test for unit root. Thus, given two variables Y_t and x_t, if they are indeed I(1) processes, verified through some unit root tests, a simple method of testing whether they are cointegrated is to estimate the 'cointegrating regression':

$$y_t = a + bx_t + u_t \, , (2)$$

and then test whether the residual u_t is I(0) or not, using the t-ratio on u_{t-1} from the regression of Δu_t on u_{t-1} and lagged values of Δu_t, in a way akin to the unit root (ADF) testing discussed earlier. If u_t has no unit root, that is, the linear combination $u_t = y_t - a - \beta x_t$ is I(0), then there exists a cointegrating relationship between yt and xt. In this perspective, the DF and ADF tests are regarded as Engle- Granger (EG) test or Augmented Engle-Granger (AEG) test.

The appropriate distribution say τ_u obtained by Monte Carlo simulations were imparted critical values by Engle and Granger (1987) and Engle and Yoo (1987). Moreover, Phillips and Ouliaris (1990) acquired the limiting asymptotic distribution of τ_u and provided critical values. The asymptotic distributions differ according to different trend variables in cointegrating regression due to which the critical values are given in three parts, i.e., when the cointegrating regression contains no constant (nor trend), only a constant, and both a constant and a time trend. It was MacKinnon (1990) who offered an approximation formula for computing critical values for all sample sizes, estimated using surface regressions.

Despite all this, these single equation methods does not indicate the number of cointegration relationships in the system. Here lies the importance of multiple equation system methods. Thus when there are more than two variables, residual based single equation methods fail to test for the number of cointegration relationships. Hence the use of system methods of Vector Auto Regression (VAR) framework is prescribed that treats all the variables as endogenous. The most popular system method is the Johansen (or Johansen and Juselius, JJ) method, based on canonical correlations (Johansen 1988; Johansen and Juselius 1990), that provides two likelihood ratio (LR) tests. The first (trace test) tests the hypothesis that there are at most *r* cointegrating vectors, and the second (maximum eigenvalue test) tests the null hypothesis that there are *r* cointegrating vectors against the hypothesis that there are *r*+1 cointegrating vectors. Johansen and Juselius (1990) recommend the second test as better. But later studies gave more emphasis to trace test (such as Toda 1994, 1995; and Liitkepohl et al. 2001).

The JJ test is computed in the following way. Suppose there are *p* variables that are considered being cointegrated. First, it is ensured that all the variables are of the same order of non-stationarity, and in fact are I (1), since it is very unlikely that variables will be of a higher order of integration. The variables tested for cointegration are stacked into a *p*-dimensional vector, called, say, y_t. Then, a *p*×1 vector of first differences, Δy_t, is constructed, formed and estimated using the following Vector Auto Regression (VAR)

$$\Delta y_t = \Pi\, y_{t-k} + \Pi_1\, \Delta y_{t-1} + \Pi_2\, \Delta y_{t-2} + \dots + \Pi_{k-1}\, \Delta y_{t-(k-1)} + u_t$$

The rank of the matrix Π is tested. If Π is of zero rank (i.e. all the eigenvalues are not significantly different from zero), there is no cointegration, otherwise, the rank will give the number of cointegrating vectors.

Both the JJ statistics i.e., trace test and maximum eigenvalue test statistics can be thought of as being based on an examination of the eigenvalues of the long run

coefficient or Π matrix. In both cases, the g eigenvalues (for a system containing g variables) are placed in ascending order: $\lambda_1 \geq \lambda_2 \geq \ldots \geq \lambda_g$. The maximal eigenvalue (i.e. the λ_{max}) statistic is based on an examination of each eigenvalue separately, while the trace statistic is based on a joint examination of the g-r largest eigenvalues. If the test statistic is greater than the critical value from the tables of Johansen and Juselius (1990) tables, reject the null hypothesis that there are r cointegrating vectors in favour of the alternative that there are r+1 (for λ_{max}) or more than r (for λ_{trace}).

The testing is conducted in a sequence and under the null, $r = 0, 1\ldots g$-1 so that the hypotheses for λ_{trace} and λ_{max} are as follows

Null hypothesis for both tests	Trace alternative	Max alternative
H_0: $r = 0$	H_1: $0 < r \leq g$	H_1: $r = 1$
H_0: $r = 1$	H_1: $1 < r \leq g$	H_1: $r = 2$
H_0: $r = 2$	H_1: $2 < r \leq g$	H_1: $r = 3$
$\vdots$	$\vdots$	$\vdots$
H_0: $r = p$-1	H_1: $r = g$	H_1: $r = g$

Thus the trace test starts by examining all eigenvalues together to test H_0: $r = 0$, and if this is not rejected, this is the end and the conclusion would be that there is no cointegration. If this hypothesis is not rejected, the largest eigenvalue would be dropped and a joint test conducted using all of the eigenvalues except the largest to test H_0: $r = 1$. If this hypothesis is not rejected, the conclusion would be that there is one cointegrating vector, while if this is rejected, the second largest eigenvalue would be dropped and the test statistic recomputed using the remaining g-2 eigenvalues and so on. The testing sequence would stop until the null hypothesis is not rejected.

The maximal eigenvalue test follows exactly the same testing sequence with the same null hypothesis as for the trace test, but the max test only considers one eigenvalue at a time. The null hypothesis that $r = 0$ is tested using the largest eigenvalue. If this null is rejected, the null that $r = 1$ is examined using the second largest eigenvalue and so on.

There is a potential problem with the size of the JJ test statistics in small samples, that is, the JJ test tends to over-reject the null hypothesis when it is true (Reimers 1992). Hence a small sample correction is applied to these statistics. The fundamental difference between the Engle-Granger and the JJ approaches is that the former is a single-equation methodology whereas JJ test is a systems technique involving the estimation of more than one equation. The main (arguably only) advantage of the Engle-Granger approach is its simplicity and its intuitive interpretability. However, it has a number of disadvantages, which includes its inability to detect more than one cointegrating relationship and the impossibility of validly testing hypotheses about the cointegrating vector.

4.3.2 Results of the Cointegrated Vector Auto Regression (VAR) Model:

Before proceeding towards the cointegration exercise, a test is conducted to ensure that all the variables considered are stationary. To perform this, an *Augmented Dickey Fuller* (ADF) test is applied both at the levels and at the first difference. This particular test is conducted by making use of three different models namely; first a model without constant, secondly a model with constant only and finally a model with both constant and trend. As already explained, we consider the period 1980 to 2003 for the following variables: Bank Liquid Reserves to Bank Asset Ratio (BLRBA), Domestic Credit provided by the Banking Sector as a percentage of Gross domestic Product (DCBS as % GDP), Liquid Liabilities as a percentage of Gross domestic Product (LL as % GDP), Market Capitalization as a percentage to Gross Domestic Product (MC as % GDP), Value Traded as percentage to Gross Domestic Product (VT as % GDP), Turnover Ratio (TR) and Growth Rate of Gross Domestic Product (GDP Growth Rate). The results of *unit root* test which are given in the Tables 4.5 (a) and Table 4.5 (b).

The results of unit root test in Table 4.5 (a) and Table 4.5 (b) at both levels and first difference gives an impression that all the indicators taken into consideration are integrated of order one, I (1), that is, series with one unit root

Table 4.5 (a) Results of the Unit Root Analysis – At levels

Variables	ADF test Statistics					
	Model 1 (Without constant)#	Lags	Model 2 (With constant)@	Lags	Model 3 (With Constant + Trend) $	Lags
BLRBA	-1.042	0	0.03849	0	-2.448	0
DCBS as % GDP	-0.2435	1	-2.329	2	-1.109	1
LL as % GDP	3.312	0	2.130	0	-0.3514	0
MC as % GDP	0.5123	0	-1.254	0	-2.236	0
VT as % GDP	-3.141**	3	-3.882*	3	-4.793**	3
TR	-0.5316	0	-4.710**	4	-5.524**	4
GDP Growth Rate	0.02756	4	-3.754*	0	-3.747*	2

Note:
 # Critical values are 5%=-1.97 1%=-2.74; @ Critical values are 5%=-3.08 1%=-3.96
$ Critical Values are 5%=-3.76 1%=-4.73
* and ** indicate statistical significance at 5 and 1 per cent respectively.

Table 4.5 (b) Results of the Unit Root Analysis – At First Difference

Variables	At First Difference					
	ADF test Statistics					
	Model 1 (Without constant)#	Lags	Model 2 (With constant)@	Lags	Model 3 (With Constant + Trend) $	Lags
BLRBA	-4.028**	0	-4.202**	0	-4.095*	1
DCBS as % GDP	-2.948**	0	-2.812	0	-3.466	0
LL as % GDP	-2.134*	0	-2.690	0	-3.866*	0
MC as % GDP	-3.077**	0	-3.236*	1	-3.080	2
VT as % GDP	-4.426**	0	-4.506**	1	-4.213*	0
TR	-4.029**	0	-3.915**	0	-3.786*	0
GDP Growth Rate	-6.038**	0	-5.848**	0	-5.635**	0

Note:
 # Critical values are 5%=-1.97 1%=-2.74; @ Critical values are 5%=-3.08 1%=-3.96
$ Critical Values are 5%=-3.76 1%=-4.73
* and ** indicate statistical significance at 5 and 1 per cent respectively.

The series are further tested for the presence of unit roots and it was found that the Augmented Dickey Fuller (ADF) test, however fails to find any more unit roots and it is maintained that all the series are integrated of order 1 i.e. I(1) as the

ADF statistics was higher than that of the critical value. There is always a set back in the usage of differenced variables against level variables due to serious loss of long run information. Here comes the technique of cointegration that not only maintains the long run information but also avoid the so-called spuriousity in the regression specification.

After establishing that the variables are nonstationary at levels and stationary at first difference, the next task is to look at the association between the chosen financial development indicators with the economic growth variable. For this, the Johansen-Juselius cointegration testing procedure is made use of; and the results are given in the following Tables. Both maximum eigenvalue and trace statistics with small sample correction are used (Reimers 1992). Beginning with the null hypothesis of no cointegration (r=0) among the variables, it is found that both the corrected maximum eigen value and trace statistics are well below the 95 percent critical value, thereby confirming non rejection of the null of no cointegration among the variables at 5 percent level of significance. Depending upon the number of cointegrating vectors at which the test statistics are greater than the critical values, that much linear combinations of the variables are considered to be stationary. Different permutations and combinations are tried to assess the association between banking and stock market variables. In all, nine combinations of the seven indicators are taken into consideration for performing a cointegrated vector auto regression (VAR) approach. All the tables given below are based on the null hypothesis of no cointegrating vector as against an alternative hypothesis of at least one cointegrating vector. The names of the variables considered for each test procedures are given along with the corresponding Table. And these include bank liquid reserves to bank asset ratio (BLRBA), domestic credit provided by the banking sector as a percentage of gross domestic product [DCBS as % GDP], liquid liabilities as a percentage of gross domestic product [LL as % GDP], market capitalization as a percentage of gross domestic product [MC as % GDP], value traded as a percentage of gross domestic product [VT as % GDP], turnover ratio (TR) and growth rate of gross domestic product (GDP Growth Rate). The corresponding eigenvalues for the variables used to test for the number of cointegrating vectors is given below the variable names.

First we seek to see whether there exists any cointegration between the indicators of economic growth (Growth Rate of Gross Domestic Product) and the separate indicators of the banking sector development in India over the period 1980 to 2003. The JJ test results are reported in Table 4.6, which indicates that we have two cointegrating vectors (CVs) defined in this case; note that for the first two rows, both the trace test statistics and maximum eigenvalue test statistics are greater than their critical values and hence we reject the first two null hypothesis. The results that there are only two cointegrating vectors against the fact that we can think of four possible cointegrating vectors with four variables however poses a problem of identification: Do we have the intended growth equation, and for reconfirmation, we resort to the residual-based single equation Augmented Engle Granger (AEG) tests. Here we form a growth equation (growth indicator as a function of the banking sector development indicators) and perform AEG test on its residuals to see whether the residuals are stationary (with no unit root) or not. This result is given in the first row of Table 4.15, which confirms our assumption of cointegration between the intended variables.

Table 4.6: JJ Cointegration Test for Economic Growth and Banking Variables
Variables Considered:
1. Growth rate of Gross Domestic Product (GDP Growth Rate)
2. Bank Liquid Reserves to Bank Asset Ratio (BLRBA)
3. Domestic Credit provided by Banking Sector as a percentage to GDP (DCBS as % GDP)
4. Liquid Liabilities as a percentage of GDP (LL as % GDP)
Eigenvalues: 0.743, 0.627, 0.384, 0.154

Null Hypothesis	Maximum Eigenvalue Test			Trace Test		
	Alternative	Statistic	Probability Value	Alternative	Statistic	Probability Value
r = 0	r = 1	31.29*	0.013	r ≥1	68.91**	0.000
r = 1	r = 2	22.65*	0.028	r ≥2	37.63**	0.005
r = 2	r = 3	11.4	0.149	r ≥3	14.98	0.058
r = 3	r = 4	3.83	0.050	r =4	3.83	0.050

* and ** indicate statistical significance at 5 and 1 per cent respectively.

Next we turn to find cointegration between economic growth indicator and the stock market development indicators in India for the period 1980 to 2003. The JJ test results in Table 4.7 shows that there is only one Cointegrating Vector defined in this context.

We proceed as earlier, assuming that the defined cointegrating vector in fact represents the intended growth equation here and for reconfirmation we also resort to AEG cointegration test. We find that the growth equation of our interest is cointegrated (Table 4.15).

Table 4.7: JJ Cointegration Test for Economic Growth and Stock Market Variables

Variables Considered:
1. Growth rate of Gross Domestic Product (GDP Growth Rate)
2. Market Capitalization as a percentage to GDP (MC as % GDP)
3. Value Traded as a percentage to GDP (VT as % GDP)
4. Turnover Ratio (TR)

Eigenvalues: 0.722, 0.599, 0.217, 0.032

Null Hypothesis	Maximum Eigenvalue Test			Trace Test		
	Alternative	Statistic	Probability Value	Alternative	Statistic	Probability Value
r = 0	r = 1	29.48*	0.025	r ≥1	56.84**	0.005
r = 1	r = 2	21.02	0.050	r ≥2	27.37	0.095
r = 2	r = 3	5.61	0.668	r ≥3	6.35	0.659
r = 3	r = 4	0.74	0.391	r =4	0.74	0.391

* and ** indicate statistical significance at 5 and 1 per cent respectively.

Given these results, that the economic growth indicator is cointegrated with the banking sector and stock market development indicators separately, we now try to find whether there is cointegration between economic growth on one hand and the banking sector and stock market development indicators on the other hand. The JJ test results in this regard are given in Table 4.8.

Table 4.8: JJ Cointegration Test for Economic Growth, Banking and Stock Market Variables

Variables Considered:
1. Growth Rate of Gross Domestic Product (GDP Growth Rate)
2. Bank Liquid Reserves to Bank Asset Ratio (BLRBA)
3. Domestic Credit provided by the Banking Sector (DCBS as % GDP)
4. Liquid Liabilities as a percentage to GDP (LL as % GDP)
5. Market Capitalization as a percentage to GDP (MC as % GDP)
6. Value Traded as a percentage to GDP (VT as % GDP)
7. Turnover Ratio (TR)

Eigenvalues: 0.929, 0.805, 0.658, 0.608, 0.436, 0.330, 0.180

Null Hypothesis	Maximum Eigenvalue Test			Trace Test		
	Alternative	Statistic	Probability Value	Alternative	Statistic	Probability Value
r = 0	r = 1	60.93**	0.00	r ≥1	171.68**	0.000
r = 1	r = 2	37.64	0.09	r ≥2	110.76**	0.003
r = 2	r = 3	24.65	0.422	r ≥3	73.12*	0.025
r = 3	r = 4	21.52	0.254	r ≥4	48.47*	0.042
r = 4	r = 5	13.18	0.45	r ≥5	26.95	0.105
r = 5	r = 6	9.2	0.276	r ≥6	13.77	0.089
r = 6	r = 7	4.57*	0.033	r =7	4.57*	0.033

* and ** indicate statistical significance at 5 and 1 per cent respectively.

Results of Table 4.8 show that there are four cointegrating vectors to be considered, according to the trace test results, we accept (whereas with the maximum eigenvalue test results support the existence of only one cointegrating vector). The AEG cointegration test results (Table 4.15) reconfirm that the growth equation of our interest is one of the cointegrated vectors.

Table 4.9 attempts to find the number of cointegrating vectors among the banking sector development variables and the stock market development variables. The trace statistics shows that the linear combination of the six variables considered are stationary (rejecting null hypothesis) as their test statistics are greater than the critical values revealing that there are six cointegrating vectors, while the maximum eigenvalue test explains that there are only one cointegrating vector whose linear combinations are stationary.

Table 4.9: JJ Cointegration Test for the Banking and Stock Market Variables
Variables Considered:
1. Bank Liquid Reserves to Bank Asset Ratio (BLRBA)
2. Domestic Credit provided by the Banking Sector (DCBS as % GDP)
3. Liquid Liabilities as a percentage to GDP (LL as % GDP)
4. Market Capitalization as a percentage to GDP (MC as % GDP)
5. Value Traded as a percentage to GDP (VT as % GDP)
6. Turnover Ratio (TR)
Eigenvalues: 0.887, 0.658, 0.608, 0.531, 0.287, 0.233

Null Hypothesis	Maximum Eigenvalue Test			Trace Test		
	Alternative	Statistic	Probability Value	Alternative	Statistic	Probability value
r = 0	r = 1	50.04**	0.002	r ≥1	127.39**	0.000
r ≤ 1	r = 2	24.66	0.421	r ≥2	77.35**	0.01
r ≤ 2	r = 3	21.41	0.261	r ≥3	52.69*	0.015
r ≤ 3	r = 4	17.41	0.159	r ≥4	31.28*	0.033
r ≤ 4	r = 5	7.78	0.411	r ≥5	13.87	0.086
r ≤ 5	r = 6	6.10*	0.014	r =6	6.10*	0.014

* and ** indicate statistical significance at 5 and 1 per cent respectively.

However, we depend upon the trace test statistics as it is considered to be superior to maximum eigenvalue test (Toda 1994, 1995; Liitkepohl et al. 2001), and conclude that the banking sector and the stock market development indicators are cointegrated. This result in turn helps us aggregate the two sectors to view it in its totality in terms of financial sector development index, as we do later on.

Now we repeat the exercise as done earlier by considering indices of banking sector and stock market in isolation as well as in concert with economic growth indicator. Table 4.10 below shows the cointegration that is undertaken for both banking sector index and stock market index. It is evident that there is no cointegrating vector that is stationary i.e. the null hypothesis is accepted since the test statistics are less than critical values. However, we proceed further by cross checking with the Augmented Engle Granger test, and find that the residuals from the given equation are in fact stationary white noise (See Table 4.15); we accept this result of cointegration.

Table 4.10: JJ Cointegration Test for Banking Sector Index and Stock Market Index
Variables Considered:
1. Bank Index
2. Stock market Index
Eigenvalues: 0.431, 0.007

Null Hypothesis	Maximum Eigenvalue Test			Trace Test		
	Alternative	Statistic	Probability Value	Alternative	Statistic	Probability Value
r = 0	r = 1	12.97	0.078	r ≥ 1	13.13	0.11
r = 1	r = 2	0.16	0.69	r =2	0.16	0.69

* and ** indicate statistical significance at 5 and 1 per cent respectively.

Accepting (based on the Augmented Engle Granger test result) that there exists a cointegration between banking sector index and stock market index, we next move on to test for the association among economic growth indicator on banking sector index and stock market index both separately and in combination in the following tables.

Table 4.11: JJ Cointegration Test for Economic Growth and Banking Sector Index
Variables Considered:
1.Growth Rate of Gross Domestic Product (GrGDP)
2. Banking sector Index
Eigenvalues: 0.542, 0.050

Null Hypothesis	Maximum Eigenvalue Test			Trace Test		
	Alternative	Statistic	Probability Value	Alternative	Statistic	Probability Value
r = 0	r = 1	17.98*	0.011	r ≥1	19.17*	0.012
r = 1	r = 2	1.19	0.275	r =2	1.19	0.275

* and ** indicate statistical significance at 5 and 1 per cent respectively.

The relationship between growth rate of gross domestic product with that of banking index (Table 4.11) and stock market index (Table 4.12) indicates that the test statistics both in the trace and maximum eigenvalue are significant thereby rejecting the null hypothesis of no cointegrating vectors. Therefore, both the Tables (4.10 and

Table 4.12: JJ Cointegration Test for Economic Growth and Stock Market index

Variables Considered:
1. Growth Rate of GDP
2. Stock market Index
Eigenvalues: 0.605, 0.079

Null Hypothesis	Maximum Eigenvalue Test			Trace Test		
	Alternative	Statistic	Probability Value	Alternative	Statistic	Probability Value
$r = 0$	$r = 1$	21.38**	0.006	$r \geq 1$	23.27**	0.002
$r = 1$	$r = 2$	1.88	0.170	$r = 2$	1.88	0.170

* and ** indicate statistical significance at 5 and 1 per cent respectively.

4.11) deduce that there is only one cointegrating vector in the case of maximum eigenvalue and trace test that are stationary. Moreover, the confirmation of the integration with residual based Augmented Engle Granger test (Table 4.15) implies that the growth equation is in the intended direction. A similar result is obtained when attempted for the association between gross domestic product to that of banking sector index and stock market index (Table 4.13).

Table 4.13: JJ Cointegration Test for Economic Growth, Banking Sector Index, and Stock Market Index

Variables Considered:
1.Growth rate of Gross Domestic Product (GrGDP)
2. Bank Index
3. Stock market Index
Eigenvalues: 0.65726, 0.41136, 0.0056868

Null Hypothesis	Maximum Eigenvalue Test			Trace Test		
	Alternative	Statistic	Probability Value	Alternative	Statistic	Probability Value
$r = 0$	$r = 1$	24.63*	0.013	$r \geq 1$	36.95**	0.006
$r \leq 1$	$r = 2$	12.19	0.104	$r \geq 2$	12.32	0.143
$r \leq 2$	$r = 3$	0.13	0.717	$r = 3$	0.13	0.717

* and ** indicate statistical significance at 5 and 1 per cent respectively.

The Table 4.13 rejects the null hypothesis of no cointegrating vectors and leaves us with one cointegrating vector both in the case of trace and maximum

eigenvalue test. This result was in addition verified by making use of Augmented Engle Granger test (See Table 4.15).

Table 4.14: JJ Cointegration Test for Economic Growth and Financial Sector Development Index

Variables Considered:
1. Growth rate of Gross Domestic Product (GrGDP)
2. Financial Development Index
Eigenvalues: 0.60226, 0.058830

Null Hypothesis	Maximum Eigenvalue Test			Trace Test		
	Alternative	Statistic	Probability Value	Alternative	Statistic	Probability Value
r = 0	r = 1	21.20**	0.003	r ≥1	22.60**	0.003
r ≤ 1	r = 2	1.39	0.238	r =2	1.39	0.238

* and ** indicate statistical significance at 5 and 1 per cent respectively.

Finally, an analysis is performed taking up the relationship between growth rates of gross domestic product with that of financial development (that is aggregate index for banking sector and stock market indicators) (Table 4.14). Here too, since the test statistics are greater than the critical values; the null hypothesis of no cointegration is rejected thereby accepting the alternative hypothesis of one cointegrating vector which was also established with the residual based Augmented Engle Granger test (See Table 4.15).

The conformity of all the estimates (through Cointegrated Vector Auto Regression approach) of the possible combinations relating to growth rate of gross domestic product with the banking and stock market indicators along with their indices using Augmented Engle Granger test is reported in Table 4.15 below:

Table 4.15: Augmented Engle-Granger Test for Cointegration

Variables	Augmented Engle Granger Test	
	ADF Statistics	Lag
Growth rate of GDP and BLRBA, DCBS as % GDP, LL as % GDP	-3.969**	0
	-2.910**	1
Growth rate of GDP and MC as % GDP, VT as % GDP), TR	-3.901**	0
	-2.730**	1
Growth rate of GDP, BLRBA, DCBS as % GDP, LL as % GDP, MC as % GDP, VT as % GDP, TR	-3.897**	0
	-2.778**	1
BLRBA, DCBS as % GDP, LL as % GDP, MC as % GDP, VT as % GDP, TR	-3.354**	0
	-2.633**	1
Bank Index and Stock market Index	-0.7662	0
	-2.227**	1
Growth rate of GDP and Banking Sector Index	-3.881**	0
	-2.982**	1
Growth rate of GDP and Stock market Index	-3.874**	0
	-2.969**	1
Growth rate of GDP, Banking Sector Index and Stock market Index	-3.888**	0
	-3.004**	1
Growth rate of GDP and Financial Development Index	-3.874**	0
	-2.968**	1

* and ** indicate statistical significance at 5 and 1 per cent respectively.

All the residual-based cointegration tests confirm the existence of a long-run relationship, that is, cointegration among the variables considered in the different cases.

Given these results, Table 4.16 summarizes the entire results that are performed at macro level by undertaking different permutations and combinations of economic growth indicator along with financial development indicators.

Table 4.16 Summary of the Cointegrated Vector Auto Regression Approach

Variables Considered	Whether Cointegrated or not
Bank Index and Stock market Index	Yes
BLRBA, DCBS as % GDP, LL as % GDP, MC as % GDP, VT as % GDP, TR	Yes
Growth rate of GDP and BLRBA, DCBS as % GDP, LL as % GDP	Yes
Growth rate of GDP and MC as % GDP, VT as % GDP, TR	Yes
Growth rate of GDP, BLRBA, DCBS as % GDP, LL as % GDP, MC as % GDP, VT as % GDP, TR	Yes
Growth rate of GDP and Banking Sector Index	Yes
Growth rate of GDP and Stock market Index	Yes
Growth rate of GDP and Banking Index & Stock market Index	Yes
Growth rate of GDP and Financial Development Index	Yes

4.4 Conclusion:

The present chapter seeks to establish the possible association between the indicators of the financial development and economic growth in the context of India over a period of 24 years i.e. from 1980 to 2003. In this study, the term financial development is taken to refer to the development of the banking sector and the stock market indicators. In all, there were seven variables, one for representing economic growth and three each for proxying financial sector development (especially in terms of banks and stock markets). The indicators of banking sector and stock market are indexed separately (i.e. banking sector index and stock market index) as well as together (namely financial development index) with the help of Principal Component Technique. Nine combinations of all the variables along with

the respective indices are analyzed using the time series technique of Johansen-Juselius (JJ) Cointegrated Vector Auto Regressions (VAR) approach, the results of which were further confirmed with residual based Augmented Engle Granger test. In all the cases taken, it was found that there exist cointegration among the chosen variables thereby, reflecting the existence of a positive long-run association between financial development indicators and economic growth indicator over nearly two-decade period. With the establishment of long run association between financial development and economic growth indicators, the study advances further by posing a problem: Given this macro relationship, what would be the impact of financial development at the micro level. For this, a micro level study is attempted in the next chapter by considering the case of sample firms. Here the concentration would be on the sources of financing of firms i.e., whether they resort to external financing (i.e. from banks and other financial institutions, stock markets etc) or internal financing (i.e. from internally generated revenue).

CHAPTER 5

FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH:

A MICRO LEVEL ANALYSIS

5.1 Introduction:

In the background of the results we have obtained at the macro level that establish a long-run association between economic growth and financial development in India, we now turn to a micro level study on the sources of firms' finances, given the overall financial development in India. It goes without saying that the financial structure of the firms assumes significance in understanding the process of financial development. Here the focal point is regarding the sources of financing of the firms in terms of internal and external financing rather than the nature and type of financial intermediation. Thus the ultimate question that is attempted to be answered in this chapter is with respect to the degree of the firms' reliance on internal or external sources of finance and also to the type of firms going for such financing.

Generally, firms' financing can be of two types, namely, internal and external financing. Internal source of funds is said to include bonus shares, reserves and surplus (mostly retained profits) and provisions (mainly depreciation) while external source of funds, comprise increase in paid-up capital (new capital issues including premium), borrowings (by way of debentures, loans and advances from intermediaries and public deposits) and trade dues (Reserve Bank of India 1998-99: Ch.VIII). In this chapter, we make a modest attempt to find out whether the firms in India in general go in for external sources of financing or are dependent on their own internal sources. Our main premise behind this analysis is that a higher degree of external financing goes hand in hand with financial sector development. We show in this chapter that this premise holds water as far as the sample of firms considered for the study is concerned.

5.2 Background of the Study

There are several viewpoints relating to the financing of firms. Literature on corporate finance had probed more into the issue of relating firms' financing with investment decisions. Most prominent among them being the renowned theorem of Modigliani and Miller (1958) who asserted that in the absence of taxes, bankruptcy costs, asymmetric information, and an efficient market; the financing decisions are completely irrelevant to firm value, including capital structure. In other words, Modigliani and Miller maintained that firms' choice for particular source of funds, be it internal (i.e. retained earnings) or external (via issuing bond or equity), had no bearing on their investment decision. However, the presence of institutional factors (such as tax and financial intermediaries) and market condition (i.e. imperfect information) can also affect the firms' financing decisions as well as investment (Rajakumar, 2001). This study is nevertheless limited to the extent of incorporating only the private corporate sector and also of not undertaking financing patterns in terms of different size classes, industry groups etc.

The firms' dependence on internal and external financing differs in the context of the developed and developing countries. Mayer (1990) undertook a cross country study for the period 1970-85 and found that the internal funds contributed nearly two-thirds of average investment financing in developed countries such as the US, UK, Japan, Germany, France, Italy, Canada and Finland, while the relative share for external financing was very low, about 10 per cent. This argument is also reflected in the study by Singh, 1995 which in addition finds that stock markets appear as key source for firms in emerging markets. Even, the standard pecking order theory of finance for instance suggests that firms prefer internal to external finance (especially in advanced economies) and that if they had to resort to external finance, they would prefer to use debt and only as a last resort, equity finance. The high level of imperfections in stock markets in developing countries such as the inadequacy of the investor protection and legal frameworks and the lack of transparency in transactions and the share price volatility that is inherent in them would lead us to predict that firms in developing countries would rely much more

on internal than external funds as also resort far less to equity finance than firms in advanced countries. This is the same line of argument as that of Singh and Hamid (1992) and in contrast Atkin and Glen (1992) found that firms in G7 countries internal funds are dominant and in developing countries externally generated funds i.e. bank loans and equity are dominant. Besides, financing choices of firms is critical as cost of capital and value of firms depend upon its debt-equity mix (Pagano 1993; Boyd and Smith 1998; Hovakimian, Opler and Titman 2001). Cobham and Subramaniam (1998) report a much more limited role for equity in the financing of corporate growth in India and suggest bank loans and internal financing as the major source of firm financing in India.[37]

As regards the composition of borrowings, Indian firms have three major components: (i) term loans from Financial Institutions (FIs), (ii) short-term finance from commercial banks, and (iii) debentures. With the exception of few years, borrowings from intermediaries (banks and other Financial Institutions (in general, Financial Institutions)) continued to be a major source of funding for the corporate sector. Among the various components of borrowings, bank borrowings generally constituted the most important source, followed by borrowings from FIs and debentures (see Subramanian and Umakrishnan (2004)). Recent years have found increasing importance of stock market development (i.e. preference of the firms to put their investments in the form of equity and preference capital). In this respect, there are studies concentrating on debt-equity ratio, where debt represents borrowings from banks and other financial institutions and equity denotes that of stock markets (Gallego and Loayza 2004). The debt-equity ratio, depicting the relative importance of borrowed capital in relation to owned capital, is an important indicator of the capital structure of companies. It is coupled with institutional environment and the extent of development of financial markets thereby determining the financing options of the corporate body. The relative role of equity vs. debt, or in other words, the relative role of stock market and financial intermediaries, is considered to be a principal issue. This points towards the limited role that stock market has played as a source of finance in India, except for few

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[37] Similar idea was put forward by Saggar (2005)

years, and this calls for suitable measures to correct the imbalance and develop the capital market along sound lines. In the absence of vibrant stock market, the debt-equity ratio may be higher than what is prudentially desirable, which could create difficulties for servicing the debt by the corporate.

Given the background, this chapter seeks to bring out the source of funds that the firms generally go for in the standard case. It is to examine whether the firms in the recent years are extensively dependent on external financing, i.e., financing through banks, stock markets rather than on internal sources.

5.3 Data and Methodology

The study considers a sample of listed and permitted firms of Bombay Stock Exchange (BSE), obtained from the Centre for Monitoring Indian Economy's (CMIE) PROWESS Database on the financial year basis for the period, i.e., March 1991 to March 2005. The reason behind taking only Bombay Stock exchange is that it is one of the oldest stock exchanges in India (established in 1875) and has the record of listing maximum number of firms to the tune of 5664 firms[38]. The indicators chosen for the analysis are based on the criteria of size and efficiency profile of the firms as well as those that reflect their external and internal source of financing. For the analysis, the size and efficiency of firms are reflected in the crucial variables like sales, operating profit and solvency ratio. The definitions of these variables according to CMIE PROWESS database is as follows:

> *Sales/Operating income* denotes the revenue generated by an enterprise during a given accounting period. The revenue is measured by the charges made to customers or clients for goods supplied and services rendered to them. Prowess defines sales/operating income as the revenue generated by a firm from its main business activities. It excludes other income and income from non-recurring transactions, income of extra-ordinary nature and prior period income.

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[38] The number of firms mentioned is as per the publication of the Standards and Poors' "*Global Stock Market Fact Book*", 2004.

Sales/operating income includes sale of manufactured and traded goods, income through job work or other services rendered. It also includes the operating income of service companies. In the case of construction companies, gross billing for works completed is considered as income. Sales are always taken gross of indirect taxes such as excise duties.

> *Operating profits* represents profit arrived at by deducting variable cost and fixed cost from gross sales value.

> *Solvency ratio* is a measure of the liquidity position of a firm. It is calculated using the following formula: Solvency Ratio = (Total Asset excluding Revaluation and Deferred Revenue Expenditure) *divided by* (Total Borrowings + Current Liabilities and Provisions – Tax Advance).

With regard to the internal and external sources of funds, indicators such as retained profits, depreciation, paid-up equity capital, debentures, total borrowings, and current liabilities and provisions are used. The entire dataset is filtered keeping in mind the exclusion of firms that have reported missing values and zeros to represent a balanced panel. Only those cases where sales are zero but the retained profits are negative are retained, as it is possible for firms to incur loss when there are no revenues generated. After sorting out, the average number of firms left is 664 per year analysed for a period of 15 years.

To begin with, the broad definitions of internal and external sources of funds as given in CMIE PROWESS are given below:

> *Internal sources of funds* usually represent the change in amount of funds sourced by a firms from within. It includes the change in retained profits and depreciation as on two balance sheet dates. This is a calculated data field and is arrived at using the following formula

Internal Sources of funds = ((Reserves + Bonus equity shares − Premium Reserves − revaluation reserves - intangible assets − miscellaneous expense not written off + gross fixed asset − net fixed asset) − previous (reserves + bonus equity shares − premium reserves − revaluation reserves - intangible assets - miscellaneous expense not written off + gross fixed asset − net fixed asset)).

➢ *External sources of funds* represents the funds sourced by a firm from sources other than those internal such as retained profits or depreciation which is a non-cash charge. This is a calculated data field and is arrived at using the following formula:

External Sources of funds = (Source Capital Market + Source Borrowings + Source Current liabilities and Provisions)

The component indicators of internal and external sources of funds are defined below:

• *Retained profits* are the amount of net profits that are retained within the firm and not distributed as dividend.

• *Depreciation* is a measure of the wearing out, consumption or other loss of value of depreciable asset arising from use, effluxion of time or obsolescence through technology and market changes. Depreciation includes amortization of assets whose useful life is predetermined and has a significant effect in determining and presenting the financial position and results of operations of an enterprise. It is charged in each accounting period by reference to the depreciable amount, irrespective of an increase in the market value of the asset.

There are various methods of computing depreciation. The most commonly adopted methods are straight-line method and written down value method. As per standard accounting norms, an enterprise should follow a consistent method for depreciation computation. However, there are instances where companies change

methods of calculating depreciation. In case of a change in method of computation of depreciation provision, there is either excess or a shortfall in provision of depreciation that is then written back or provided for.

- *Paid-up equity capital* is the total outstanding paid-up equity capital of the company as at the end of the accounting period. Shares issued but not paid-up or pending allotment does not form part of equity capital. Fresh equity capital issue announcements such as bonus share issues, etc. is not included in the equity capital unless the company has not made allotment of equity shares. Equity capital includes bonus equity shares issued, if any, by the firm in the past. It also includes increase in equity capital arising out of conversion of Global Deposit Receipts (GDRs) or External Commercial Borrowings (ECBs). The issue of GDRs is more or less like equity issue and the capital increases on the issue date. In the case of Euro-convertible bonds (which can be compared to fully convertible debentures), the capital increases only when the bonds are converted.

- A *debenture* represents the amount raised through issuance of debentures. The kinds of debentures included here are: non-convertible debentures, the non-converted part of partly or fully convertible debentures, and Convertible debentures. When there is a conversion clause associated with debentures, it is treated as follows: Prior to conversion, the entire debenture issue is treated as debt and form part of the debentures data field. Upon conversion, only the non-converted portion is what remains as debentures. Debentures placed privately with financial institutions like UTI are treated like other debentures and not classified with institutional borrowings. The debentures data field include the outstanding amount of debt raised through debentures and does not include the issue of debentures during a particular accounting period.

- *Total Borrowings* include all forms of debt-interest bearing or otherwise. All secured and unsecured debt is included under borrowings. Thus, borrowings include debt from banks (short term as well as long term) and financial institutions, inter-

corporate loans, fixed deposits from public and directors, foreign loans, loan from government, etc.

- *Current liabilities and provisions* include all liabilities that are due within twelve months. Sundry creditors, bills payables/acceptances, interest accrued and due form part of current liabilities. It also includes provisions for taxation and provision for dividend, provision for diminution in investment, etc. Current liabilities also include share suspense account, share application amount and un-matured financial charges.

Given these definitions, we now turn to the results in the next section.

5.4 Analysis Results

The analysis is done in three stages; first at the firm level, secondly at the disaggregated level by making use of different industry groups as given in the Prowess database, namely, manufacturing, services, financial services and banking services and thirdly, by linking patterns of financing with firm size. The industry groups are accounted for in the financial reports of the Prowess depending upon the economic activity performed.

Table 5.1 below gives an account of the total number of companies under the four industry groups stated above over the period of 15 years, from 1991 to 2005. Note that the total number of companies in the sample increased steadily during the first half of the period under study and declined sharply thereafter, yielding a negative average annual growth rate for the entire period. The same trend is seen in the case of manufacturing also. The probable reason for this could be attributed to mergers and acquisitions, lockouts, corporate raid[39] and so on. Despite wide fluctuations over the years, the manufacturing firms accounted for the largest number of firms throughout the period followed by services, financial services and

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[39] A 'corporate raid' is a business term, sometimes also referred to as *breaking a company*. It describes a particular type of hostile takeover in which the assets of the purchased company are immediately sold off (business liquidation). The target company essentially disappears in the process.

finally banking services. Contrary to this is the rate of growth of –2.60 percent (i.e. a negative growth rate) for the manufacturing services over the period, while the growth rate of the financial services and banking services stood at 8.16 percent and 25.84 percent respectively. It should be noted that the number of firms in the services sector also had an impressive growth initially, only to fall back to the original position by 2005.

Table 5.1: Number of Firms in Different Industry Groups over the Sample Period 1991-2005

Year	Manufacturing	Services	Financial Services	Banking Services	Total
1991	464	39	11	1	515
1992	504	43	19	2	568
1993	552	52	21	4	629
1994	594	53	21	4	672
1995	630	56	25	4	715
1996	649	56	36	6	747
1997	667	64	50	9	790
1998	664	72	58	9	803
1999	671	70	60	6	807
2000	640	70	58	16	784
2001	593	70	56	22	741
2002	517	63	56	28	664
2003	464	56	46	25	591
2004	406	43	35	24	508
2005	321	39	33	25	418
Average Annual Growth Rate (%)	-2.60	0	8.16	25.84	-1.48

Source: Centre for Monitoring Indian Economy, PROWESS updated till Jan2006

Following the number of firms in each industry groups, now the focus moves on to the characteristics of the chosen firms. To be specific, in Table 5.2, an attempt is made to look into the broad indicators of size in terms of sales and efficiency (reflecting in profitability and liquidity) in terms of operating profit and solvency ratio respectively. Each of these indicators is obtained by averaging the figures across the firms each year separately. It is seen from the table that the solvency ratio representing the liquidity profile of the firms remained more or less on an average of 1.4 times throughout the period 1991 to 2005, thereby indicating that these firms have the ability to meet its financial obligations/commitments without any default.

The size and profitability indicators, namely, sales and operating profit demonstrated a pattern with an steady rise during the period 1991 to 2005 from Rs. 194.28 crores to Rs. 1902.5 crores for the former and from Rs. 17.21 crores to Rs. 280.3 crores for the latter with exception in the year 1999 where there was a fall to the tune of Rs. 435.6 crores and Rs. 27.996 crores respectively. For the period 1991 to 2005, the growth rate of sales and operating profit were 17.69 percent and 22.05 percent respectively with 0.053 percent for solvency ratio. Overall, the size and efficiency of the firms given in the table below reveals the better performance of the firms over the years.

5.4.1 Sources of Funds: Internal and External financing

With this background, now the analysis progress towards the sources of funds on which these firms usually depend on i.e., whether they rely on internal or external funds. It is already mentioned that there are numerous fund sources for the corporate sector. Each firm raises its funds taking into account the nature of business, volume of finance needed, and conditions of capital and money market. Thus, finance is considered to be the lifeblood of any commercial or industrial undertaking and its need arises both for its foundation as well as expansion. Specifically, funds may be available internally or they may be raised from external sources. The utilization of undistributed or retained profits for meeting the fixed or working capital requirements of firms is known as internal financing or financing from internal sources. Internal funds are available to a firm that has been running its business successfully and has set out a portion of its earnings for future purposes. The process of creating savings in the form of reserves and surplus for its utilization in the business is technically termed as ploughing back of profits. Consequently, the internal resources provide the best means of the company's future growth prospects, as it involves no issuance cost. However, when firms are unable to finance all desired investment through their internal sources, they resort to external sources of financing.

Table 5.2: Period –wise Analysis of Indicators for Size and Efficiency of the Firms

Year	Sales (Size)				Operating Profit (Profitability) Rs. Crore				Solvency Ratio (Liquidity) Times			
	Mean (Rs. Crore)	Minimum (Rs. Crore)	Maximum (Rs. Crore)	Coefficient of Variation (%)	Mean (Rs. Crore)	Minimum (Rs. Crore)	Maximum (Rs. Crore)	Coefficient of Variation (%)	Mean (Rs. Crore)	Minimum (Rs. Crore)	Maximum (Rs. Crore)	Coefficient of Variation (%)
1991	194.28	0.27	7772.89	247.46	17.21	-22.32	1945.80	571.75	1.35	0.30	6.81	29.63
1992	210.11	0.04	9089.23	263.94	18.61	-144.24	2462.99	653.31	1.35	0.09	4.46	26.32
1993	229.85	0.37	10726.82	266.99	20.58	-156.44	2944.04	684.33	1.40	0.07	4.16	28.02
1994	265.74	0.02	12625.81	317.23	24.79	-134.72	3475.13	635.86	1.50	0.06	7.74	36.13
1995	284.72	0.20	14914.79	285.04	28.68	-293.60	1875.03	447.87	1.58	0.07	6.47	39.83
1996	348.44	0.03	15784.23	269.37	35.62	-317.59	2074.22	438.43	1.57	0.07	11.40	44.00
1997	429.43	0.08	18076.88	328.76	46.88	-432.85	12016.18	959.20	1.56	0.11	15.28	61.47
1998	440.86	0.14	20777.89	333.54	51.71	-366.13	12533.94	943.59	1.52	0.31	15.85	60.30
1999	435.60	0.02	25782.25	338.16	27.99	-630.51	3665.49	681.87	1.45	0.28	15.74	59.18
2000	654.69	0.06	97258.62	608.83	54.05	-1424.19	3551.53	584.35	1.42	0.26	47.26	159.58
2001	885.89	0.01	124349.00	626.61	105.81	-598.80	19920.52	820.62	1.38	0.10	31.57	147.64
2002	1029.64	0.04	117106.20	573.84	138.30	-1724.44	24141.27	772.38	1.39	0.06	21.02	180.00
2003	1243.77	0.04	127012.20	547.65	157.85	-423.27	7427.41	460.45	1.37	0.04	23.52	192.51
2004	1578.52	0.02	138785.70	513.92	214.90	-1222.71	8643.12	411.17	1.30	-76.56	23.45	332.65
2005	1902.50	0.01	159984.40	502.98	280.30	-496.95	9234.74	364.37	1.36	0.08	27.72	217.47
Average Annual Growth Rate (%)	17.69				22.05				0.053			

Source: Computed from Centre for Monitoring Indian Economy, PROWESS updated till January 2006.

Accordingly, the present study incorporates six variables to denote the source of financing of the firms. Out of the six, two variables namely, retained profits and depreciation are used to denote the internal financing of the firms. The remaining variables, such as paid up equity capital, debentures, total borrowings, and current liabilities and provisions represent the external financing of the firms.

To recap, from the total of 9952 sample firms, the numbers of firms for each period i.e. from 1991 to 2005 are reported in last column of Table 5.1. Each year separately, the values of indicators chosen for internal and external financing are averaged across firms. Later the two variables namely, retained profits and depreciation are summed up to arrive at total internal funds (column 2 of Table 5.3). Similarly, four variables such as paid-up equity capital, debentures, total borrowings and current liabilities and provisions are summed up to obtain total external funds (column 5 of Table 5.3). Moreover, the total funds are the composite of total internal funds and total external funds (column 10 of Table 5.3).

Total internal funds that accounted for the financing capacity of the firms out of its own retained earnings and depreciation had shown an increase from Rs. 14.3 crores in 1991 to Rs. 169.44 crores in 2005 with slight ups and downs in the period from 1991 to 2005. A very similar pattern of funding is observed in the case of total external financing with a rise from Rs. 262.10 crores in 1991 to Rs. 2017.42 crores in 2005 with minor variations during the same period. Even though the growth rate of internal funds is greater than external financing i.e., 19.31 percent and 15.69 percent respectively; the mean (Rs. 776.86 crores) of external financing is higher and its variability (67.68 percent) lower than internal financing. Similarly, the total funds, which are an amalgamation of total internal and total external financing, also show up the growth rate and coefficient of variation on par with total external financing for the sample period. A much closer look at the components of internal funds i.e. retained profits and depreciation reveal that while there is excess of growth rate (20.7 percent) in the former, the latter has lesser variability (73.19 percent). Among the external financing instruments, debentures and current liabilities and provisions has maximum growth rate of 16.31 percent and 17.38 percent with minimum variance in the former. Thus, it can be said that the major contributing elements in the enhancement of internal and external funds over the entire sample period are depreciation and debentures respectively.

Table 5.3: Sources of Finance for the Firms

(Averaged over the Sample Firms)   (Rs. Crores)

Year (1)	Total Internal Funds (2) = (3)+(4)	Retained Profits (3)	Depreciation (4)	Total External Funds (5) = (6)+(7)+ (8)+(9)	Paid up Equity Capital (6)	Debentures (7)	Total Borrowings (8)	Current Liabilities and Provisions (9)	Total Funds (10) = (2)+(5)
1991	14.30	7.46	6.84	262.10	25.75	124.01	49.17	63.17	276.39
1992	14.93	7.63	7.30	287.86	26.64	141.90	52.18	67.14	302.79
1993	17.39	7.92	9.47	357.98	32.85	181.63	69.76	73.74	375.37
1994	19.83	11.27	8.56	383.78	37.09	195.57	66.77	84.35	403.61
1995	26.22	16.32	9.90	365.24	39.62	184.91	54.17	86.54	391.46
1996	32.69	19.83	12.85	434.78	43.43	224.41	59.98	106.96	467.46
1997	34.29	16.76	17.54	547.32	45.67	276.60	66.85	158.20	581.61
1998	30.87	12.27	18.61	600.77	45.86	308.11	76.70	170.10	631.65
1999	24.20	3.23	20.97	593.77	51.36	324.70	82.84	134.86	617.97
2000	37.24	7.09	30.15	731.91	58.95	379.28	94.31	199.36	769.15
2001	40.52	10.34	30.18	1032.12	64.33	505.95	171.45	290.39	1072.65
2002	46.18	10.66	35.52	1219.81	78.24	588.40	202.25	350.92	1265.99
2003	74.41	31.44	42.97	1285.67	83.77	630.05	216.37	355.48	1360.08
2004	112.56	59.67	52.89	1532.34	96.70	729.99	243.58	462.08	1644.90
2005	169.44	103.98	65.46	2017.42	114.11	1029.51	277.72	596.08	2186.86
Mean	46.34	21.72	24.61	776.86	56.29	388.33	118.94	213.29	823.20
Coefficient of Variation (%)	92.04	122.76	73.19	67.68	46.77	66.79	66.84	76.44	68.72
Average Annual Growth Rate (%)	19.31	20.7	17.5	15.69	11.22	16.31	13.16	17.38	15.91

Source: Computed from Centre for Monitoring Indian Economy, PROWESS updated till Jan2006

Despite the increase in internal and external financing of firms over the period of 15 years as shown in the Table 5.3 as well as Figure 5.1, it is clearly evident that the rate at which the external financing is growing outpace that of the internal source of financing. This is an indication of the fact that in general, the sample firms chosen reflects a higher dependence on the external funds for meeting their requirements than on the internal funds which gets evident from Figure 5.1 below:

Figure 5.1: Trends in Internal and External Financing of Firms in India

Figure 5.1: Trends in Internal and External Financing of Firms in India
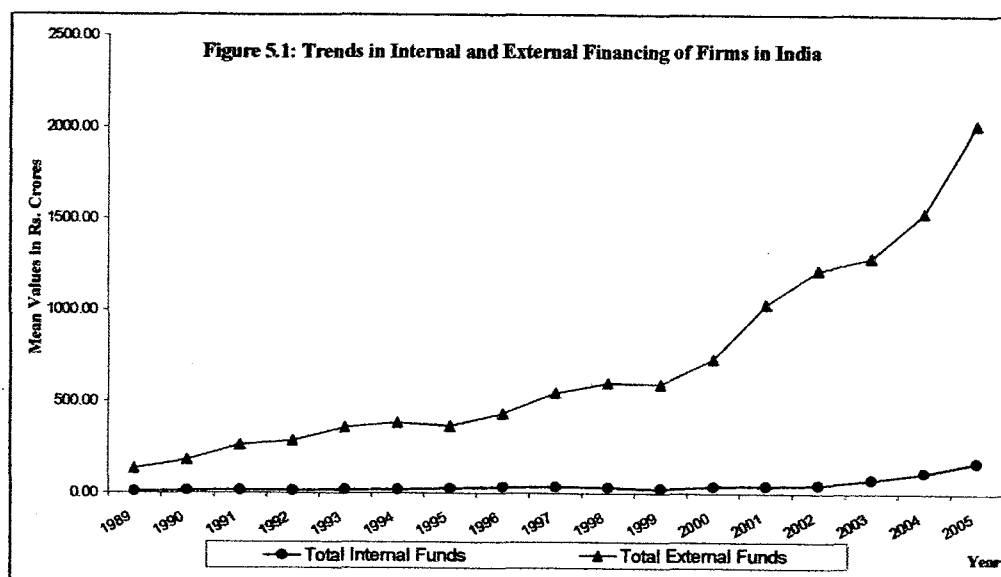
Source: Based on Table 5.3

5.4.2 Internal and External Financing: Different Industry Groups.

Given the fact of the overall significance of external source of financing for firms, we now turn to its disaggregate level across different industry groups such as manufacturing, services, financial services and banking services which are classified on the basis of economic activity in the Prowess database emulated in Table 5.4 below. In Table 5.4, the total funds (internal and external sources of funds) under the different industry groups mentioned above are reported. For each industry groups, firstly, the indicators namely retained profits, depreciation, paid-up equity capital, debentures, total borrowings and current liabilities and provisions are averaged across firms each year separately and summed up later on (See Table 5.4). It is very clear from the Table 5.4 that financial services and manufacturing account for the greater growth rate of 20.49 percent

and 15.38 percent respectively with lesser variability in the latter to the tune of 61.08 percent.

Table 5.4 Total Funds under Different Industry Groups *(Rs. Crores)*

Year	Manufacturing	Services	Financial Services	Banking Services
1991	206.53	335.89	188.13	31344.49
1992	242.61	164.82	179.75	19603.39
1993	278.97	394.57	210.59	14293.44
1994	326.29	209.26	313.16	14935.77
1995	352.08	529.00	423.73	4465.79
1996	419.49	598.50	449.29	4542.67
1997	505.53	298.70	453.59	8943.52
1998	540.38	381.60	495.51	10242.83
1999	583.11	471.75	511.22	7290.07
2000	713.15	566.32	627.31	4410.44
2001	768.35	572.92	723.56	11753.49
2002	890.98	695.26	908.25	10190.02
2003	1097.69	572.30	1260.47	8177.85
2004	1236.83	986.27	1895.12	9363.21
2005	1530.91	1559.27	2559.30	11096.73
Mean	646.19	555.76	746.60	11376.91
Coefficient of Variation (%)	61.08	62.07	90.67	60.82
Average Annual Growth Rate	15.38	11.59	20.49	-7.15

Source: Computed from CMIE PROWESS Database

Following the same method, to make it more understandable, the internal and external funds under different industry groups are given in Table 5.5 (a) and Table 5.5 (b) below.

Table 5.5 (a): Internal Sources of Finance under Different Industry Types *(Rs. Crores)*

Year	Manufacturing (1)	Services (2)	Financial Services (3)	Banking Services (4)	Total Internal Funds (5) =(1)+(2)+ (3)+(4)
1991	13.44	18.25	5.51	355.68	392.88
1992	14.90	8.68	4.72	254.25	282.55
1993	16.44	19.18	7.66	176.56	219.84
1994	19.42	13.84	11.60	202.71	247.57
1995	25.31	34.63	21.09	84.52	165.55
1996	32.12	40.50	26.03	60.85	159.50
1997	34.10	20.82	21.83	213.58	290.33
1998	28.62	25.02	17.16	332.28	403.08
1999	25.49	25.92	12.00	-17.40	46.01
2000	41.02	20.18	6.91	70.65	138.75
2001	40.40	23.40	5.32	187.99	257.11
2002	42.89	39.90	1.35	210.76	294.90
2003	74.38	28.67	11.05	294.03	408.12
2004	113.08	85.99	13.77	295.44	508.28
2005	167.21	184.02	26.52	364.00	741.76
Mean	45.92	39.27	12.84	205.73	303.75
Coefficient of Variation (%)	92.31	111.92	62.65	56.14	56.27
Average Annual Growth Rate (%)	19.72	17.94	11.87	0.17	4.64

Source: Obtained from CMIE, PROWESS Database

A glimpse of internal funds suggests that the manufacturing firms showed a twelve fold increase from Rs. 13.44 crores in 1991 to Rs. 167.21 crores in 2005 and the services firms with ten fold increase during the same period from Rs. 18.25 crores to Rs. 184.02 crores respectively. While financial and banking services firms registered nearly five folds and one fold increases respectively over the period considered. Furthermore, it is the manufacturing firms that report the maximum growth rate (19.72 percent) and lesser variability (92.31 percent) when compared to services firms with 17.94 percent and 111.92 percent respectively.

By going through the same logic, shifting focus towards external source of financing signify that it is the financial services firms that report the maximum increase of nearly 14 folds over the period 1991 to 2005 from Rs. 182.61 crores to Rs. 2532.78 crores respectively i.e., a growth rate of 20.66 percent. This trend is followed by manufacturing firms, services firms and finally by banking services firms to the tune of nearly seven, four, and less than one folds increase over the period of study undertaken. In this manner, the Table 5.5 (b) proposes that there is a clear demarcation of the kind of industry groups that go for internal and external financing i.e. more so in the case of manufacturing firms for the former (internal) and financial services firms for the latter (External financing).

Table 5.5 (b): External Sources of Finance under Different Industry Types *(Rs. Crores)*

Year	Manufacturing (1)	Services (2)	Financial Services (3)	Banking Services (4)	Total External Funds (5) =(1)+(2)+ (3)+(4)
1991	193.09	317.64	182.61	30988.81	31682.16
1992	227.71	156.14	175.03	19349.14	19908.01
1993	262.54	375.39	202.93	14116.88	14957.73
1994	306.87	195.42	301.55	14733.06	15536.90
1995	326.78	494.37	402.64	4381.27	5605.06
1996	387.37	558.00	423.26	4481.82	5850.45
1997	471.43	277.88	431.77	8729.94	9911.01
1998	511.76	356.58	478.35	9910.55	11257.23
1999	557.62	445.82	499.23	7307.47	8810.14
2000	672.14	546.15	620.40	4339.79	6178.47
2001	727.95	549.51	718.24	11565.50	13561.21
2002	848.09	655.35	906.90	9979.25	12389.60
2003	1023.31	543.63	1249.42	7883.83	10700.19
2004	1123.76	900.28	1881.35	9067.77	12973.15
2005	1363.70	1375.25	2532.78	10732.73	16004.46
Mean	600.27	516.49	733.76	1117.19	13021.72
Coefficient of Variation (%)	59.23	58.75	91.89	61.37	50.46
Average Annual Growth Rate (%)	14.98	11.03	20.66	-7.29	-4.76

Source: Obtained from CMIE, PROWESS Database

To be specific, the growth rate of manufacturing and services are higher in the internal funds (19.72 percent and 17.94 percent) and that of manufacturing and financial services firms (14.98 percent and 20.66 percent) in case of external funds with slight variability in the manufacturing firms in either case.

Therefore, it can be broadly concluded that among the other industry groups, it is the manufacturing services firms in internal financing and financial services firms in the external financing that accounts for greater extent of financing over the sample period.

Given the fact that the firms, in general, usually go for external financing and there appears to be a difference in the kind of industry groups that accounts for the major proportion of such financing, we now attempt to examine whether there exists any relationship between firms' size and the different sources of financing.

5.4.3 Firms' Size and Pattern of Finance:

Size characteristics of the firms under study are usually proxied by any one of the following variables: sales, total assets, gross value added, employment etc. Here we select the first variable, sales, to proxy the size of the firms.

The procedure of division of firms on size via sales is done at a more scientific way by considering the quartile deviations of the sales variables. From the entire sample of firms, large firms are sorted on the basis of values greater than the third quartile, medium firms with values in between the first and third quartile and finally, small firms on the basis of value below first quartile values (the values are Rs. 323.325 crores, Rs. 117.525 crores and Rs. 44.76 crores respectively). For each firm size i.e. large, medium and small, the internal source of finance is computed separately by aggregating the retained profits and depreciation provision, while the external source of finance is the total of paid up

equity capital, debentures, total borrowings, and current liabilities and provisions. The results are given in Table 5.6.

Table 5.6: Size-wise Firm Financing 1991 -2005 (Average Shares in Total)

Sources of Financing	Small Firms		Medium Firms		Large Firms		Total	
	Actual (Rs. Crores)	Percent -age	Actual (Rs. Crores)	Percent -age	Actual (Rs. Crores)	Percent -age	Actual (Rs. Crores)	Percent-age
Internal	-4.66	-4.80	4.07	1.84	149.02	6.12	148.42	5.39
Retained Profit	-6.89	-7.09	-2.20	-0.99	78.05	3.21	68.96	2.51
Depreciation	2.23	2.29	6.27	2.83	70.97	2.92	79.47	2.89
External	101.75	104.80	217.47	98.16	2284.61	93.88	2603.84	94.61
Paid-up Equity Capital	11.46	11.80	20.18	9.11	168.13	6.91	199.77	7.26
Total Borrowings	52.56	54.13	118.67	53.56	1127.50	46.33	1298.72	47.19
Debentures	11.17	11.50	25.12	11.34	376.75	15.48	413.04	15.01
Current Liabilities and Provisions	26.56	27.36	53.51	24.15	612.24	25.16	692.31	25.15
Total (Internal + External)	97.09	100.00	221.54	100.00	2433.63	100.00	2752.26	100.00

Source: Calculated from CMIE, PROWESS Database

Surprisingly, it is found that the retained profits for small and medium firms are negative implying that these firms are loss-making enterprises and depend entirely upon external sources for financing their investment requirements. Even large firms depend on external sources of financing to the extent of 94 percent. The shares of internal financing for medium and large firms are very meager to the level of nearly 2 percent and 6 percent respectively. On an average, it can be inferred from the table that all the firms irrespective of their size such as large, medium and small size go in largely for external financing.

A further probe into Table 5.6 gives some insights about the components of external funding that different kinds of firms resort to. Among the external sources of funds, it is the debentures, borrowings and current liabilities and provisions that account for nearly three-fourths of total share in the case of all sizes of firms, i.e., large, medium and small, followed by paid up equity capital. This is an indication of the fact that over the years, small, medium and large firms depend largely on borrowings from banks and other financial institutions, raising funds from equity issues is secondary in importance.

Following this argument, an attempt is made to find the sources of financing of small, medium and large firms to different industry groups (Table 5.7).

Table 5.7 points out that in the case of internal sources, large and medium firms in all the industry groups have some reliance on internal funds, while the small firms in all the industry groups have very weak reliance on internal funds. Coming to external financing, it is the large firms that accounts for a greater proportion of financing in all industry groups followed by medium and small firms.

The whole discussion so far underlines the extensive dependence of firms on external financing sources. To substantiate this position, Table 5.8 provides averages of stock market financing (i.e., paid up equity capital) and total bank financing[40] (as given in Prowess database) with a gap of nearly six years across the entire sample considered. It is evident from the table that both stock market and bank financing have been tremendously increasing over the period i. e. from Rs. 34.23 crores over 1991-96 to Rs. 87.43 crores over 2001-05 in the case of stock market and from Rs. 38.06 crores to Rs. 212.71 crores in the latter case. However, the growth in bank financing is much higher than that of stock market financing over the entire sample period. With this, it becomes quite obvious that financing through both stock markets and banks is significant with the maximum percentage of total external financing. This can be an indication of the much-debated complementarity that exists between banks and stock markets.

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[40] Total bank borrowing is the total of loans sourced from banks. It includes loans from banks in the form of cash credit, bank overdraft facilities, term loans, etc. Packing credit is also included in bank borrowings. Bank Borrowings also include term loans from banks.

Table 5.7: Size-wise Financing of Firms across Different Industry Groups 1991-2005

(Average Shares in Total) *(In Per Cent)*

Industry Type / Firm Size-Wise Sources of Funds	Banking Services		Financial Services		Manufacturing		Services		Total	
	Actual (Rs. crores)	Percentage	Actual (Rs. crores)	Percentage	Actual (Rs. crores)	Percentage	Actual (Rs. crores)	Percentage	Actual (Rs. crores)	Percentage
Internal	195.12	1.01	144.65	1.69	140.31	6.70	182.13	6.18	662.22	2.01
Small	-98.83	-0.51	-2.30	-0.03	-6.64	-0.32	-0.41	-0.01	-108.19	-0.33
Medium	8.42	0.04	17.92	0.21	3.04	0.14	7.62	0.26	37.00	0.11
Large	285.53	1.48	129.03	1.51	143.92	6.87	174.92	5.94	733.41	2.23
External	19117.33	98.99	8401.35	98.31	1955.17	93.30	2764.28	93.82	32238.12	97.99
Small	1236.50	6.40	118.05	1.38	106.33	5.07	91.73	3.11	1552.62	4.72
Medium	988.28	5.12	574.31	6.72	188.70	9.01	218.28	7.41	1969.57	5.99
Large	16892.55	87.47	7708.99	90.21	1660.13	79.22	2454.26	83.30	28715.94	87.28
Total (Internal + External)	19312.45	100.00	8546.00	100.00	2095.48	100.00	2946.41	100.00	32900.34	100.00

Source: Calculated from CMIE, PROWESS Database

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Keeping this point of view, the next question that now arises is which kind of firms goes for bank and stock market borrowing. For an answer, we turn to Table 5.9 that gives an account of size-wise bank and stock market financing.

Table 5.8: Financing of Firms through Banks and Stock markets
(Rs. Crores)

Financing of firms	1991-1996	1996-2001	2001-2005
Stock market Financing	34.23	51.60	87.43
Bank Financing	38.06	83.95	212.71

Source: Obtained from CMIE, PROWESS Database

Results of the Table 5.9 show that it is the large firms followed by medium and small firms that get set for both stock markets based and bank based financing. Thereby, it can be concluded from the whole analysis that firms usually route through external financing for meeting its financial requirements amongst which financing via borrowings from banks and financial institutions and equity issues play a significant role.

Table 5.9: Size-wise Firm Financing through Banks and Stock markets

Size- wise Financing Sources	1991-1996		1996-2001		2001-2005	
	Actual (Rs. crores)	Percentage	Actual (Rs. crores)	Percentage	Actual (Rs.crores)	Percentage
Stock market financing						
Large	161.67	88.16	151.03	78.04	191.77	70.36
Medium	11.7	6.38	19.66	10.16	31	11.37
Small	10.01	5.46	22.83	11.8	49.77	18.26
Total	183.38	100	193.53	100	272.54	100
Bank financing						
Large	151.99	84.98	236.11	81.87	468.77	81.91
Medium	20.49	11.45	36.65	12.71	66.66	11.65
Small	6.38	3.57	15.63	5.42	36.89	6.45
Total	178.85	100	288.4	100	572.33	100

Source: Calculated from CMIE, PROWESS Database

It can in general be concluded that both the sources – banks and stock markets – are almost equally significant in the context of India; in terms of the stages of financial development, this in turn implies that India seems to be in the fourth stage of financial sector development and is steadily heading towards the fifth stage of

financial sector development. Furthermore, it is an indication of the fact that there has been greater demand for investment in the economy, which promotes the rapid growth of banking sector and a simultaneous development of stock markets as well. Here we can conclude that expansion of both banks and stock markets functions are taking place in a complementary manner rather than being a substitute in the entire process of financial development.

5.5 Conclusion

The present chapter seeks to look into the implications of financial development and economic growth at the micro level in the context of India. Basic question that is attempted here is whether financial development affects the financing choices of firms. To this extent a sample of permitted and listed firms from CMIEs PROWESS Database is selected and the sources of financing (i.e. internal and external sources of funds) are examined. Crucial variables such as retained earnings and depreciation are used to denote internal financing and the external financing is composed of components like paid up equity capital, total borrowings, debentures and current liabilities and provisions. The analysis is done at three levels, i.e., firstly at the firm level, secondly at the disaggregated level (using different industry groups) and thirdly at the firm size context. The results ascertained that external financing of firms outpace the internal financing. Study done at the different industry groups suggested that manufacturing firms and financial services firms to the greatest extent contribute for internal and external financing respectively. Regarding firm size (classified as small, medium and large on the basis of quartile deviation of sales variable), it is observed that firms tend to go for external financing irrespective of their size and among the external financing, the major dependence of the firms are on borrowings from banks and other financial institutions. There are also some variations found when firm size is compared across different industry groups. Here the broad finding is that small firms exclusively depends on external financing while large and medium firms have access to both internal and external financing but more so for the latter. An analysis to find which component (i.e. stock market financing or bank financing) assumes importance within the sources of external financing, leads to the general conclusion that both stock market and bank financing are almost equally significant[41] in the context of India.

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[41] In line with Shirai, 2002 and Mathew Joseph et al. (1999).

CHAPTER 6

CONCLUSION

The study broadly aims at an assessment of the significance of financial development in India. Here the term financial development is narrowed to the extent of inclusion of banks and stock markets only. There are plenty of studies (both theoretical and empirical) in this context at cross-country level, individual case country level and country specific level utilizing different indicators and brings forth different arguments relating to the same most of which suggests that the result are very country specific and calls forth the need to probe into such relationship at an individual country level. To this extent, the present study attempts to look into the significance of financial development in India with both macro and micro level perspective. The basic objectives of the study includes: (1) To trace the development of financial sector in India in terms of banking and stock market indicators, (2) To find the association between financial development and economic growth at the macro level, and (3) To examine the influence of financial development on the financing choices of firms at the micro level.

Financial Sector Development

At the grass root level, the trends in the banking sector indicators and stock market indicators are traced along with a slight historical background. Further, to substantiate the development of banks and stock markets over time in an economy, a mention is also made regarding the framework developed by Kumar and Tsetsekos (1992) which emphasizes on the phases of financial development in the process of economic growth similar to that of Rostow's stages of growth. In this particular study, the first phase is characterized as a barter economy while the second stage is portrayed to be monetized economy with development of curb markets as well as emergence of banking sector. Expansion of banking sector takes place in the third stage with slight signs of stock markets appearance in the fourth phase with the stock market active expansion and functioning attributed to the fifth stage. Thus, it is in the fourth and fifth phases that the emergence of banks and stock

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markets does appear. To put it differently, an economy is said to be financially developed when there are existence of active banking sector and stock markets. With this concept in mind, the present study narrow down the term financial development into banks and stock markets as already mentioned. Later on this financial development (in terms of banking sector and stock markets) is tested for its association with economic growth in India at the macro level.

Macro Level Analysis

To perform the macro level analysis, three indicators used for banking sector include bank liquid reserves to bank asset ratio and both domestic credit provided by the banking sector and liquid liabilities as a proportion to Gross Domestic Product. In addition, to represent stock markets also, three indicators are utilized namely, market capitalization and value traded as a proportion to Gross Domestic Product and turnover ratio. On the other hand, economic growth is reflected with the indicator of growth rate of Gross Domestic Product. All these indicators are collected from World Bank's 'World Development Indicators', June 2005 CD and also from International Finance Corporation (IFCs, now Standards and Poor's) Emerging (Global) Stock Market Fact Book CDROM 2000 as well as issues of 2001, 2002, 2003, 2004. The span of the macro level study lies from 1980 to 2003, which depicts an era of liberalization.

First at the macro level, the indicators detailed above are indexed using principal component method both separately (called as banking sector index and stock market index) as well as in combination (referred to as financial development index). Secondly, these constructed indices are also used to test for the long run association with economic growth indicator. In all, nine combinations of the indicators along with their respective indices are tested for association by making use of Johansen-Juselius (JJ) Cointegrated Vector Auto Regression approach (VAR). The results obtained through the Johansen-Juselius VAR approach is further reconfirmed with the help of the residual- based Augmented Engle Granger (AEG) test. It was found that in all the cases (different combinations) undertaken depict the

existence of positive long-run association of financial development indicators with the economic growth indicator. After ascertaining the association between financial development and economic growth in the context of India, the next step was to observe the influence of this financial development on the financing choices of firms' i.e., at the micro level.

Micro Level Analysis

Financing pattern of firms is usually referred to in two types: Internal and External financing. Internal financing denotes the ability of the firms to generate revenue within the firms without going for external sources of borrowings. The Reserve Bank of India, 1998-99 defines internal financing and external financing where internal financing is said to include bonus shares, reserves and surplus (mostly referred to as retained profits) and provisions (mainly in the form of depreciation). On the contrary, external financing is composed of paid-equity capital (new capital issues including premium), borrowings (by way of debentures, loans and advances from intermediaries and public deposits) and trade dues. With the definition in hand, the present study also gazes at the sources firms' financing in the vogue of financial development. For this, the internal financing is represented through indicators of retained profits and depreciation while external financing incorporates paid-up equity capital, debentures, total borrowings, and finally current liabilities and provisions. To undertake this study, the data on permitted and listed companies is obtained from CMIEs PROWESS database for the period ranging from March 1991 to March 2005 which especially reveals the post liberalization phase of the Indian economy. In all there were total of 9952 sample firms after the clearance of missing values and zeros from the original set of data. The whole analysis is done at three stages namely, firstly at the firm level, secondly at the disaggregated level by making use of different industry groups such as manufacturing, services, financial services and banking services and finally by linking the pattern of financing with the firm size. To begin with, the total six components selected in all to represent internal and external financing are averaged separately for different years across the firms to arrive at the figures. Later, the

components of retained profits and depreciation are summed up to obtain the total internal financing each year. Similarly, the components of external financing, namely, paid up equity capital, debentures, total borrowings and current liabilities and provisions are added up to arrive at the figure of total external financing for each year separately. In addition, the average annual growth rate, coefficient of variations and mean of all the internal and external financing components are also reported to arrive at the reliable figures. The results suggest that the firms' dependence on external financing outpace that of internal financing over the sample period of 1991 to 2005. Later, a similar exercise is performed at a more disaggregated level by accounting for different industry groups as well as considering the effect on pattern of financing via firms' sizes. The sizes of firms (small, medium and large) are determined on the basis of the quartile deviations (i.e. first, second and third quartile) of the sales variable. The corresponding quartile values are Rs. 44.76 crores, Rs. 117.525 crores and Rs. 323.325 crores. All the firms below the sales value of Rs. 44.76 crores are classified as small firms, in between Rs. 44.76 crores and Rs. 323.325 crores as medium firms and greater than Rs. 323.325 crores as large firms.

In general, the findings of the firm level study is that even though external financing and internal financing are increasing over the sample period, there has been a greater reliance of firms on the former (from Rs. 262.10 crores in 1991 to Rs. 2017.42 crores in 2005) when compared to the latter (from Rs. 14.30 crores to Rs. 169.44 crores). It was also found that there are differences in the kind of industry groups going for different sources of financing. Major inference in this case is that, among other industry groups, it is the manufacturing firms and financial services firms that accounts for the greatest extent of generation of internal and external financing respectively over the entire sample period. Moreover, the firm size study in relation to sources of finance indicated clearly that all firms irrespective of their firm size (say large, medium and small) switch to external financing when compared to internal financing. Also among the external financing components, it is debentures, borrowings, and current liabilities and provisions that accounted for nearly three-fourth of the total share in case of all firm sizes followed by raising

funds from equity issues. Furthermore relating firm size with industry types, it is observed that large and medium firms in all the industry groups even though depend heavily on external financing, have some reliance on internal funds too. But small firms on the other hand rely exclusively on external financing. The analysis was further focused separately on banks and stock markets financing of firms that confirms the earlier findings of higher dependence of bank financing as opposed to that of stock market. In addition, there was an observation that large firms go for both financing in an extensive manner when compared to that of small and medium firms. This finding is an indication of the fact that both stock markets and banks are heading toward each other in financing firms, thereby reflecting the complementary role which could be accorded as per the framework of Kumar and Tsetsekos (1992) on financial development stages. From this it can be deduced that India is in the fourth stage of financial development process.

To summarize, there exists a strong association between financial development and economic growth at the macro level in India. In addition, the firms' pattern of financing in the course of financial development process reflects upon the fact of greater dependence of firms on external financing when compared to internal financing. This points toward the stage of dominant banking sector with an emerging and expanding stock market in India (i.e. the fourth phase of financial development as predicted by Kumar and Tsetsekos (1992). Therefore, the study concludes that an active financial development is a necessary instrument to strive economic growth in countries like India.

Limitations and Scope for Further Research.

This study basically deals with a period since the liberalization phase i.e. at macro level from 1980 to 2003 and at the micro level from 1991 to 2005. Hence a clear picture of pre and post liberalization period is not captured which could be a very good agenda for the future work. Despite the inclusion of both macro and micro aspects of the relationship that exist between financial development and economic growth, the study is somewhere incomplete due to data limitations. It is to

be specially cited that the usage of Centre for Monitoring Indian Economy's (CMIE) PROWESS database has its own problems, which are out of our reach. Moreover, the sample of firms that is selected for the study is confined to the inclusion of permitted and listed companies (which is a mixed bag of all kinds of firms) and ignores completely the unlisted firms behaviours which could also serve as a research area. An attempt can also be made to observe the financing pattern for any particular industry per se or for the entire industry classification as such. Besides, it is suggested to examine more sophisticated indicators of financial development. If possible, the inclusion of legal variable in the analysis could prove to be fruitful. Moreover a major contribution to this field would that of suggesting a theoretical framework within which such studies can be oriented. Thus there is wider scope for the study on finance-growth linkage in the context of India, which is somewhat a rare country studied separately on this issue, and a more intensive work is called for in the future.

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