ONE
Introduction

1.1 Financial Integration in the Global Context

Since the late 1980s, the majority of emerging market economies have gone through important structural changes by liberalising their domestic financial system. On one side, the expansion of developed countries’ market share required developing countries to improve the structure of their domestic financial institutions. On the other side, developing countries had to open up to the global market to avail themselves of international finance at a lower cost. So, financial liberalisation led to the betterment of domestic financial segments while making countries more interlinked to the global financial market. However, financial integration has become one of the most controversial aspects of financial liberalisation because of highly volatile short-term debt and speculative hot capital flows across nations. A study by Toffler (1991) showed that an estimated US$200 billion worth of foreign exchange is traded everyday in London, New York and Tokyo alone.\(^1\) Of this, not more than 10% is associated with world trade; the remaining 90% is in speculation.\(^2\) Returns from this “casino economy”\(^3\) are two-fold. First, people can earn by selling and re-selling their financial assets at a higher price than the buying price, and second, they can earn interest on their holdings. There is therefore an obsession to invest in financial assets that can provide a high speculative return. In this context, financial integration across countries is criticised because it increases systemic risk, though one of the important objectives of financial liberalisation was to diversify risk in the globalised market.

\(^1\) Financial capital is a separate entity to production capital (Perez, 2002) and the transformation of financial assets to physical assets has become a real concern along with the changing nature of savings and investment. Finance capital may be defined as the pieces of paper or other kinds of promises that represent claims on these types of goods and on other sources of promised future income. Physical capital or production capital is the real object of technology-embodied means of production, owned by entities like individuals, governments, and other organisations and invested in the process of production to get a return.

\(^2\) Speculation refers the activity of obtaining a profit on the prospective change in the market value of commodities or financial assets. And most trade in the stock market is speculative.

\(^3\) As trade in this market mostly depends on speculation and involves a huge return.
In the context of diversification of risk across a larger number of investors in the global market, the securitization\(^4\) of financial assets has been a recent addition. It has reduced the risk of particular banks but increased the systematic risk. It has also led to the innovation of newer and more complex financial instruments, especially credit and derivative\(^5\) instruments that have begun playing an important role in the integration of the global financial market. The conventional financial system did not have these many financial instruments to play with. It is true that such complex credit and derivative instruments are mostly concentrated in US-like developed nations, but Asian countries are major investors in these securities.

Whether financial integration leads to higher growth or makes a country more prone to systematic risk is a matter of debate. Financial integration across domestic financial segments may lead to real sector growth by providing greater accessibility of funds through alternative financial institutions. However, efficient channelisation of funds depends on many other factors such as the existence of a developed and transparent market, technological betterment, an efficient payment system, the prevalence of good governance,\(^6\) political stability, and the deepening of financial services. In this regard, Prasad et al. (2003) argued that considering all these factors in an analysis hardly provides any convincing connection between financial integration and economic growth. Further, they provided empirical evidence to show that a country faces more instability if it makes an effort to become financially integrated with the world economy. Importantly,

\(^4\) Securitization is the process of pooling and repackaging homogenous illiquid financial assets into marketable securities that can be sold to investors. The financial instrument generated from the process of securitization, namely securities, can be used as collateral by investors. Depending on the nature of collateral, securities may be divided into asset-backed securities (or ABS, where assets are used as collateral), mortgage-backed securities (or MBS, where mortgage loans are used as collateral) and collateralized debt obligations (or CDOs, where securities are backed by bonds, loans or even credit default swaps).

\(^5\) Financial derivatives are financial instruments that are linked to a specific financial instrument or indicator or commodity, and through which specific financial risks (such as interest rate risk, currency, equity and commodity price risk, and credit risk) can be traded in financial markets in their own right. Transactions in financial derivatives should be treated as separate transactions rather than as integral parts of the value of underlying transactions to which they may be linked. The value of a financial derivative derives from the price of an underlying item, such as an asset or index. (For details, see http://www.imf.org/external/np/sta/fd/index.htm).

\(^6\) It should be mentioned that the US economy had to go through a financial and economic crisis despite having one of the best governance systems.
many developing countries, including India, began liberalising their financial sectors without fulfilling most of these criteria. However, from the recent financial crisis in the US and Europe\(^7\) it is evident that the existence of a highly efficient market system and good governance may not always be saviours. From this crisis, it is also very clear that financial integration makes countries more vulnerable to external shocks, while growth is not convincingly assured.

Increased capital flows, especially in terms of short-term debt, make developing country more vulnerable to risks generated externally. It may be noted that the opening up of domestic economies by most emerging countries has significantly increased the flow of capital across nations. So much so the volume of financial flows in the recent period is higher than ever before.\(^8\) According to Gozzi et al. (2009), during 1991-2005, about 30\% of the total capital raised by firms by issuing equity and bonds was from security markets outside their home country. In 2005, firms from developing and developed countries raised 51\% and 39\% respectively of the total capital raised through security issues in capital markets outside their home countries. The share was higher for debt than for equity issues. Stiglitz (2004) observed that “financial integration may allow countries to smooth small disturbances, but lead to increased volatility in the event of large adverse

\(^7\)The prevalence of an accommodative monetary period for an excessive long period, 2002-06, coupled with financial innovations led to lax lending in the US market, which in turn led to a sustained rise in asset prices, particularly house prices. This increase in housing prices was mostly driven by a large rise in mortgage credit to households, particularly low credit-quality households. As banks’ objective was to distribute the risk with large diversified investors, most of these mortgages were securitized. In the phase of unprecedented growth in complex credit derivatives, these sub-prime loans were bundled into a variety of tranches, including AAA, and sold to a range of financial investors. When inflation began creeping up, the US Federal Reserve started tightening monetary policy, which led to an increase in the interest rate. Consequently mortgage payments also began rising. The tightened monetary policy contained aggregate demand and output, which had a depressing impact on housing prices. This provided an incentive to sub-prime borrowers to default with low/negligible margin financing. Defaults by such borrowers led to high losses by financial institutions and investors. Although securitized mortgage loans were sold to off-balance sheet Special Investment Vehicles (SIVs), in practice, the risk was parcelled out increasingly among banks and financial institutions and effectively became more concentrated. The excessively leveraged banking industry and the opacity of these transactions led to a breakdown of trust among banks beginning late 2007. Against the backdrop of financial globalisation, banks and financial institutions in other major countries, especially in Europe, were adversely affected by losses and capital write-offs. The lack of confidence froze the interbank money market and led to liquidity flow in search of safe havens like T-bills and bonds, which was evident from the very low yields in these securities (Mohan, 2011)

\(^8\) The revolution in information and communication technology has been playing a very important role in the development of capital flows and the boom in financial trading.
shock” (p. 62). He also pointed out two major arguments against capital market liberalisation. One, in the form of systematic association, which indicates a higher likelihood of a crisis, and two, the free flow of capital many a time restrains governments from preventing or responding to negative macroeconomic shocks.9

1.2 Financial Liberalisation and Integration in the Indian Context

Given this background of global financial integration and its role in promoting growth and increasing the possibility of external shock, it may be interesting to examine the implication of financial liberalisation in India. One of the major objectives of financial reforms, started in the 1990s,10 was to achieve financial integration. To achieve better channelisation of resources, India had to achieve the simultaneous development of different domestic financial segments such as the money market, capital market and foreign exchange market. At the same time, it was necessary to reap the benefits of an association with the international market in terms of better and larger access to external finance, more profitable investment opportunities and diversification of risk. In the 1970s and 1980s, India went through several calamities on the economic, financial and social fronts. Most financial institutions were inefficient in providing minimum support for the growth of the real sector economy. Consequently, making finance available at an affordable cost and improving the performance of the domestic financial segments were the two most important challenges to the Indian economy. To overcome deadlocks in the financial system, India’s financial sectors have been going through a phase of transformation in the past two decades to realise better development of the banking industry, capital market and foreign exchange market. It has been going through a structural change characterised by market-determined interest and exchange rates, price-

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9 In anticipation of an election result in Brazil, the Authority of Brazil not only turned to the IMF for funds, but also raised the interest rate to a high, just to stop the predicted outflow of capital, with the much adverse consequence of macroeconomic shocks.

10 India’s financial sector liberalisation began long back on the basis of the Narasimham Committee report and now comprises a fairly standard package of reforms. A committee was set up under the chairmanship of Raghuram G. Rajan in August 2007 to reformalise the Indian financial sector to meet the needs of the real sector economy in the coming decades. The committee has submitted its report after examining the performance of various segments of the financial sector.
based instruments of monetary policy, current account convertibility, phased capital account liberalisation and an auction-based system in the government securities market.

In this reform process, financial market integration has remained one of the important policy objectives (details of the policy measures taken towards financial development and integration are discussed in Chapter 2). India may be called a fully liberalised country if we go by the definition of Kaminsky and Schmukar\(^\text{11}\) (2003), where financial liberalisation is full liberalisation of at least two of the following three sectors—foreign sector capital account, domestic financial sector and the stock market.\(^\text{12}\) According to this definition, an economy may be considered fully liberalised if at least two of these sectors are fully liberalised and one is partially liberalised.

As a consequence of the removal of institutional barriers on international financial transactions and the increase in foreign participation in the domestic market, India began experiencing a robust flow of international capital\(^\text{13}\) (Table1.1). It may be noted that India’s Bombay Stock Exchange (BSE) is among the 10 biggest stock markets in the world by domestic market capitalisation\(^\text{14}\) (WFE, 2007). Also, in terms of broad stock

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\(^\text{11}\) For a detailed analysis of the measurement of financial liberalisation, see Demetriades and Luintel (1996, 1997) and Abiad and Mody (2005). Demetriades and Luintel (1996) employed an exogeneity test and concluded that other than a lending rate ceiling, all the controls on banking practice show a negative effect on financial deepening and thereby growth. Abiad and Mody (2005) used ordered a logit method for 35 countries for the period 1973-1996 and estimated the index constituted six policy dimensions: credit controls, interest rate controls, regulations and securities market, entry barriers, privatisation in the financial sectors, and restrictions on international financial transactions.

\(^\text{12}\) Foreign sector capital account liberalisation means the relaxation of conditions on offshore borrowing by financial institutions and non-financial corporations on the multiple exchange rate market and on capital outflows. In a fully liberalised economy, banks and institutions are allowed to freely borrow from abroad by informing the authorities. Permission is granted automatically with a reserve requirement of less than 10%. There are also no special exchange rates for either the capital account or the current account and no restrictions on capital outflows. Liberalisation of the domestic financial sector basically means the reduction of control on credit movement and also on the borrowing and lending interest rate. Deposits in foreign currency are possible in liberalised domestic financial markets. Stock market liberalisation mainly permits foreign investors to hold domestic equity without restriction and they are allowed to freely repatriate capital, dividend and interest in two years.

\(^\text{13}\) It is argued that the development of active and liquid derivative markets opened up more international dealings and hedging strategies to foreign traders (Stoll, 1990). Financial globalisation increased the ability to buy and sell capital assets, the growth of which is driven by the emergence of the Euro market, which has been playing a major role in the global pooling of funds that can be tapped by borrowers from any country (O’Brien, 1992).

\(^\text{14}\) The domestic market capitalisation of a stock exchange is the total number of issued shares of domestic companies, including their several classes, multiplied by their respective prices at a given time. This
index performance.\textsuperscript{15} India’s National Stock Exchange (NSE) and BSE stood eighth and ninth respectively during the period 2007-08 (WFE, 2008). This reflects why India is a preferred destination for foreign institutional investors (FIIs) and an important market for speculative gain.

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<tbody>
<tr>
<td>Brazil</td>
<td>3.67</td>
<td>5.89</td>
<td>10.79</td>
<td>9.92</td>
<td>9.85</td>
<td>7.41</td>
<td>8.73</td>
</tr>
<tr>
<td>Canada</td>
<td>11.63</td>
<td>16.71</td>
<td>17.73</td>
<td>28.96</td>
<td>14.93</td>
<td>12.06</td>
<td>20.93</td>
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<tr>
<td>France</td>
<td>0.89</td>
<td>1.56</td>
<td>2.09</td>
<td>4.06</td>
<td>2.35</td>
<td>3.98</td>
<td>5.94</td>
</tr>
<tr>
<td>Germany</td>
<td>0.81</td>
<td>1.83</td>
<td>3.08</td>
<td>4.27</td>
<td>2.13</td>
<td>2.08</td>
<td>3.36</td>
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<tr>
<td>India</td>
<td>16.13</td>
<td>15.24</td>
<td>14.73</td>
<td>21.91</td>
<td>15.75</td>
<td>22.62</td>
<td>40.70</td>
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<tr>
<td>Italy</td>
<td>10.25</td>
<td>14.84</td>
<td>23.26</td>
<td>19.62</td>
<td>13.61</td>
<td>11.08</td>
<td>27.90</td>
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<tr>
<td>Japan</td>
<td>1.29</td>
<td>0.48</td>
<td>0.93</td>
<td>0.70</td>
<td>0.55</td>
<td>1.18</td>
<td>1.18</td>
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<tr>
<td>UK</td>
<td>2.28</td>
<td>5.17</td>
<td>3.48</td>
<td>10.87</td>
<td>3.16</td>
<td>9.17</td>
<td>10.79</td>
</tr>
<tr>
<td>US</td>
<td>0.32</td>
<td>0.73</td>
<td>0.88</td>
<td>1.66</td>
<td>0.98</td>
<td>2.17</td>
<td>2.53</td>
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Source: Compiled from databases of the IFS, WDI and RBI, various issues.
Note: Compound growth; original data is in current US$ million.

The increasing trend in external borrowing and short-term debt is also significant (Figure1.1). External commercial borrowings (ECBs) by non-financial corporate entities help encourage private investment for growth. It opens up international capital markets to a large number of creditworthy entities to access international funds for investing (includes import of capital goods, new projects and modernisation/expansion of existing production units) in the real sector (the industrial sector, including small and medium enterprises, infrastructure sector and specific service sector) as well as for overseas direct investment.\textsuperscript{16}

\textsuperscript{15} Broad indexes are, in general, market capitalisation-weighted, including a large sample of listed domestic companies. They are generally recalculated to adjust to capital operations and to modifications in the company composition of the index. When the index is a price index, it measures the pure change of share prices without taking into consideration returns from dividend payouts. When the index is a return index, it measures the total return of investments on the index shares, including reinvested dividends.

\textsuperscript{16} ECBs are not permitted for (i) on-lending or investment in the capital market or for acquiring a company in India, (ii) investment in the real estate sector, and (iii) investment in working capital, general corporate purposes and repayment of existing rupee loans. ECBs through the automatic route became effective in 2000 up to US$50 million with a minimum average maturity of three years and, on the basis of experience gained, were subsequently liberalised to US$500 million (per borrowing company per financial year) in January 2004 with a minimum average maturity of five years. In addition, US$250 million is permitted since December 2006 for borrowings with a minimum average maturity of 10 years.
It may be noted that net capital flows to India reached 9% of gross domestic product (GDP) in 2007-08, much above the current account deficit. During 2007, India was the highest recipient of net capital flows among all emerging market economies (EMEs) and the third highest recipient globally (after the US and Spain). However, in the very next year (2008-09), as a consequence of the global financial crisis, capital flows declined to 0.6% of GDP, falling short of the current account deficit, which itself widened (Kapur, 2009).

With the objective of creating a well-linked financial sector, the policy of adopting universal banking is considered a breakthrough. The universal banking model (the originator of this is the US) may be seen as a package that allows commercial banks in India to adopt the activities of investment banking and increase their exposure to the capital market. As a result, banks may be able to solve the problem of less liquidity available in intermediating short-term liabilities to fund long-term assets in the non-financial sector. Banks in many countries have emerged as multi-product service providers, both for retail and wholesale customers, thereby earning more and more non-interest income. Other than deposit taking and lending, this banking model has enabled commercial banks to perform a wide range of financial services, comprising holding a number of claims (both equity and debt) on firms, trading financial instruments, foreign exchange, derivatives, and underwriting of new debt and equity issues. Another important dimension of universal banking is securitization, which has made the banks participate in originating more and more structured products. Consequently, the global banking system
started experiencing phenomenal growth in structured credit products,\(^\text{17}\) which helped in injecting more liquidity into the banking industry. Though securitization is not a dominant activity in India the linkage between the banking sector and the capital market helped in increasing the flow of capital across borders which led to a higher degree of financial integration.

Since commercial banks act as large depository financial institutions, there is always an inherent risk if they actively participate in the capital market. Further, this particular banking model was widely criticised after the recent US crisis because it fully exposed commercial banks to the capital market. However, the same policy in India has an altogether different contextual background and it may be said that the extent to which Indian banks are exposed is not as much as banks in developed countries. Yet, it does not necessarily means that the Indian economy is not susceptible to any kind of external shock. Indian banks are not aggressive players in the international market and they do not extensively originate credit or derivative structured products. Nevertheless, they may invest a significant amount in these types of products. Table 1.2 shows the huge growth in the issue of different products, which signify huge investment opportunities. It may also be a possible reason for the huge growth in cross-border capital flows.

<table>
<thead>
<tr>
<th>Credit Derivatives</th>
<th>0 (2001)</th>
<th>60 trillion (2007)</th>
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<tbody>
<tr>
<td>Forex Trading Activity</td>
<td>100 billion (1987)</td>
<td>1,000 billion (2007)</td>
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<tr>
<td>OTC Interest Rate Derivatives</td>
<td>0 (1987)</td>
<td>50 trillion (1997) and 400 trillion (2007)</td>
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**Table 1.2: Issue of Structured Products in Global Financial Market**


\(^{17}\) Structured investment products are pre-packaged investment strategies based on various underlying assets such as equities, interest rates, currencies and commodities. The value of the product can thus depend on the value of the underlying stocks or indices. During 2000-07, the issue of such products in the US and Europe grew from around $500 billion to $2.6 trillion while global issue of collateralized debt obligations (CDOs) grew from $150 billion to $1.2 trillion (IMF, 2008: 56). Before the recent US financial crisis, various market and credit risks had been packaged (pooling assets like bonds, loans or mortgage-backed securities) by off-balance sheet vehicles created by banks. After repackaging the illiquid assets into marketable instruments, banks sold them to investors. Till 2007, the market for structured credit products boomed because investors found structured credit products more attractive as they offered higher returns than equivalently rated company bonds. With the worldwide integration of financial markets, banks could share the risk across a broader spectrum of investors spread outside the domestic economy.
In this context, though India’s regulatory framework is praised internationally, it may be interesting to look at the figures reported in Mohan (2009).\textsuperscript{18} This study pointed out that a few banks detailed their investment in collateralized debt obligations/bonds that had a few underlying entities with sub-prime exposure (of 77 reported banks, 14 had exposures) to Lehman Brothers and in related entities either in India or abroad in which a majority of the exposures were not covered by the bankruptcy proceedings. Consequently, even though the overnight market became stable in the longer period, these banks suffered some mark-to-market losses\textsuperscript{19} caused by the widening of credit spreads arising on term liquidity in the market. Corporates also began depending more on the banking industry as an immediate effect of the drying of external sources of finance and the collapse of the stock market. Almost all banks show increasing borrowing from the call money market. The Reserve Bank of India (RBI) started intervening in the market through a reduction in the cash reserve ratio (CRR) and releasing funds from the balance under the Market Stabilisation Scheme (MSS),\textsuperscript{20} which declined from Rs. 1,684 billion in 2007-08 to Rs. 882 billion in 2008-09 and further to Rs. 27 billion in 2009-10. This statistic is enough to signify the huge liquidity crunch in the Indian banking system. The only difference with other countries was that to overcome the huge liquidity crisis, the central banks of other countries had to inject liquidity into the system, which expanded their balance sheets, while the RBI could manage the liquidity crunch without expansion of its balance sheet because of its restrictive monetary policy. Repo/reverse repo\textsuperscript{21} operations under the daily liquidity adjustment facility (LAF)\textsuperscript{22} helped to manage transient liquidity shortfalls/surpluses in the money market (Mohan, 2009, 2011).

\textsuperscript{18} The source of these figures is not mentioned in the study.

\textsuperscript{19} A loss generated through an accounting entry rather than the actual sale of a security. Mark-to-market losses may happen when a security bought and held is valued at the current market price, which is below the purchasing value. For example, if a company invests in some securities and the market value of these securities falls, we may say that these securities are exposed to mark-to-market losses. As it is not actually sold, it is a loss in the accounting entry.

\textsuperscript{20} Under the MSS, the RBI is authorised by the government to issue government T-bill/bonds to offset the expansionary impact of capital inflow.

\textsuperscript{21} A repo, ready forward or buy back deal is a transaction in which two parties agree to sell and purchase the same security. Under such an agreement, the seller sells specified securities with an agreement to repurchase the same at a mutually decided future date and price. Similarly, the buyer purchases the securities with an agreement to resell the same to the seller. So the repo rate is the rate at which funds are
Given the seemingly conflicting role of financial integration (as a leading factor for growth and also an important cause of spreading external shocks), analysing the effect of India’s financial liberalisation on the real sector economy is interesting. We intend to test the realisation of the goal of developing an integrated domestic financial system as an important policy measure of financial reform. Also, inter-linkages across different important financial segments such as the exchange rate, interest rate and capital market have emerged as important channels to maintain internal stability at a time of increasing linkages with the global financial system. Moreover, examining the international integration of the Indian financial system may be interesting to understand how far the country is exposed to the global market. We also intend to examine the impact of the changing structure of financial institutions on the growth of the real sector economy. As the universal banking model is adopted, the Indian banking sector is expected to have more inter-linkages with the capital market with a probable change in the institutional framework. Also, the booming capital market signifies high speculative capital and high liquidity in the Indian financial system. However, the dominance of foreign capital in the capital market may prove to be alarming at a time of sudden capital outflow. So, we intend to empirically examine the inter-linkage of the capital market and the banking

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22 The liquidity adjustment facility (LAF) was introduced by the RBI during June 2000 in phases to ensure a smooth transition while keeping pace with technological upgradation. The first revision came in March 2004 and the latest revision was in October 2004. This monetary instrument facilitates banks to resolve short-term cash shortages during periods of economic instability or from any other form of stress caused by forces beyond their control. Various banks use eligible securities as collateral through a repo agreement and borrow funds to alleviate their short-term requirements. The LAF operation helps in reducing excess volatility in the short-term market and thereby helps in maintaining stability. However, the LAF operation of the RBI is collateralized against government securities and the absorption of liquidity under reverse repo is against government securities held in the RBI’s portfolio and vice versa for repos. So, there was an increasing need for the RBI to have government securities in stock to keep the sterilisation process uninterrupted in the event of excess flow of capital in India after 2003-04. Before that, almost for a decade (1993-94 to 2003-04), the sterilisation process operated mainly through open market operations (OMOs) as the RBI was left with a large pool of government securities as a result of the fiscal dominance of the 1970s and 1980s. By 2003-04, the continuous sterilisation process to neutralise the expansionary impact of foreign exchange purchases on domestic monetary and liquidity conditions had reduced the stock of such securities. However, the finite stock of government securities in the RBI’s balance sheet and the provisions of the RBI Act prohibiting issue of its own securities made the introduction of the MSS in 2004 necessary for smoothening the LAF operation.
industry. In this context, testing the integration between the financial and real sector economy may be significant to recognise the spillover effect of shocks from the financial to the real sector economy.

1.3 Theoretical and Empirical Review of Literature

From the above discussion, we see that in the context of globalisation of the financial economy, the advantages and disadvantages of long-term and short-term capital flows have an important role to play on the growth of the real sector economy. The following section briefly discusses a few studies on the effect of financial liberalisation in terms of financial integration, institutional development and the effect of the changing role of financial institutions on the growth of the real sector economy. Detailed discussions of the studies are undertaken in the relevant chapters.

1.3.1 Debate on necessity of financial liberalisation and direction of flow of capital

One of the neoclassical views in favour of financial liberalisation by developing countries is the presumption that the growth of emerging and developing countries is highly constrained by the paucity of finance with a saving-investment mismatch. So, capital is supposed to flow from developed to developing countries. However, the development of financial systems with outstanding growth of banking services could help developing nations overcome their liquidity needs to a large extent. Hence, it is not low saving that explains the low investment scenario in developing nations; rather it is the lack of an efficient system which transforms savings or financial capital into investment or production capital (Rodrik, 2008). According to this view, emerging economies benefit from the global financial market as it may help in financial market development while stimulating gains and efficiency through competition in the international market. It may also help them to have access to new technologies and disciplining macroeconomic policies (Prasad, 2008). So, it is inefficient ways of transferring financial capital to investment capital that may explain the insufficient investment realised for growth of a developing economy.

It may also be noted that financial innovation has provided developed countries with many financial instruments or capital assets for investment and these have led to very low
or sometimes negative saving in developed countries. The expectation of high returns from investing in the finance assets of developed nations may make capital flow from developing to developed nations. Interestingly, most of the developed countries are now experiencing a high current account deficit while developing countries are experiencing a high current account surplus (China, Hong Kong, Korea, Taiwan and Malaysia, except India).

Besides, there may be other reasons why capital may flow from developing to developed nations. Some studies have found that the flow of capital from developing countries to the developed countries may be due to the prevalence of weak institutions (Alfaro et al., 2005) or because of the high cost of physical capital (Hsieh and Klenow, 2003; Caselli and Feyrer, 2007) or sometimes the availability of high-return financial assets (Mohan, 2011). Sometimes, it is because of reputational risk due to failure of servicing the old debts of governments (Gertler and Rogoff, 1990; Reinhart and Rogoff, 2004).

Other than these economic and financial factors, political risk is also an important factor in determining the flow of capital in and out of a country. Many developing countries, including India, are susceptible to political instability and high-level corruption. There exists another stream of literature that concludes capital should flow to the fastest growing countries among developing economies (Gourinchas and Jeanne, 2006), while Prasad et al. (2007) found that during 2000-2004, China and India, despite having better investment opportunities, were significant exporters of foreign capital to relatively low-growth countries.

The necessity of the international flow of capital may be argued from the viewpoint of Keynes. Although in his early writing (1920) he was very optimistic about financial flows across borders, he later was in favour of keeping finance national. However, Keynes was very supportive of the international transmission of ideas, knowledge, science and hospitality (Keynes, 1936). He also pointed out that the inability of the free market system to distinguish between enterprise and speculation could lead to entire market systems dominated by speculators who were interested only in making profits by short selling financial assets and not in long-term investment. He was sceptical of attaining stability in exchange rates while promoting free trade without limiting international
capital mobility. The effort to simultaneously attend to this trio may be termed “exercises in squaring the circle” (Felix, 1995). The neoclassical view has opposed this on the ground that “no country can share in the benefits of international trade unless it allows capital to move freely enough to finance that trade, and modern financial markets are sophisticated and open enough that capital transactions can no longer be compartmentalised as trade-related or speculative” (Boughton, 1997).

Hence, the conventional assumption on the direction of the flow of finance capital from developed to developing countries does not hold universally. Instead, it is a country-specific phenomenon, depending on the nature of the capital and the purpose of the flow of capital. However, from this long debate we may say that it is difficult for a country to develop without opening up its financial system and that at the same time there is no doubt that it may make a country more prone to financial disaster in the absence of a good regulatory policy framework and a developed domestic financial market. It may also be noted that capital market development in most of the developing world has made countries more vulnerable to external shocks. Though a booming capital market may be considered an alternative source of finance that is likely to have a positive impact, speculative transactions in the equity market may create unprecedented growth delinked from real sector growth.

1.3.2 Impact of capital account openness and financial reforms in equity market on real sector growth

In recent years, the opening up of the capital account has become a subject of intense debate with an emerging consensus on the need to manage the risks posed by rapid and large flows of short-term capital. A few empirical studies based on panel data explain the growth implications of capital account liberalisation in the post-Bretton Woods era. In this regard, a multivariate analysis by Quinn (1997) on regulations of international financial transactions found that capital account convertibility is beneficial for per capita income growth. Edison et al. (2002) tested the effect of capital account liberalisation and stock market liberalisation on the economic growth of 89 countries. They found high-income countries and the East Asian economies had beneficial effects but not developing economies. Bekaert et al. (2002) found that equity market liberalisation leads to a
significant decline in both consumption and output volatility. However, the relative impact is higher in the case of equity market liberalisation compared to capital account liberalisation. But, in emerging market economies, sometimes capital account openness leads to more volatility in output and consumption. However, another study by Buch et al. (2002) found no consistent empirical relationship between financial openness and the volatility of output.

Some other studies show that the stock market plays a crucial role in channelising financial assets. According to Levine and Zervos (1996), a well-developed stock market may be able to provide different kinds of financial services that offer higher incentives to investment. By using a cross-country regression analysis for 41 countries over the period 1976-1993, they demonstrated that various measures of equity market activity are positively correlated with measures of real activity across different countries and this association is stronger in the case of developing countries. They evaluated the extent to which these measures are robustly correlated with current and future rates of economic growth, capital accumulation and productivity improvement. By a similar approach, for 40 countries over the period 1980-88, Atje and Jovanovic (1993) found that there is a significant correlation between economic growth and the value of stock market trading relative to GDP.

The theoretical rationale behind capital account liberalisation is achieving an efficient global allocation of saving and a better diversification of trade and thereby growth and welfare. However, in the presence of considerable information asymmetry, free capital mobility does not necessarily ensure optimal allocation of resources, especially when significant domestic distortions exist (Stiglitz, 2004). But this debate remains inconclusive as there is very little empirical evidence till date to either support or refute conclusively such views. Calvo et al. (2004) argued that capital inflows depend on several external factors such as a benign economic environment and interest rate and there might be a sudden stop of capital inflow depending on these conditions. A sudden
A large, unexpected and widespread collapse in capital flows that is often unrelated to the economic fundamentals of a country and is usually highly damaging for economic activity in the affected country is described as a sudden stop. The concept of “sudden stop” was popularised by Guillermo A. Calvo (2004).
and Caballero et al. (2001) found theoretical links between low financial sector development and high output volatility.

There exists a well-known debate regarding the direction of causality—whether economic growth leads to financial development (Robinson, 1952) or vice versa (Schumpeter, 1912) or whether development of one will always affect the development of other. However, the other dimension of the controversy regarding the role of financial development is mainly focused on the relative importance of bank-based versus market-based financial systems for economic growth. It has been an important area of theoretical discussion for more than a century (Allen et al., 1999; Gerschenkron, 1962; Stiglitz, 1985; Levine, 2002). The proponents of market-based financial systems emphasise that well-functioning markets are more efficient in promoting development through profit incentives, enhancing corporate governance and facilitating risk management (Beck et al., 2002). In contrast, bank-based financial structures have a more positive role in promoting growth and overcoming the shortcomings of market-based financial systems (Sing, 1997). Some studies, which analysed the UK and US as market-based systems and Japan and Germany as bank-based systems, concluded that the type of financial system matters (Hoshi et al., 1991; Morck et al., 1999; Weinstein and Yafeh, 1998; Arestis et al., 2001).

There is another view which says that as a country develops the financial system is likely to be more dependent on market finance than bank finance (Boyd et al., 1998). This debate on the relative importance of financial systems may be seen from the different perspective of universal banking, which leads to an increasing association between these two financial systems. The World Bank defines universal banking as a banking system that conducts a wide range of financial services comprising deposit taking and lending, holding a number of claims (both equity and debt) on firms, trading financial instruments, foreign exchange and derivatives, and underwriting new debt and equity issues (Calomiris, 1995). It may be noted that the Glass Steagall Act of 1933 curtailed the access of the US banking sector to the capital market. The compartmentalisation of the two financial systems took place after the Great Depression of the 1930s. It was argued that the severity of this crisis was mostly because of the banking sector’s exposure to the
capital market. Though the regulations on US commercial banks were relaxed in 1987, after the Gramm Leach Bliley Act of 1999, commercial banks were given unlimited access to the capital market. So the possibility of greater association between the two financial systems increased over time.

The above discussion may be summarised by saying that financial development has a positive influence on the growth of the economy, irrespective of whether a country has a bank-based or market-based economy. However, capital account openness and a significant growth of the stock market have an ambiguous effect on the growth of the real economy because of the movement of capital across borders in the expectation of speculative gain. Also, it may be said that financial liberalisation facilitates financial integration. It received a different impetus in the era of universal banking, which strengthened the linkage between the banking sector and the capital market across nations. In this era, the structuring of different marketable instruments has made worldwide financial integration broader but more complex. However, there are different perspectives and methods of measuring financial integration, some of which we discuss in the following section.

1.3.4 Quantification of financial integration

The most common way of measuring financial integration is the unification of markets in terms of convergence of risk-adjusted returns on assets of similar maturity across markets. In other words, the principle of law of one price (LOOP) holds in a financially integrated market (Cournot, 1927; Marshall, 1930). LOOP may be measured in terms of risk-adjusted equalisation of returns on similar financial assets. As rates of return help in international investment decisions and the sharing of risk (Lane et. al, 2003), a financially integrated market may be able to reflect fundamental factors such as difference in asset quality, associated risk and liquidity (Jain et al., 2005). Sometimes financial integration may lead to unification or predictable movement of rates of return of similar assets, which signifies a “no arbitrage” situation.

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24 β-convergence and σ-convergence are borrowed from growth theory to measure financial integration. For details, see Baele et al., 2004.
Other ways of measuring financial integration are to examine either the degree of correlation between national saving and national investment (Feldstein, 1983) or a country’s share in the global holding of external assets and liabilities (Lane et al., 2006). Anderson et al. (2005) found that financial integration leads to high correlation among different asset prices (especially high-yield bond and equity prices) in developed and the emerging countries’ financial markets. So, countries that integrated through the investment and lending channel with the global financial system are prone to external shocks. Financial crises may affect the growth of the economy, depending on the depth and efficiency of the domestic financial system to withstand shocks from the external economy.

Another extensively employed methods to measure financial integration in the literature is the Johansen-Juselius (J-J) technique. We discuss details of this technique in the methodology (also see Chapter Three).

1.3.5 Empirical evidence: Indian context

In the context of India, some studies show that there has been a reversal of financial repression\footnote{25 Other than indicating regime of negative interest rates, when policy rates are artificially kept administered, by financial repression we mean the inefficient financial services in terms of low saving and investment rate, non-availability of market information due to lack of diffusion of technology, manual payment system etc.} after the 1990s, which is clear evidence of the depth and effectiveness of financial liberalisation (Demetriades and Luimet, 1996, 1997; Abiad-Mody, 2005; J. B. Ang, 2008). Analysing the period 1970-2004, Kamat et al. (2007) found financial liberalisation had a positive impact on growth. A study by Chakraborty (2007) found that India’s economic growth has a significant influence on financial development and the causality is not in the opposite direction.

By examining the determinants of bank intermediation costs and profitability after liberalisation, Koeva (2003) found that an increase in competition is associated with lower intermediation costs and higher profitability of Indian banks. Demetriades and Luimet (1996) found all controls on banking sector business operations have a negative effect other than the lending rate ceiling. Lawrence et al. (2003) found evidence of a
general rise in the trends of all financial indicators, liquid liabilities and private credit growth since the 1990s along with significant growth in stock market capitalisation. However, their cross-country analysis showed that although India’s financial sector has been growing rapidly, this growth is much slower than that of high-income and fast-growing countries.

Analysing variables like real exchange rate, capital inflows, the rate of growth of domestic credit and the rate of inflation in a vector autoregression (VAR) framework, Chakraborty (2003) examined the role of monetary and fiscal policies and found that monetary policy had a greater influence on the dynamic response of the real exchange rate to capital inflows in India from 1993 to 2001. For the period 1993-99, another analysis (2007) by Chakraborty showed that an increased volume of private foreign capital affected fluctuations in foreign currency assets, the wholesale price index, money supply, real and nominal effective exchange rates, exports and current account deficit like macroeconomic variables, with a few exceptions.

There are some studies that address the issue of financial integration in the context of the Indian economy. On the basis of monthly data up to 1997, Bhoi et al. (1998) concluded that Indian financial markets are integrated among themselves but not with the world economy. Another study, by Jain et al. (2005), showed that integration among different domestic markets had been increasing in the last decade. They examined call money rates, 91-day treasury bill rates, rupee-US dollar exchange rates and the London Inter Bank Offer Rate (LIBOR) and found strong co-integration of the domestic call money market and LIBOR as well as a long-term common stochastic trend between domestic and foreign market returns. A study by Bhatt and Virmani (2005) showed that a convergence existed between short-term uncovered interest parity from 1991-92 to 2003-04.

Several studies (Bhoi et al., 1998; Nag et al., 1999; Nath et al., 2003; Bhatt and Virmani, 2005; Virmani, 2007) have estimated India’s financial integration by adopting techniques like the Johansen-Juselius (J-J) co-integration test, convergence tests, artificial neural network architecture, and the Granger causality test and we find their conclusions are mostly mixed. Moreover, these studies are limited in their coverage of market segments.
as most of them examine the integration of the money and foreign exchange markets on the domestic front. Given high growth in the stock market, our study examines financial integration on the domestic front and takes the existing literature forward by empirically examining the simultaneous development of major financial segments such as the money market, capital market and foreign exchange market. Earlier studies address financial integration for pair-wise market segments, while we test financial integration in a multivariate framework. On the international front, earlier studies considered the US as the only possible market to test India’s reach in the international financial domain. Though it may be said that India’s economy is likely to be integrated with the US economy, in the age of a new globally integrated market, we test India’s financial market integration to a wider extent by covering both developing and developed market economies.

We have already argued that the adoption of the universal banking model is expected to increase the linkage between the banking sector and the capital market. However, it also may change the relative importance of these two financial institutions with regard to their effects on growth. It may be noted that the banking industry forms the backbone of Indian economy although the effect of the stock market on economic growth is widely recognised. Nevertheless, most studies examine the effects of the banking sector and the stock market separately.

In the context of universal banking, earlier studies concluded that this model of banking would help Indian scheduled commercial banks (SCBs) overcome the problem of huge non-performing assets (NPAs) as well as increase their participation in the capital market, thereby enhancing the liquidity and size of the capital market. Banks were allowed to underwrite securities to help large corporates meet their working capital needs. Hence, bringing in SCBs and Development Finance Institutions (DFIs) helped to create more liquidity in the system through reconstructing or selling NPAs to securitization companies and underwriting of corporate loans. Existing studies (Datar, 1999; Rajwade, 2001; Sen, 2002) debate the causes and consequences of adopting this banking model. However, to the best of our knowledge, there is no study that tests the extent and effect of practising this banking model from the perspective of increasing risk exposure.
So, we explore changing trends in banks’ investment and lending portfolios to sensitive sectors such as the capital market and real estate sector. We also analyse banks’ changing preferences towards investing in mutual funds and FII products along with non-statutory liquidity ratio (non-SLR) securities. Further, we examine the growth in non-interest income, which may be considered as a proxy to measure the extent of the practice of universal banking by commercial banks. We also calculate the beta to examine the sensitivity of the most liquid twelve banks’ stock returns to stock returns in the market. In addition, we intend to examine the idiosyncratic and systematic risk of the banking sector exposed to the capital market.

However, examining the inter-linkages between these financial institutions is not comprehensive in the Indian context. The causality directed from the financial structure to economic growth is not extensively estimated in developing countries because of underdeveloped financial systems. It remained largely unaddressed in the case of developing countries, especially in the case of India, until recently some studies (Levine, 2002; Beck and Levine, 2002; Arestis et al., 2004) empirically addressed the issue.

The major criticism against both Levine (2002) and Beck and Levine (2002) are that they fail to address cross-country heterogeneity. In this regard, Arestis et al. (2004) showed that it is inappropriate to pool data across countries. He was also highly critical about the use of panel data and argued that the existing panel test (panel unit root, panel co-integration-dynamic, heterogeneous or otherwise, and traditional panel test) is likely to have less consistency to country-specific estimation.26 His study on a six-country panel27 found contradictory results. While the vector error correction model (VECM) concludes a bank-based economy to be more conducive to all the countries, the fully modified ordinary least square (FMOLS) method concludes just the opposite. Notably, this study concluded India was a bank-based economy for the period 1966–1999. It may be noted that the Indian financial sector and the real sector economy showed significant

26 His study argues that under a vector error correction model (VECM), the negatively signed large co-efficient (-0.519) of South Africa alone is sufficient to turn the overall co-efficient for the panel into negative (-0.008).
27 Greece, India, South Korea, the Philippines, South Africa and Taiwan.
momentum only in the later phase of reform. This second phase of reform is rightly identified by Barman (2007) as the phase of “true liberalisation” as most of the effects of financial liberalisation are significantly evident in this phase.

Hence, we test the effect of financial development, comprising the development of the banking sector and the stock market, on the growth of India’s real sector economy. There is no such study in the context of the Indian economy that examines the association between the banking sector and the stock market. Also, the above mentioned studies do not assess the distinctive role and relative importance of the banking sector and the stock market on the growth of the real sector economy in the pre and post-liberalisation periods. The growing association between the banking sector and the capital market are likely to lead to further integration of the financial sector with the real sector economy. Given these limitations, our study adds to the existing literature by empirically investigating the changing structure of the Indian financial system and distinctively addressing the pre and post-liberalisation periods to explain their contribution to the consistent growth trajectory of India. We also intend to test the underlying integration between the financial markets, the banking industry and the real sector economy. Examining the association between these two important financial institutions and their long-run equilibrium may conceptually add to the existing literature to understand how well our financial institutions are able to channelise resources and diversify their credit and investment portfolio. The long-run equilibrium may also help in deciding a future policy road map to address the possibility of a spillover effect of any external shocks to the real sector economy, especially when the emergence of global financial markets as a self-regulating system has proved to be an illusion (Krugman, 2008).

1.4 Theoretical Debate on Financial and Real Sector Economy: Complementary or Substitute

We intend to test India’s financial integration across the domestic market, on the international front, between the banking industry and capital market, and across the financial and real sector economies using the framework of McKinnon’s complementarity, which says that there is complementarity between the financial
economy and the real sector economy, against the neoclassical substitutability view. We discuss the details of this framework in this section.

McKinnon’s theory suggests financial liberalisation contributes to the growth of the real sector economy. A repressed financial economy does not provide opportunities to save in a diversified portfolio and savings are mostly limited to cash, and demand and time deposits. As most of the developing countries are characterised by low interest rates and high or moderate inflation, the real rate of return on savings in formal financial institutions is very low or negative. For this reason, savers in a financially repressed economy are likely to obtain assets in real form, like real estate or gold, which can be traded in the informal market. As personal savings are inadequate to finance real sector investment, investors depend mostly on unorganised money lenders, though personal savings are often initially required as working capital before the investment takes place.

Financial integration facilitates borrowing from diversified and formal financial sectors at a market-determined interest rate. In a repressed economy, the interest rates are mostly administrative, which McKinnon argued is one of the major hindrances to raising ample funds through the formal financial sector. Shaw (1973) argued that if the market-determined interest rate is high enough to attract adequate savings, the possibility of quality investment increases. If the interest rate is lower than the equilibrium level, the actual investment required for the growth of the real sector economy becomes constrained by the available savings with the formal sector. On the other hand, if the interest rate is sufficiently high, finance would be available for previously unfunded projects. Hence, McKinnon’s complementarity hypothesis emphasises the availability of finance rather than the cost of capital as the major obstacle to the growth of the economy.

The hypothesis proposes the demand for money and the investment function as follows:

\[ \frac{M}{p} = L (Y, r, R) \frac{L_Y}{L} > 0, \quad L_r > 0, \quad L_R > 0 \]

\[ \frac{I}{Y} = F (r, R) \frac{F_r}{F} > 0, \quad F_R > 0 \]

McKinnon’s complementarity hypothesis is a joint hypothesis, which postulates that demand for real money balance \((M/p)\) depends directly on the real return on capital \(r\)
and that the investment ratio \( I/Y \) depends on the real deposit interest rate \( R \). According to him, the \( I/Y \) ratio has a positive relation with the real money balance. If any increase in \( R \) increases \( M/P \) and if real money balance is complementary to investment, it increases the \( I/Y \) ratio. The complementarity hypothesis specifically requires the following two conditions to hold simultaneously, \( L_r > 0, F_R > 0 \).

However, a conflict arises if we consider the neoclassical approach which hypothesises that they are substitute in nature (Gupta, 1984). This argument might be explained if we consider \( r \) as the real rate of return on physical capital and \( R \) as the real rate of interest on financial capital (bank deposits as well as securities). So a rise in \( r \) raises the demand for capital goods by switching demand from relatively low-yield money or financial assets. Similarly, a rise in real yield on financial assets, \( R \), raises the demand for money invested in financial capital but reduces the demand for real capital assets.\(^2\) Yet, the recent boom in financial markets generated a view that it is emerging as an independent economy. Driven by speculative activities, it grows on its own without any addition to the real economy (Perez, 2002). Perez concluded that as the real sector fails to absorb the tremendous growth of the financial sector, financial assets have been getting absorbed by the financial sector through newer and newer forms of financial capital and the consequence is not free from the possibility of financial collapse.

Perez (2002) also argued that this high and speculative return and inability to assess the actual risk has led to high investment in structured products. This is an extended version of neoclassical substitutability that says the growth of the financial sector and a very high return actually leads to more and more investment in financial instruments with which the productivity of the real sector economy does not have any convincing connection.

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\(^2\) The empirical test of McKinnon’s complementarity hypothesis for India (Laumas, 1990; Thornton, 1990; Pentecost et al., 2006) concluded that India is still characterised by financial repression. Studying India as a case, former studies covered the period of pre-liberalisation, while in the latest study the sample period is 1951-2000.
1.5 Research Objectives

Given extensive but prudent financial liberalisation and the limitations of existing studies discussed above, we propose the following objectives:

- To examine financial integration on the domestic front across India’s different financial market segments, like the short-term money market, equity market, government bond market and foreign exchange market.
- To test India’s financial integration of short-term money market and the government bond market on the international front by considering the US, the UK, Germany, Italy, Canada, Korea and Japan.
- To investigate the causes and consequences of adopting the universal banking model as an important policy reform. It contextualises the susceptibility of Indian SCBs’ stock return to the capital market by measuring the exposure of the SCBs listed in the CNX Bank Nifty of the NSE to systematic and idiosyncratic risk.
- To examine the impact of overall financial development on the real sector growth of India for the period 1980-2008. In the context of India’s pre and post-liberalised growth, the relative importance of bank-based and market-based financial systems is tested.
- Examining the complementary relationship between the development of the banking sector and the market economy and their relationship with the growth of the real sector economy to understand if they follow each other in boom and bust.

1.6 Methodology:

In this section, we briefly discuss the methods and tools we use in our analysis such as correlation, regression, the unit root test, and the J-J co-integration test.

We estimate the linear association of return of four major financial segments—money, equity, bond and exchange market—to do a preliminary analysis on the integration of different market returns. Conventionally, a correlation co-efficient is estimated to measure the potential diversification gain for investors. The correlation analysis prefigures the degree of integration in terms of linear association between any two
markets, using historical data. If there is any linear, positive significant relationship between the two assets or market return, it would not help in diversification of risk (assuming high positive correlation between risk and return). The major criticism against the correlation analysis is that it can only estimate the short-run linear relationship.

Since financial markets or financial assets often experience considerable divergence in the short run, the correlation co-efficient sometimes provides misleading results and fails to predict the longer period relation. For example, if a negative correlation co-efficient exists between two bond markets’ return, investors would prefer to invest in these two bonds with a high diversification opportunity of spreading risk. But investors may not be able to achieve the expected diversification gain from this portfolio if these two bond markets show integration in the long run to some extent. To address this issue, we use co-integration tests to examine the long-run linkages between international markets.

Most of the financial and economic variables are non-stationary series and they are characterised by deterministic and/or stochastic trends. These two characteristics make any economic or financial series non-useable to forecast future trend or behaviour. One of the important requirements of the classical regression model is stationarity of the residual term. Granger and Newbold (1974) describe a regression as a spurious regression in the presence of the non-stationary variables. However, the series can be transformed to a stationary series by de-trending or by taking first or second difference. However, these methods suffer from loss of information. In this context, the recent development is to employ a co-integration analysis.

The finding that many macro time series may contain a unit root has spurred the development of the theory of non-stationary time series analysis. Engle and Granger (1987) pointed out that a linear combination of two or more non-stationary series may be stationary. If such a stationary linear combination exists, the non-stationary time series are said to be co-integrated and may be interpreted as a long-run equilibrium relationship among the variables. The rationale of the co-integration test is to find out a long-run

29 A spurious regression is a regression with high $R^2$ and significant t-statistic, but low DW statistics. When we run a regression with a series that is non-stationary, the least square estimates are non-consistent and the usual test of statistical inference does not hold.
equilibrium among a group of non-stationary series. To examine non-stationarity, we use the Augmented Dicky Fuller (ADF) test (discussed in detail in the relevant chapter). The presence of a co-integrating relation forms the basis of the vector error correction (VEC) specification.

We employ the J-J co-integration (1988) technique (the details are discussed in the relevant chapter) to test the co-integration of domestic market segments. For analysing domestic integration, we consider some important financial asset prices of the major three markets in the Indian economy—money market, capital market and foreign exchange market. Cross-border analysis clears the integration of the Indian financial market with sample countries.

It is also used to test the integration between the real and financial variables in Chapter Five. Many previous studies (Chan et al., 1992; Arshanapalli and Doukas, 1993; Rogers, 1994; Arshanapalli et al., 1995; Kwan et al., 1995; Chan and Gup, 1997; Masih and Masih, 1997; Kanas, 1998a, 1998b, 1999) have focused on the diversification benefits of international investment in relation to the co-integration concept. The interpretation that no co-integration among two or more financial markets implies long-run gains from international portfolio diversification has been suggested by these authors. Our study tries to examine the diversification benefits and the association of risk from the perspective of investing in four domestic market segments (mentioned above). Also, the significance of the asset return channel is tested between India and a few developing and developed countries in the money and bond markets. If these markets are highly integrated, diversification will be less effective and risk would be more. We discuss the details of the indicators for the market and the banking industry, such as relative size, liquidity, and efficiency, for measuring financial development in the relevant chapters. These indicators were initially developed by Beck and Levine (2002) and Demirgiiq-Kunt and Levine (1996).

The same indicators are used to examine the relative conducive financial systems in pre and post-liberalisation India by using classical regression analysis. It also estimates the effect of financial development on Indian economic growth. It might be assessed whether the banking sector and the stock market each have a positive role in the growth of the
Indian economy. We use preliminary analysis to investigate the recent trend of the exposure of the Indian banking industry to the sensitive sector. We also use regression to calculate the sensitivity of individual banks to the market index and estimate associated systematic risk. Details of all methods and statistical tools are described in the relevant chapters.

1.7 Databases

Data related to real and financial variables for the domestic economy are drawn from the RBI Handbook of Statistics on Indian Economy, Handbook of Monetary Statistics in India, Report on Currency and Finance, RBI Annual Reports and the Central Statistical Organisation’s National Accounts Statistics. Because of the non-availability of data before 2000 for Indian secondary market trading (as it was insignificant compared to other sample countries), we use high frequency data (monthly and quarterly time series data). Banking data traded in the equity market is from the NSE.

In India, we suffer from the non-availability of long-period financial data, like the call money rate, market trading index, and so on. Besides, the RBI provides a very poor bank-specific database. Though all banks, under the RBI’s disclosure norms, are bound to provide annual reports online, there is large inconsistency in the period for which data are available. However, for research purposes, the availability of some specific data, like securitization activities by individual bank and SCBs exposure to the international market, bank-wise and security-wise, would be highly appreciable. Case studies could be done without disclosing the names of specific banks.

For the data related to world financial markets, we broadly depend on the World Federation of Exchanges (WFE) database, the World Development Indicators (WDI) database, the Global Development Finance (GDF) database, BankScope, Bloomberg and the International Financial Statistics (IFS CD-ROM) database of the International Monetary Fund (IMF). Though the IFS CD-ROM provides data for India, most of the

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30 For our analysis we used three econometric packages: STATA, GiveWin and PC Give, EVIEWS.
31 We tried to download ICICI Bank’s annual report. Despite availability, one specific year’s data was not downloadable. Even after writing several e-mails, the bank did not solve the problem. We are referring to ICICI Bank as a case, for this is common to many banks, especially private sector banks. Non-availability of data for a year or two in between a whole period makes certain kinds of analysis difficult.
years (or months if it is monthly data) are not reported consistently. Hence, for cross-country analysis we largely depend on the RBI database in the case of India and the IFS database for other countries.

1.8 Schematisation and Relevance of the Study

The study includes six chapters, including the introduction and conclusion. So far in this chapter we have discussed the context, reviewed the literature with some specification in the Indian context, and pointed to the limitations of existing studies. We also have discussed the analytical framework and enumerated the objectives, with sources of data and methodology. Apart from this, Chapter Two is a prelude to the study, discussing the macro channels of transmission. In addition, we discuss a few policies and their implications for the evolution of a new financial era. Chapter Three discusses the pros and cons of financial integration. In the context of India’s financial liberalisation, it broadly quantifies financial integration on the domestic and international fronts. Chapter Four addresses the issue of universal banking and the performance of SCBs in connection with sensitive sectors such as the capital market and real estate sector. It also includes a primary analysis of non-interest income as a proxy to measure universal banking and the changing investment and credit portfolio. It compares the systematic risk and idiosyncratic risk of public and private sector banks listed in the Bank Nifty/CNX Bank index. The succeeding chapter addresses the debate on bank-based and market-based economies in the context of the growing association between financial institutions. Against the backdrop of India’s financial reforms, it examines the relative effect of the banking sector and capital market in the pre and post-liberalisation periods. The inter-linkage between the banking industry, the most accessed financial segment, and the highly volatile and sensitive equity market has proved to be a controversial issue in the aftermath of the US crisis. In this regard, this study examines the complementary relationship of the financial sector with the real sector economy to understand the spillover effect from the financial to the real sector economy. The complementary relationship is tested in the other direction as well. We conclude with some inferences and policy suggestions in the final chapter.