CHAPTER 4

ANALYSIS OF FINANCIAL DEVELOPMENT IN INDIA

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Financial development encompasses four dimensions, namely, financial access, depth, efficiency and stability, across financial institutions and markets. These dimensions are interconnected and improvement in one may or may not support another dimension. Exploring the nature and extent of changes in the four dimensions and pooling them together to build a single construct of financial sector development important linkages between them form the core of the present research work.

Objectives of the Study

- To measure the extent of financial development in India in terms of access
- To measure the extent of financial development in India in terms of depth
- To analyse the level of efficiency of the financial sector in India
- To analyse the stability of the financial sector in India

This chapter is organized in various sections as follows.

Section 4.1 presents the findings related to the analysis of financial access based on various indicators across financial institutions and markets. Section 4.2 deals with the construction of three indices of financial inclusion to gauge the impact of financial access. It also carries out a comparison of the three indices and investigates into the intra-dimensional changes over time. Section 4.3 discusses the findings related to the second dimension of financial development, that is, financial depth. The analysis is also supplemented by an examination of the structural changes in the nature of financial deepening in India with reference to bank-based versus market-based financial sector. Section 4.4 deals with the analyses of three types of financial efficiency, namely, intermediation-cost efficiency, operational efficiency and profit efficiency. Section 4.5 covers the analysis of stability of financial sector of India. The final section, 4.6 presents the findings in relation to the construction of the index of financial development.

Chapter four covers the analytical work of the thesis wherein the analysis of each of the four dimensions of financial development has been carried out. each objective has been addressed with appropriate variables and statistical tools. It provides detailed analysis of the four dimensions of financial development, namely, financial access, financial depth, financial efficiency and financial stability. Each of these dimensions are examined in multiple and

alternative ways to gauge its development. With regard to financial access, the study has analysed three dimensions, namely, penetration, availability and usage of financial services, and weaved them into an index to measure the extent of financial inclusion over time.

4.1 FINANCIAL ACCESS

The core of financial sector development starts with financial access which forms the first and basic foundation of financial sector development pyramid. Financial access means the availability of financial services to households and businesses. In other words, it implies how well the institutional infrastructure has penetrated among the population. Sufficient penetration and ease of availability of these services is expected to improve mobilization of savings, facilitate borrowings and generally, improve the modes of making payments and settling claims.

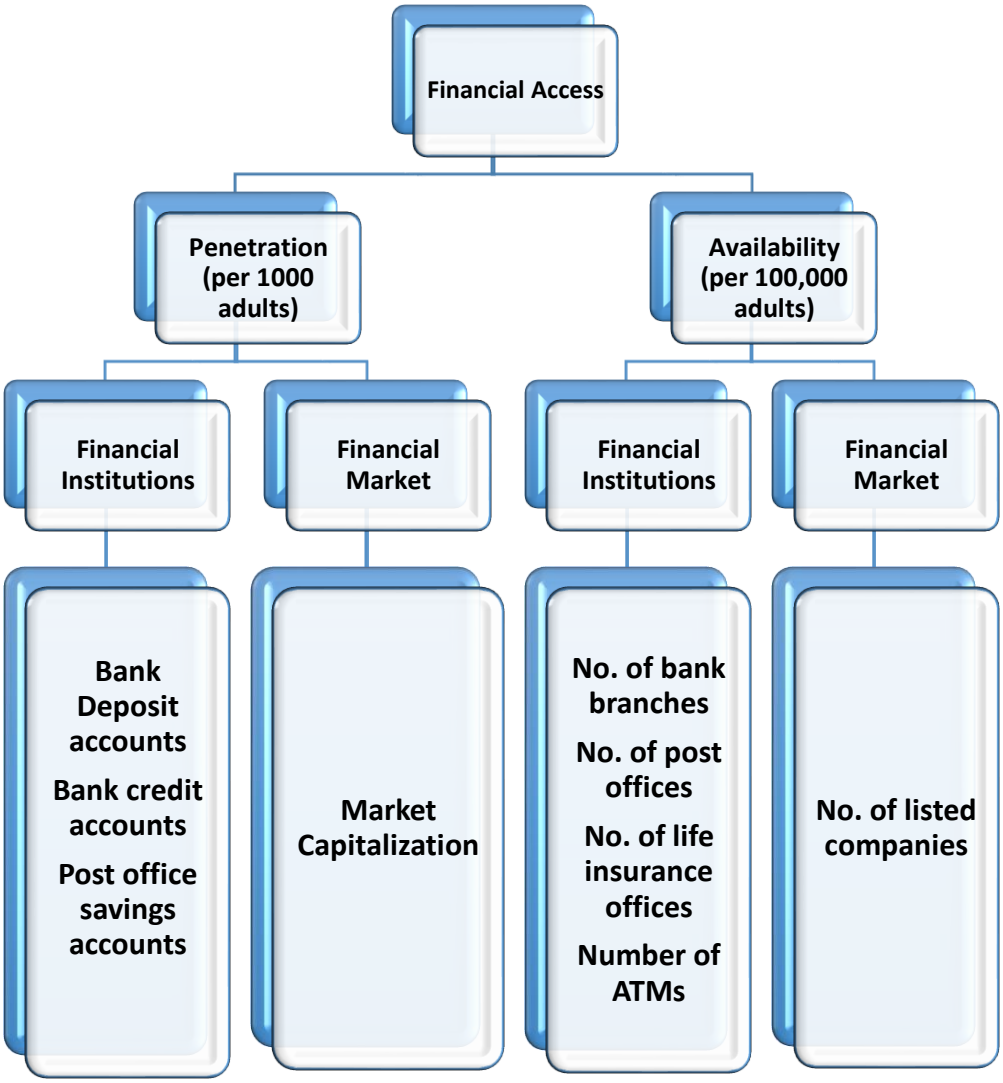
The full potential of the financial sector on the real economy cannot be realized unless full access to finance is made possible for all sections of the society. Financial access is necessary for inclusive growth of any economy. Financial Inclusion is important to unleash the stimulant effect of financial development on economic growth. Financial Inclusion is defined "as the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable group such as weaker and low income groups at an affordable cost" (Rangarajan Committee 2008). According, "Financial inclusion refers to universal access to a wide range of financial services at a reasonable cost. These include not only banking products but also other financial services such as insurance and equity products" (The Planning Commission 2009).

The analysis of financial access starts with examining the trends and growth rates of the alternative measures used to represent the same. These include number of bank and post office deposit accounts and bank credit accounts per 1000 adults; demographic penetration of the financial sector measured by bank branches, post offices and life insurance offices per 1,00,000 population; geographical penetration measured by number of bank branches and number of ATMs per 1000 square kilometre. Representing access to technology, number of internet users per 1000 adults has been added to measure penetration.

Since the construct of 'access' is incomplete without usage component of financial services, the concept of financial access also incorporates GDP, small savings to GDP, life insurance premium to GDP and public deposits to GDP ratios. To represent the usage element of financial

markets, Value Traded excluding top 10 traded companies to Total Value Traded and Market capitalization excluding top 10 companies to Total Market Capitalization ratios have also been examined. Fig. 4.1 presents the construct of financial access.

Fig. 4.1 Construct of Financial Access

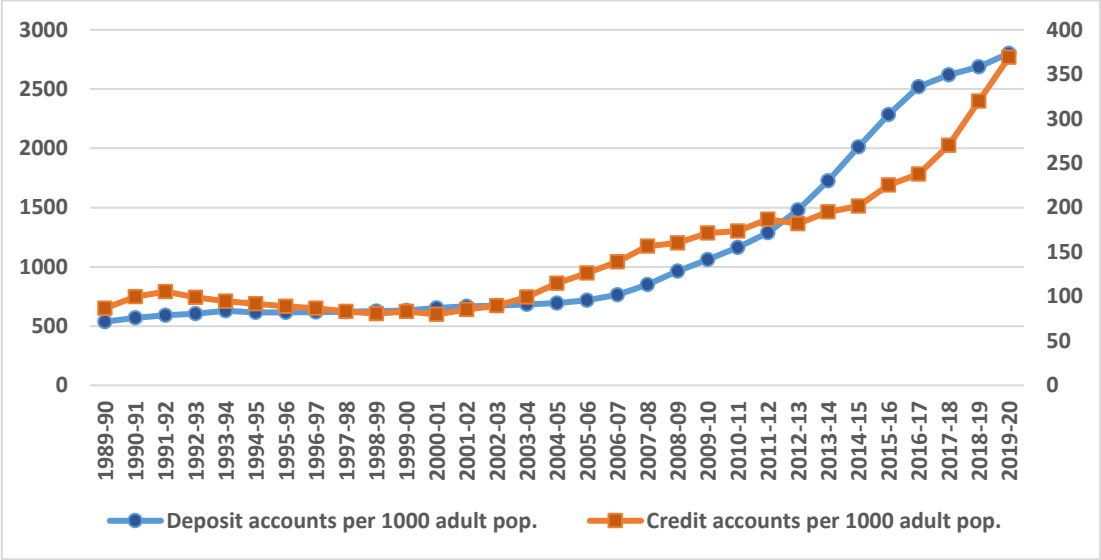


4.1.1 Banking Services Access

It is found that the number of bank deposit accounts has increased from 537 accounts per 1000 adults to 2802, registering more than five times increase over the 31-year period, from 1990 to 2020, that is, a CAGR of 5.66 percent. Likewise, the number of bank credit accounts per 1000 adults has improved from 86 to 369 over the same period, clocking a CAGR of five percent (Fig.4.2). The post office is the oldest institution to provide savings facilities to small earners and people of rural areas. Post offices in India have been credible substitutes for banks. The significance of post offices in providing banking services is substantiated by the fact that the

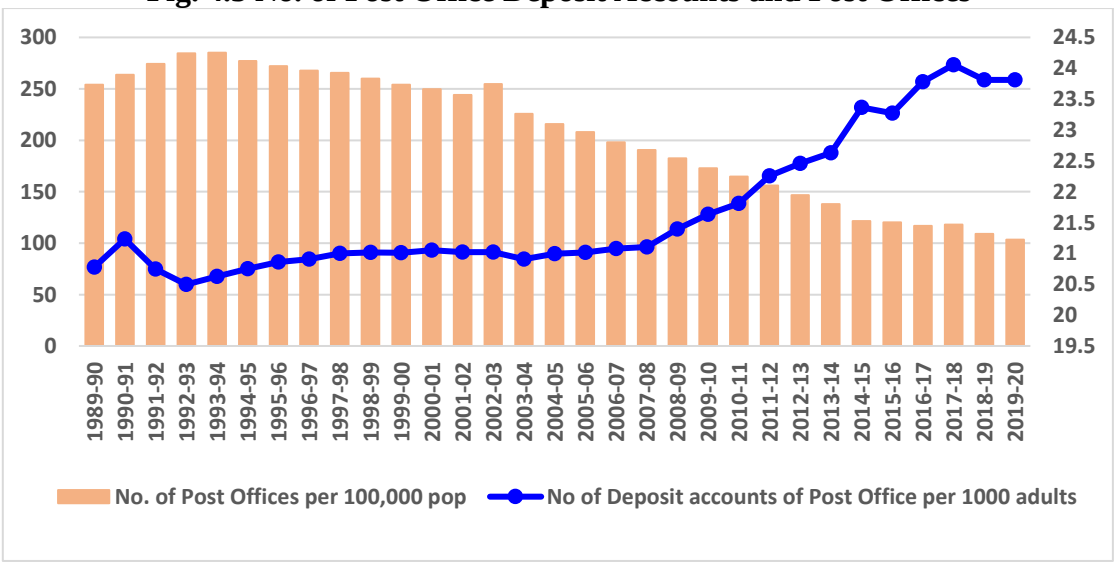
monetary aggregates M2 and M3, which measure money supply, include savings deposits and total deposits of post offices. A similar trend is found in the case of post office savings accounts too (Fig.4 3). With reference to number of bank branches, it is found that there is 2.5 times increase from 59752 branches to 150631 between 1990 to 2021, however, there is vast discrepancy between rural and urban branches. Availability of banking services indicates the ease of availability. Fig. 4.4 depicts the availability of bank branches and post offices per one lac population. Rural branches were 5264 in the year 2021 while remaining 97990 were in the non-rural areas (Fig. 4.4). It may be note that this measure does not account for multiple bank accounts held by people.

Fig. 4.2 No. of Bank Deposit and Credit Accounts per 1000 Adult Population



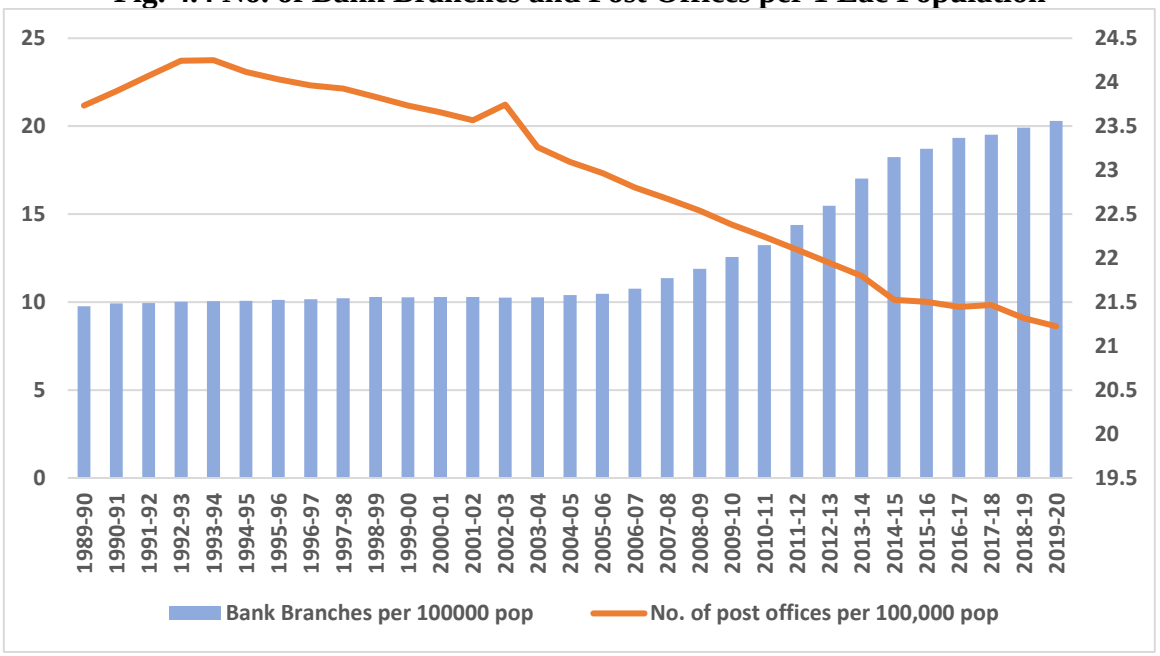
Source: BSR, RBI Publication

Fig. 4.3 No. of Post Office Deposit Accounts and Post Offices



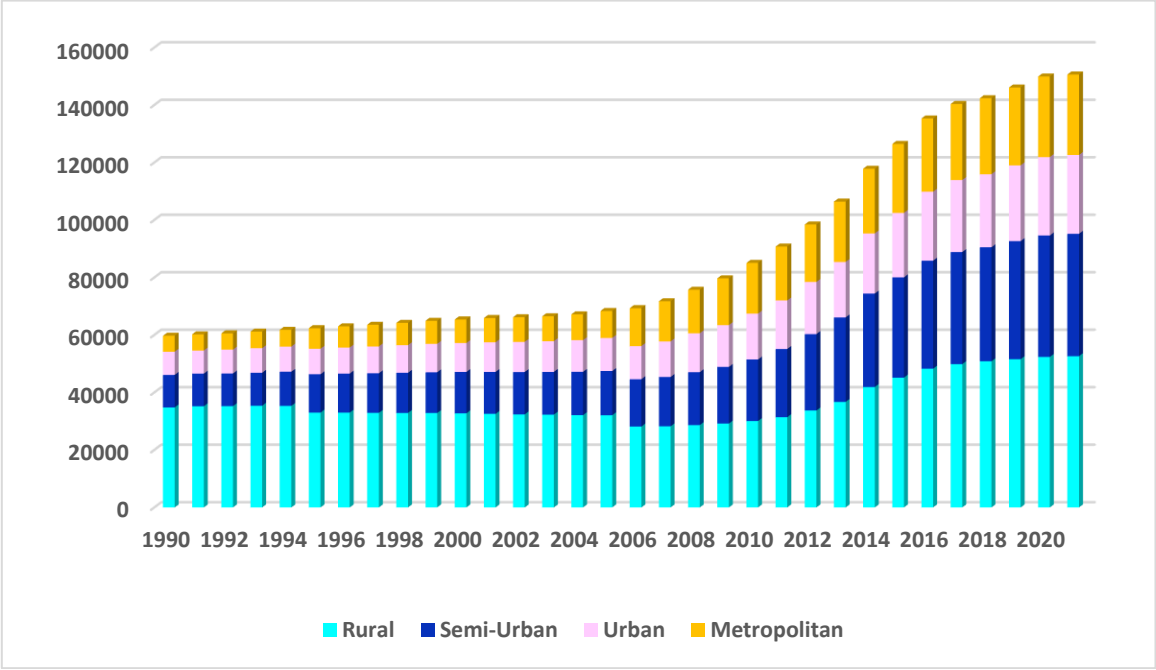
Source: Annual Reports of Indian Postal Department

Fig. 4.4 No. of Bank Branches and Post Offices per 1 Lac Population



Source: RBI Publications, Indian Postal Dept. Annual Reports

Fig. 4.5 Population Group-wise Distribution of Bank Branches in India

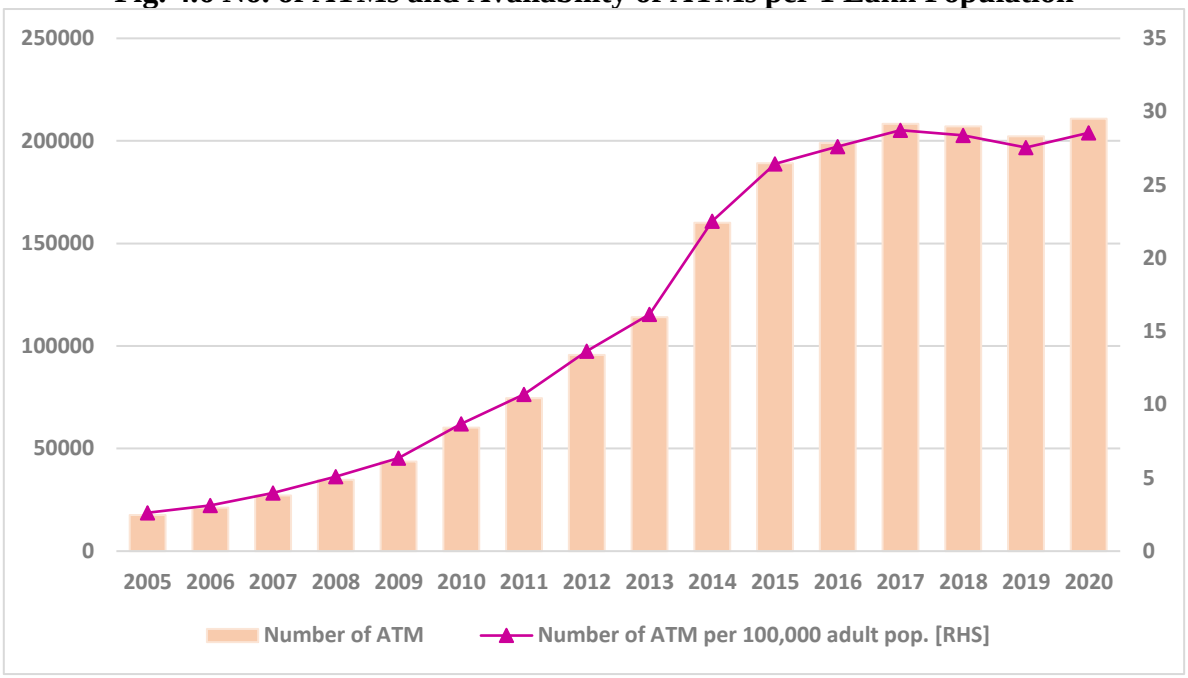


Source: Basic Statistical Returns of SCBs, RBI Publications

The number of ATMs has increased 12 times from 17642 ATMs in 2005 to 210760 ATMs in 2020 (Fig. 4.6). The availability for ATMs among one lakh population has increased at CAGR of 17 percent, which represents demographic penetration. The availability of ATMs per 1000 sq. km., which represents geographical penetration, has grown at a healthy CAGR of nearly 14

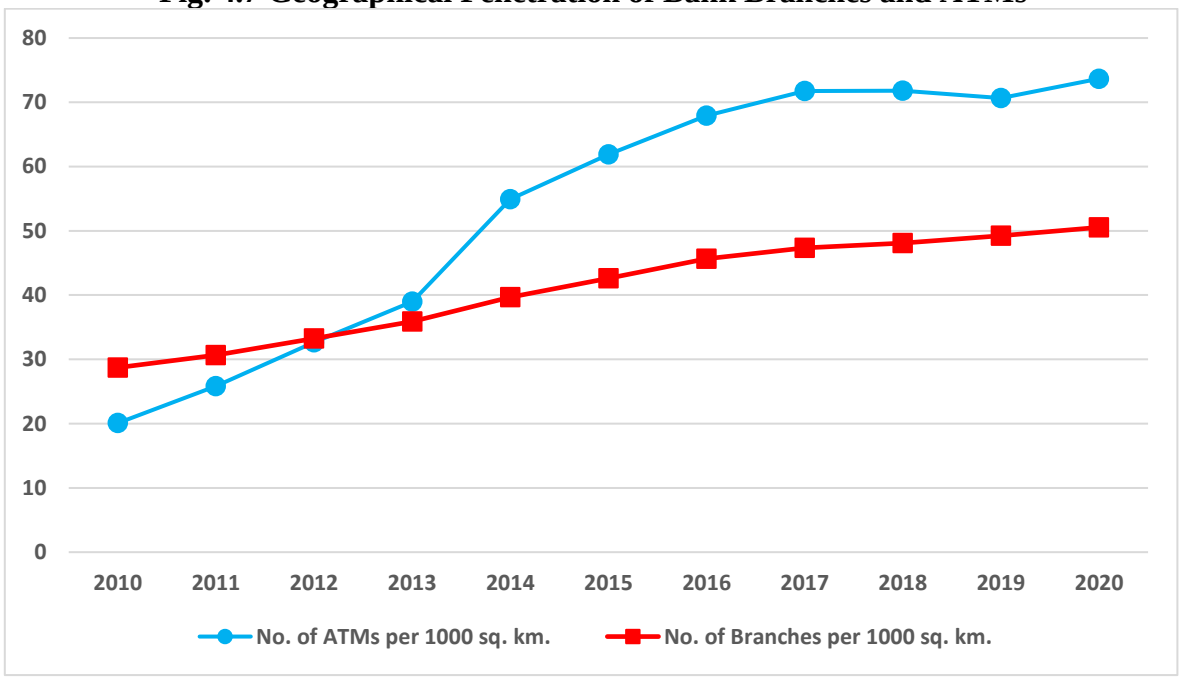
percent. Bank branch density has also increased over time but at a lower CAGR of about six percent. Fig. 4.7 depicts the geographical spread of ATMs and Bank Branches.

Fig. 4.6 No. of ATMs and Availability of ATMs per 1 Lakh Population



Source: STRBI, RBI Publication

Fig. 4.7 Geographical Penetration of Bank Branches and ATMs

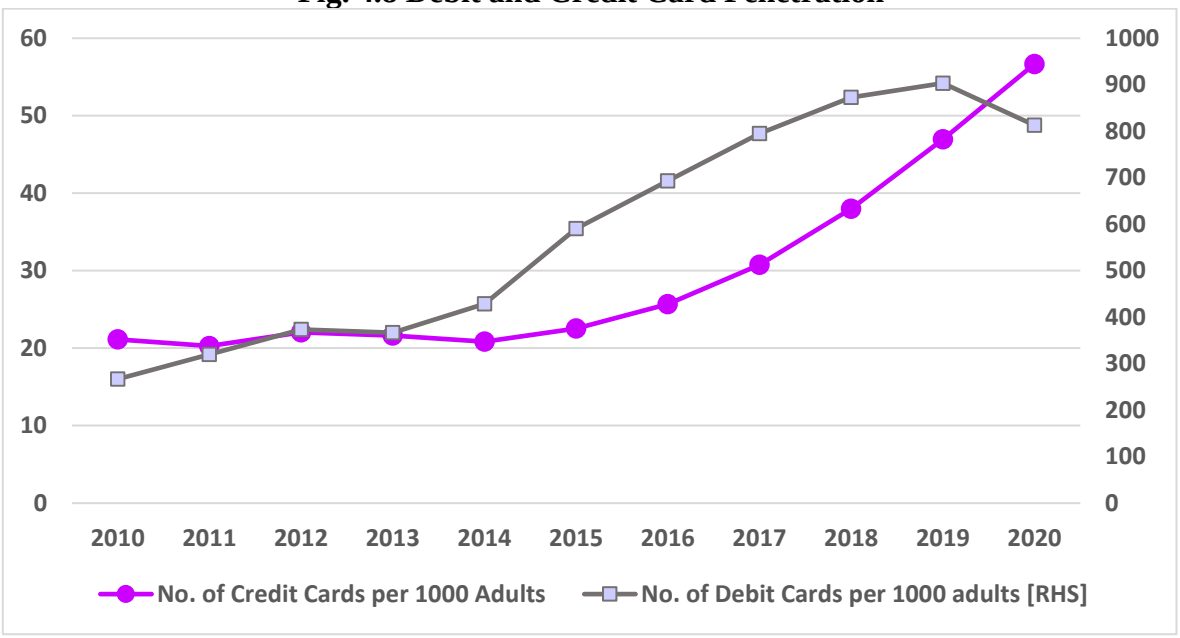


Source: Author's calculations based on RBI data

Over the years, electronic mode of making payments and settling claims has increased. The event of demonetization, in particular, boosted the economy towards online transactions in a

major way. This is reflected in the increased use of credit and debit cards and other media such as mobile banking, internet banking, e-wallets, etc. Fig. 4.8 depicts the demographic penetration of debit and credit cards over time. Debit card penetration has increased at the CAGR of nearly 12 percent, while credit card penetration has grown at the CAGR of ten percent.

Fig. 4.8 Debit and Credit Card Penetration

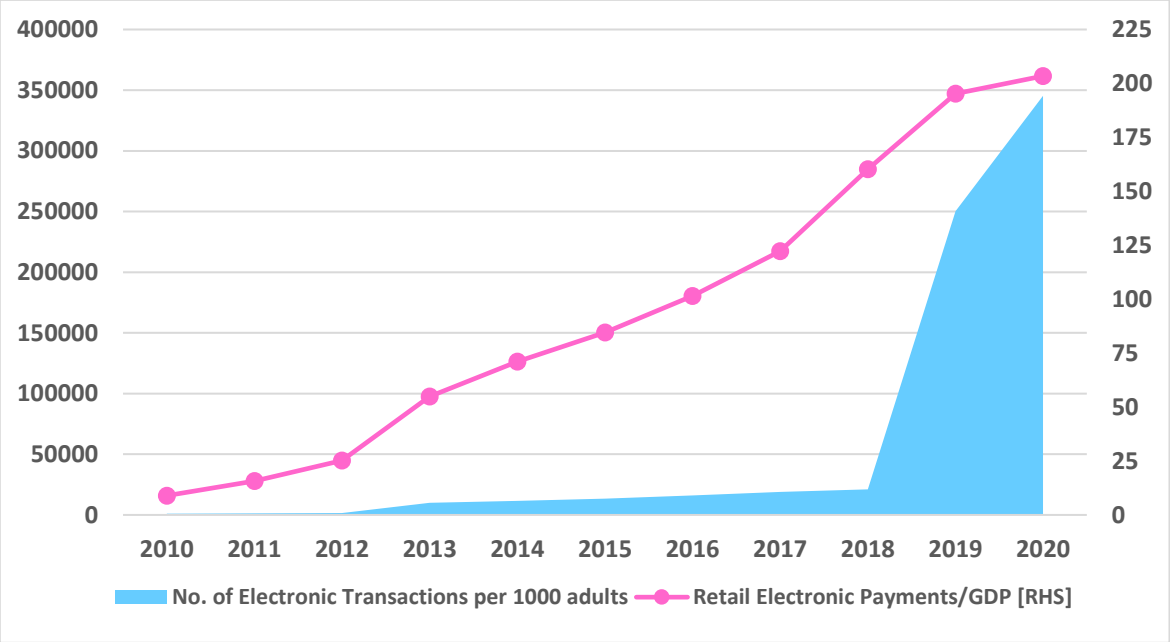


Source: RBI Bulletin

The transactions under retail electronic payment system has grown at rapid rates in recent times, particularly triggered by demonetization. It has also got the boost from the Digital India programme of the Government of India, wherever, digital payments are required. The retail electronic payments include Electronic Clearance Services (ECS), National Electronic Funds Transfer (NEFT) and Card payments. The study has not included electronic payments under Real Time Gross Settlement (RTGS), CCIL Operated System, Paper Clearance, Prepaid Payment Instruments, and Mobile Banking as the data for the same period was not available.

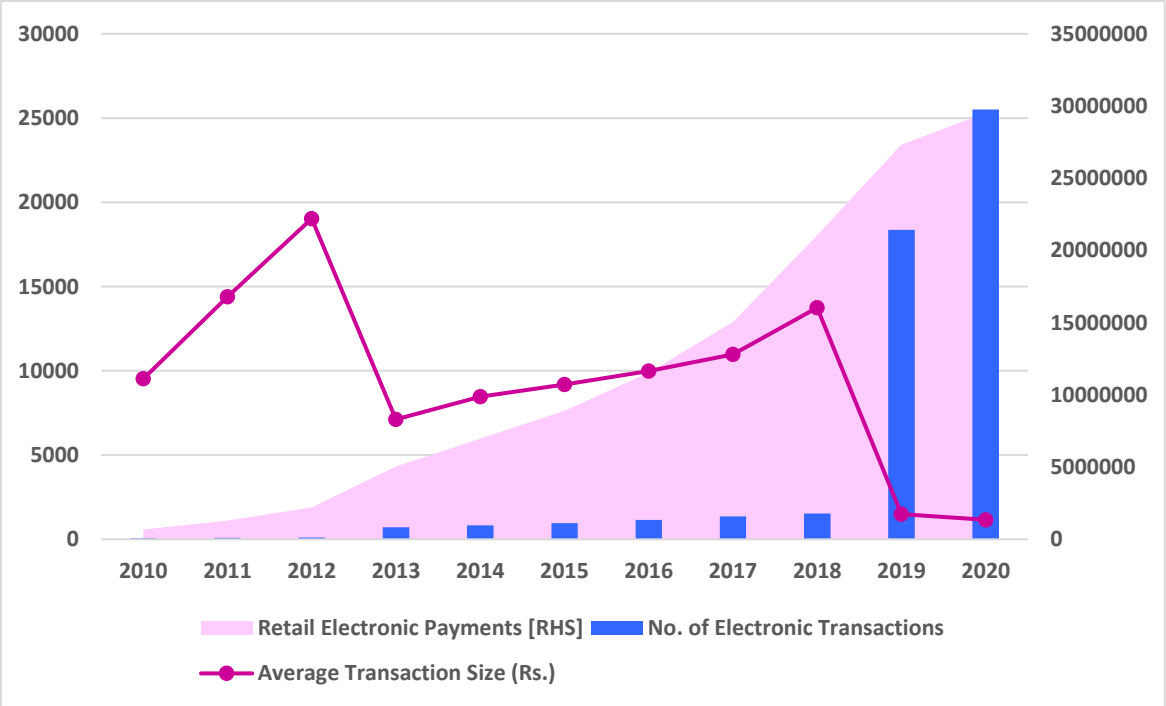
Fig. 4.9 shows the penetration of electronic transactions. While the number of electronic transactions per 1000 adult population has grown at whopping CAGR of 78.7 percent. The increasing depth of the electronic transactions is reflected in the ratio of electronic payments to GDP, which also has grown at a considerable CAGR of 36.67 percent. It can be observed that there is a sudden jump in the number of electronic transactions per 1000 adults after demonetization as electronic payments almost became the norm.

Fig. 4.9 Growth of Electronic Transactions



Source: Calculations based on data sourced from RBI Bulletin

Fig. 4.10 Average Size of Electronic Transactions



Source: Calculations based on data sourced from RBI Bulletin

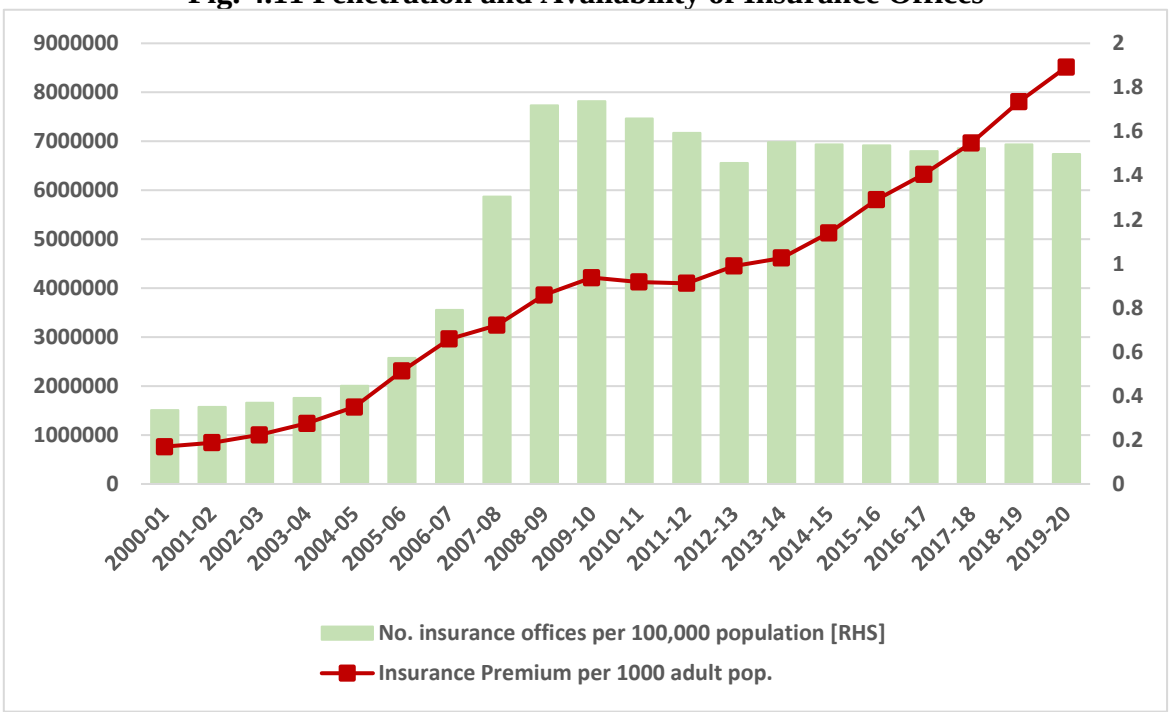
An interesting picture emerges when the size of electronic payments per transaction is analysed. While both, number and value of electronic transactions have increased over time, the size of electronic payments per transaction has declined over time. This shows that people have increasingly adopted electronic payment mode even for smaller routine transactions. It

shows greater spread of electronic modes by the larger majority of the population or the masses as is commonly observed Fig. 4.10 depicts the same. The average transaction size has declined at a rapid rate of 19 percent on compound annual basis.

4.1.2 Access to other Financial Institutions and Financial Market

Access to financial services beyond the banking sector has also shown remarkable growth. Insurance sector is one of the important financial institutions for risk management. This study measures financial development in terms of insurance density, that is, insurance premium divided by one lakh population. The study has taken into account life insurance sector for this purpose. The number of insurance offices have increased five-fold with a CAGR of 8.87 percent with the entry of private firms, over the period 2001 to 2020 (Fig. 4.11). Insurance premium per 1000 adult population has recorded much higher CAGR of 13.53 percent over the 20-year period. Post offices increased in numbers from 147236 in the year 1990 to 156721 in 2020 recording a CAGR of 4.13.

Fig. 4.11 Penetration and Availability of Insurance Offices

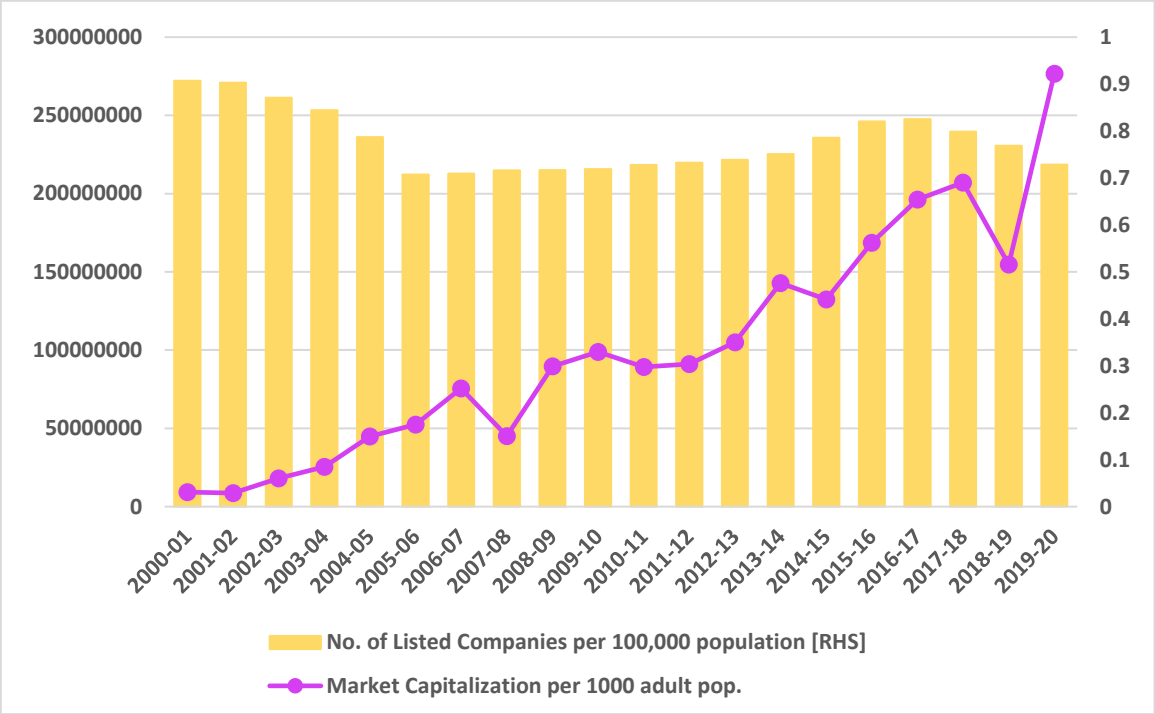


Source: Annual Reports of IRDA

Financial market access has also improved over the time. Total market capitalization increased remarkably at a CAGR of 12.56 over the 20-year period from 2001 to 2020. No. of listed companies per one lac population shows a decline from 0.91 in the year 2000-01 to 0.72 in the

year 2019-20, however, financial market access has shown significant growth with market capitalization per 1000 adult population growing at the CAGR of 19.53 percent (Fig. 4.12).

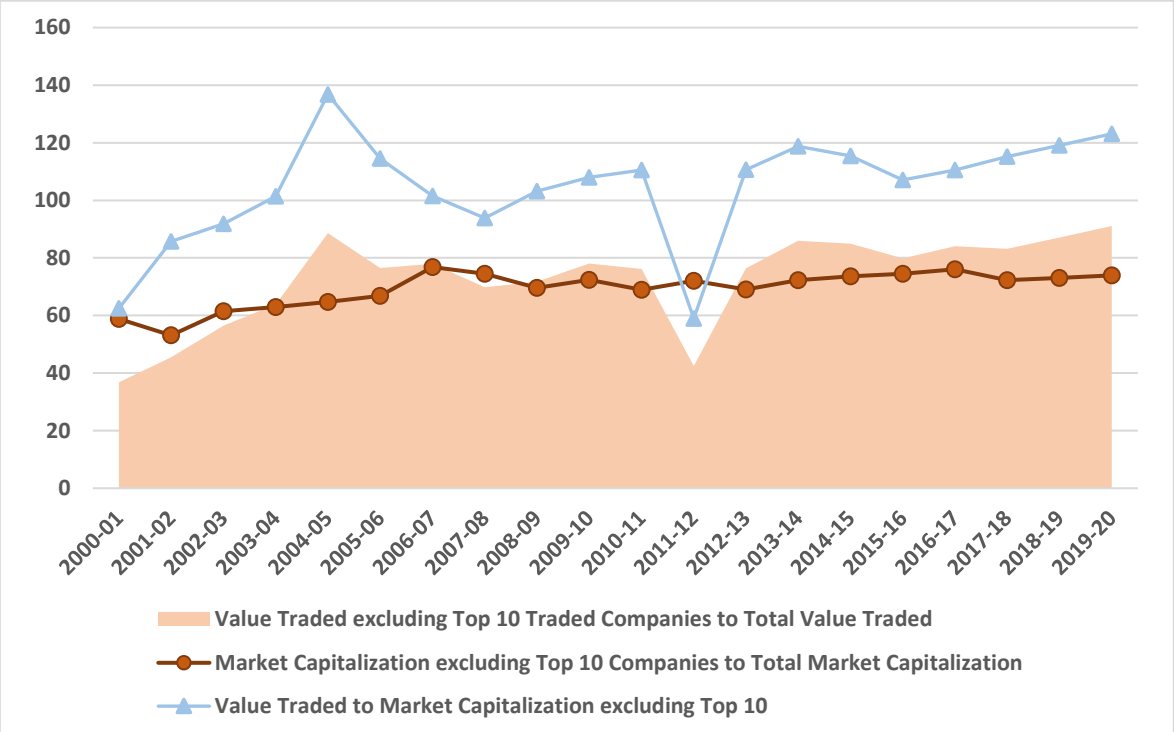
Fig. 4.12 No. of Listed Companies (per 1 Lac pop.) and Market Capitalization (per 1000 adult pop.)



Sources: Calculations based on data obtained from bseindia.com and World Bank Database

The proxy to measure the stock market access is through market concentration. It means the market capitalization raised by the medium and small companies other than large companies. This is captured by market capitalization out of top ten largest companies to total market capitalization. The market capitalization excluding top 10 companies as a ratio to total market capitalization has increased from 58.85 percent to almost 74 percent over the same period. Likewise, value traded excluding top 10 traded companies to Total Value Traded depicts access to financial markets and extent of liquidity enjoyed by smaller companies, and greater diversity. It shows that their share has increased from 36.75 percent in the year 2001 to 91.08 in the year 2020, with a CAGR of 4.89, which compares better than the CAGR of their market capitalization ratio. It indicates that access to companies excluding top 10 has truly improved with increased concentration of trading in relation to their market capitalization. These developments are depicted in Fig. 4.13.

Fig. 4.13 Stock Market Access excluding Top Ten Companies (Market Capitalization and Value Traded)



Source: Ratio calculated based on World Bank data and BSE India

4.2 FINANCIAL INCLUSION

In order to gauge the impact of improvement in financial access, the present study has constructed the index of financial inclusion covering different periods as per availability of data. the study includes indices constructed on the premise of a long period banking services oriented measures and shorter period indices which include wider range of measures related to financial institutions, markets as well as those that capture information technology based indicators in the construct of the concept of financial inclusion.

The first Financial Inclusion Index (C-FII) is based on 31-year period from 1990 to 2020 which focused on banking services oriented Core FII. The second index is an intermediate FII [I-FII] constructed for a 20-year period ranging from 2001 to 2020, which covers institutions beyond banks and post offices, to include insurance companies. Along with financial institutions the index also includes financial markets as represented by the stock market. The third index, Advanced FII [A-FII], is constructed to include beyond the institutions and markets, technology based access to financial services, and is calculated over a shorter period of ten years from 2010-11 to 2019-20 based on the availability of data for all desirable variables that

can be added, such as, electronic payments, use of plastic money and ATM facility, to mention a few.

4.2.1 Banking Services Oriented Core Financial Inclusion Index

The first Financial Inclusion Index (C-FII) which is based on 31-year period from 1990 to 2020 is centred over inclusion of the population in the formal banking services provided by banks and post offices and is therefore, called banking services oriented core FII. The Core FII is constructed as the final composite index of financial inclusion, based on three dimensional indices of penetration, availability and usage. It is based on traditional financial habits of people which is largely bank and post office oriented. The three dimensions of financial inclusion include penetration, availability and usage.

The dimension of penetration provides a measure of how widely services of banking, provided by both, banks or post offices are spread among the users. It is typically indicated by number of bank and post office deposit accounts per 1000 adult population, bank credit accounts per 1000 adults. The greater the number of such accounts, greater is the penetration of financial sector among the people.

The second dimension of financial inclusion is availability of the financial services, in this case, of banking and post office services. The need for this additional dimension arises from the fact that while people may have bank and post office accounts, they may not be easily accessible. As is commonly known, often in the remote areas, the closest bank branch may not be located in close vicinity, but may be situated several kilometres away (Pathan and Fulwari, 2020). In this sense, the availability criterion is a proxy for ease of availability of the financial services. Easier the access, better would be the banking habits of the people, keeping other things constant. The construct of availability is indicated by number of branches per one lakh population and the number of post offices per one lakh population which in a way is a measure of the density of branches.

The usage dimension is equally important because mere penetration and availability does not amount to a developed financial sector. Having a bank account or post office account should also result into increased usage of their financial services such as depositing money into the accounts or accessing credit from banks. This thought is also echoed in Diniz et al., (2011); Kempson, 2004; Seidman et al., 2005. On these grounds, amount of bank and post office deposits and amount of bank credit to GDP are taken as indicators of usage dimension.

The methodology used is as explained in Chapter 3, that is, it uses simple average of normalized Euclidean distance and its normalized inverse Euclidean distance to arrive at the dimensional index. But to construct the composite index C-FII, the present study has assigned different weightage to the three dimensions. The supply side factors of inclusion, represented by penetration is given 50 percent weightage while ease of availability and usage as assigned lower weightage of 25 percent each. The reason for assigning lower weightage to availability dimension is that apart from demographic and geographic spread of physical infrastructure related to banking services, use of information technology in providing financial services has greatly reduced the need for greater physical density of financial institutions. Similarly, usage dimension has been assigned lower weightage compared to penetration dimension because simply the spread of financial institutions and markets does not necessarily convert account holders into active users. Some inertia always exists. It may be noted that it is well established in the literature that weights are assigned unequally and exogenously. (Kumar and Mishra, 2011; Sethy, 2016; RBI, 2016;). A few studies have assigned different weights to each indicator within the dimensions (Kumar and Mishra, 2011; Sethy, 2016). In the FII constructed by RBI (2016) it has assigned higher weightage to the combined dimension of usage and quality so as to construct a forward looking index.

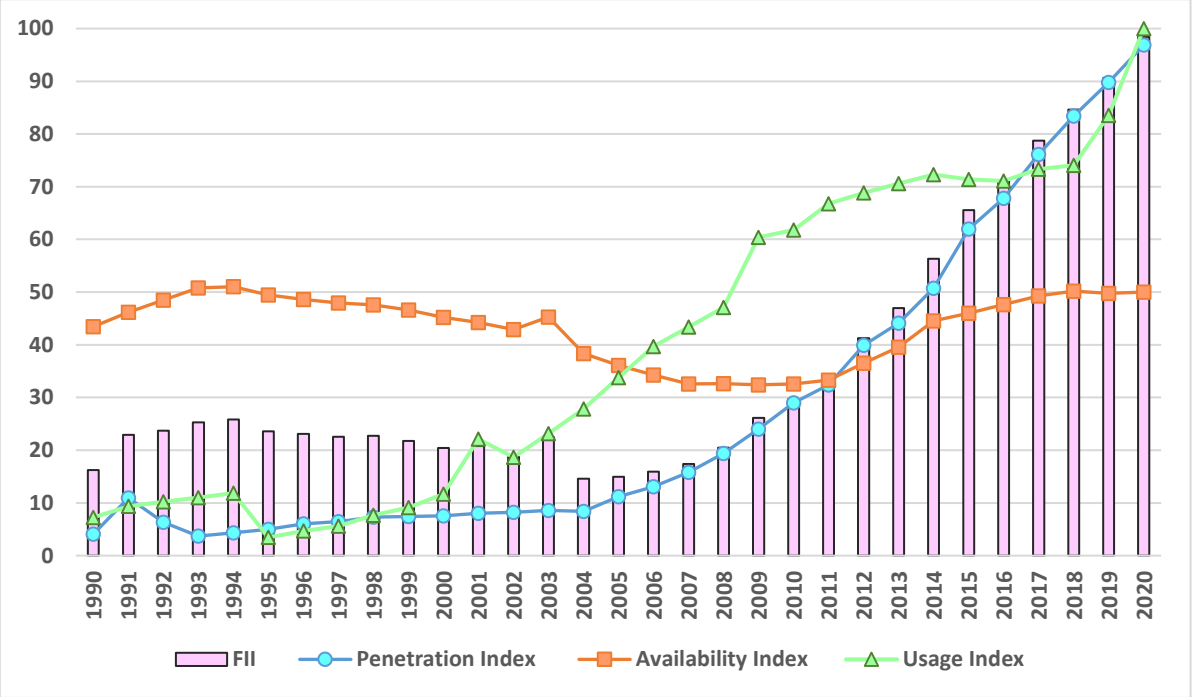
Fig. 4.14 shows the three-dimensional indices and final composite index of core financial inclusion constructed for 31 years. The first dimension, penetration of financial services has improved, particularly since the year 2005. It increased at an annual growth rate of 6.9% till 2005, and from 2005 to 2020, the annual rate of growth has more than doubled to 15.49%. Among the indicators of the first-dimensional index, deposit accounts show more growth rate. After the launch of the scheme Pradhan Mantri Jan Dhan Yojana in the year 2014, there is an acceleration in the opening of bank deposit accounts. Deposit accounts of post offices too show an improvement over the period contributing to the improvement in the penetration index.

The index of the second dimension, the availability index is quite stagnant over the entire period with only a slight improvement in the index value from 43.47 to 50. This is because, particularly, with reference to the number of bank branches, there is much less difference between their minimum and maximum values; also, post offices per one lakh population have declined over time.

The third dimensional index captures the behaviour of usage of banking and postal banking services. It can be observed (Fig. 4.14) that there is a substantial improvement in the usage

index from the year 2001 onwards. In fact, the index value for the usage dimension has risen from as low as 22 in the year 2001 to 100 in the year 2020; a 4.5 times increase. All the indicators, bank deposit, bank credit, and deposit of post offices to GDP ratios have shown remarkable growth over the study period.

Fig. 4.14 Banking Services Oriented Dimensional and Composite Index of Core Financial Inclusion [1990-2020]



Source: Computations based on data sourced from RBI publication

In Fig. 4.14, the bar graph depicts the composite index of all the three-dimensional indices. It shows that the financial inclusion index has improved continuously over the study period. From a low index value of 16.26 in the year 1990, it has increased to 98.43 in the year 2020. After fluctuating between the range of 14 and 25 from 1989-90 to 2003-04, the FII has a strictly upward trend till it reaches 98.43 at the end of the study period. Thus, from a secular point of view, there is substantial long term improvement in financial inclusion in India. It establishes that the efforts on the supply side of financial access in terms of providing the physical infrastructure, and the behaviour on the demand side in terms of usage of banking services (and post office banking services), there is remarkable development in the Indian Financial Sector, although bank-centric.

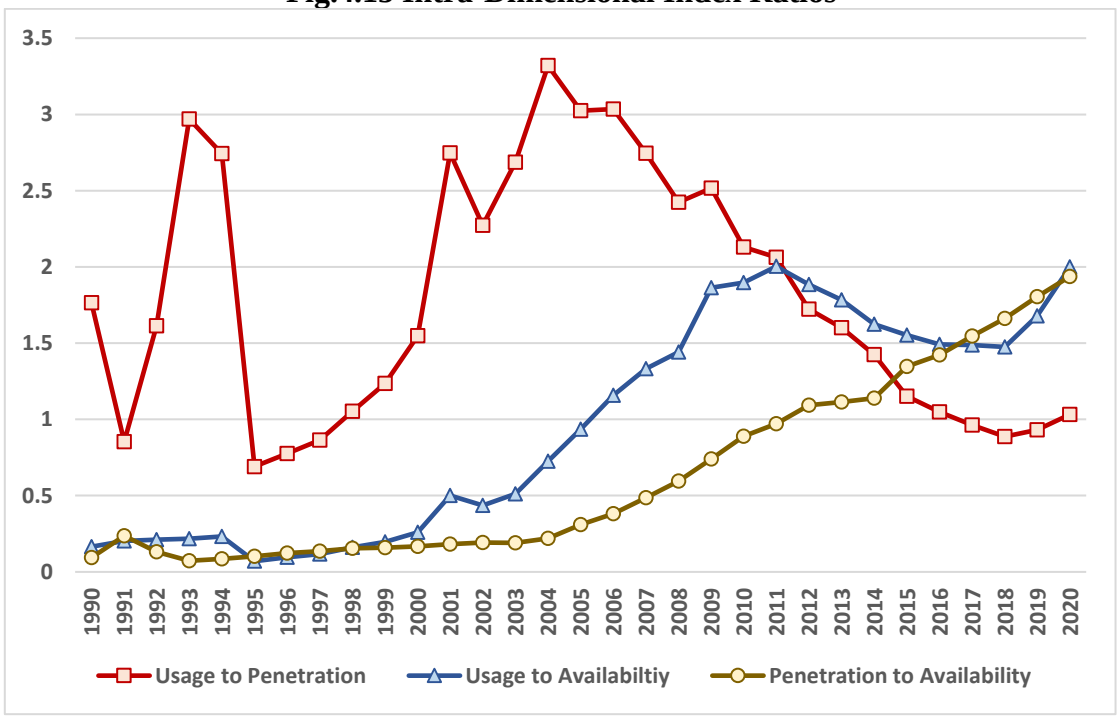
While the findings match with others in the literature (CRISIL, 2013; Sethy, 2016; Goel and Sharma, 2017; Deepti and Subramaniam, 2018; Reserve Bank of India, 2021), it may be noted that no study is found to have constructed a core financial inclusion index over such a long

period of time, which can gauge the journey from very low levels of the concerned variables to such high levels in the present time. Also, it is worth noting that most studies by other researchers do not appear to offer a clear line of reasoning with regard to which indicators to combine and why, in the construction of the indices.

Intra-Dimensional Index Ratio

An important point of inquiry is to investigate the relative size of the three dimensional indices of financial inclusion, such as, usage vis-à-vis penetration, usage vis-à-vis availability and penetration vis-à-vis availability. The first ratio seeks to examine whether increased penetration in terms of number of bank and post office accounts has resulted into greater usage of in terms of deposits and credit. It can be observed in Fig. 4.15 that the ratio improved over the years initially, which may be attributed to the deregulation of the banking sector with more and more entry of private sector and foreign banks which led to increased competition. It was a phase of expansion of credit across all sectors, with banks even lending at sub-prime lending rates owing to cut throat competition. But after reaching the peak of 3.3 times in the year 2004, there has been a continuous fall in the ratio to reach one in the year 2020. Many reasons may be responsible for this, such as increase in the number of basic savings bank accounts under Pradhan Mantri Jan Dhan Yojana which have not got converted into usage, increase in the practice of multiple bank accounts, etc.

Fig.4.15 Intra-Dimensional Index Ratios



Source: Author's calculations

Likewise, the ratio of usage to availability implies how much the ease of availability of banking services through more bank branches and post offices, has resulted into increased usage. Ideally, improved availability should result into better usage. This ratio has shown an upward trend from as low as 0.16 in the year 1990 to peak at 2.0 in the year 2020. It may be therefore said, that the given level of availability is sufficient to improve usage. In fact, with greater use of internet and mobile banking, nearness of bank branches may be of less significance once an account is opened.

The third ratio, penetration to availability indicates whether ease of availability results into greater penetration, that is, encouraging more people to open bank and post office accounts. Interestingly, this ratio shows an upward trend throughout the study period (Fig. 4.15), increasing from as low as 0.09 to nearly twice from 1990 to 2020. The important implication of this finding is that for the purpose of financial inclusion, availability dimension has played an important role. However, usage to penetration having a falling trend, implies that much effort is required to induce people to make good use of their bank accounts for deposits and loans.

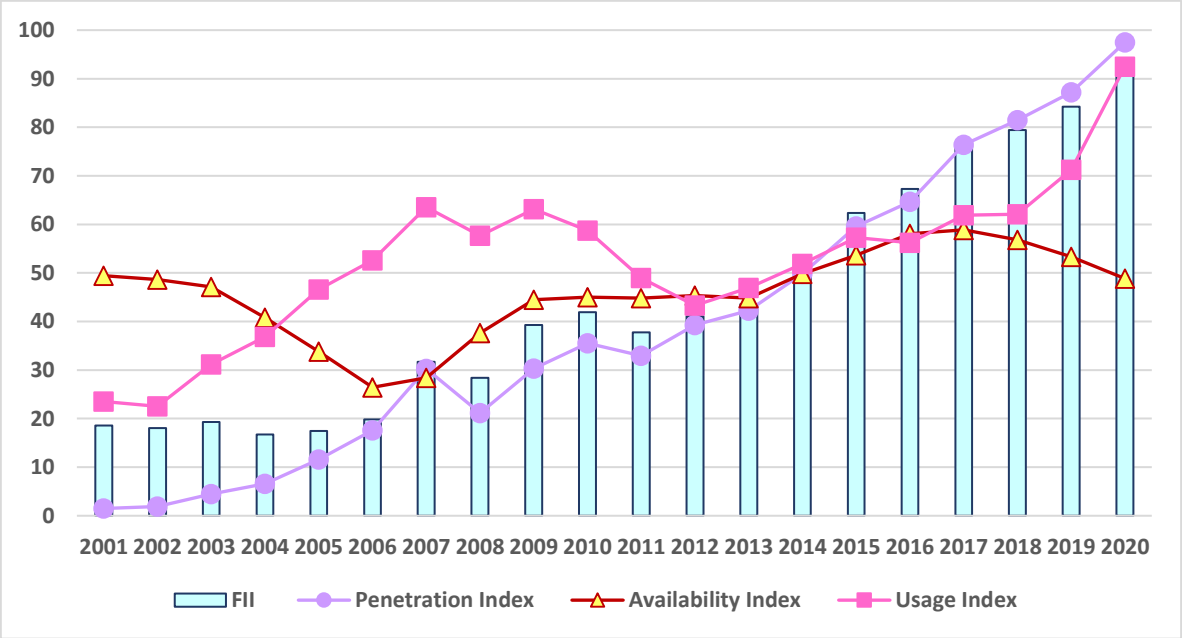
4.2.2 Financial Institutions and Markets based Intermediate Financial Inclusion Index

The second index, Intermediate FII, is constructed on a broader coverage of financial institutions and markets to include beyond banks and post offices, the penetration, availability and usage related to insurance sector, NBFCs, small savings, mutual funds and the stock market in terms of market capitalization and volume of trade in the secondary market. A 20-year period Intermediate Financial Inclusion Index (I-FII) has been constructed using these variables The methodology involved is the same as in the case of the previous index, that is, a simple average of normalized Euclidean distance and its normalized inverse Euclidean distance calculated at the three dimensional level, while the composite index is constructed by assigning higher weightage to penetration dimension and lower to availability and usage.

Fig. 4.16 shows the broader institutional and market based index. The indicators of penetration include over and above those related to bank and post office penetration, insurance premium per 1000 adults and market capitalization per 1000 adult population. The availability indicators additionally include number of insurance offices per one lakh population and number of listed companies per one lakh population. The usage dimension includes many more indicators compared to the first index. It includes usage indicator ratios like insurance premium to GDP, public deposit of NBFCs to GDP, stock market total value to GDP, mutual fund assets to GDP,

value traded excluding top ten traded companies to total values traded, market capitalization excluding top ten companies to total market capitalization.

Fig. 4.16 Financial Institutions and Markets based Intermediate Financial Inclusion Index [2001-2020]



Source: Computation based on data sourced from RBI publication and World Bank

Fig 4.16 depicts the three dimensional indices as well as the composite I-FII. It can be observed that the penetration index has a distinctly upward slope over the entire period except a mild decline at the time of the global financial crises of 2008. For the 20-year period, penetration index has improved at the CAGR of 24.62 percent which is a significant improvement. As far as availability index is concerned, much contribution can be attributed to the more than four-fold increase in availability of insurance offices per one lakh population, compared to growth in bank branches per one lakh population.

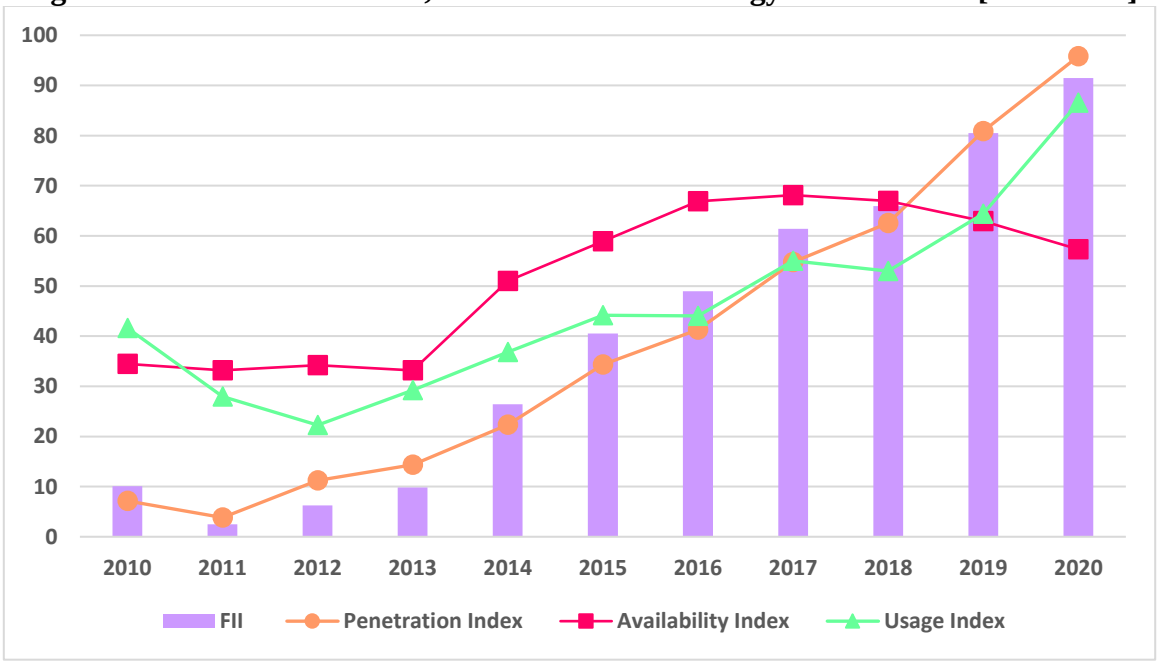
It may be observed that the index of usage has shown substantial improvement with all its indicators having a healthy growth. Most of the indicators of usage have grown at upwards of three times, while some have either doubled or improved by at least 1.5 times over the initial values. The overall usage index has shown improvement at the compound annual rate of 7.47 percent. The composite Financial Inclusion Index has improved five-fold over the 20 years with a high CAGR of 8.75 percent.

4.2.3 Institutions, Markets and Technology based Advanced Financial Inclusion Index

The third index supplements all previously used indicators with technology based access to financial services and geographical density of banking infrastructure. Technology has greatly influenced how claims are settled. More and more people are increasingly adopting electronic payment modes. Therefore, the third index A-FII incorporates these variables. They include, number of debit cards, credit cards and electronic transactions per 1000 adult population as measures of penetration; number of branches per 1000 sq. km., number of ATMs per one lakh adult population and number of ATMs per 1000 sq. km., and number of internet users per 100,000 adult population as indicators of availability; and volume of total electronic payments to GDP as an indicator of usage.

The methodology of constructing the index is the same as the previous two, with equal weightage given to each indicator within a dimension. However, in the construction of the final composite index of financial inclusion, 50 percent weightage is given to penetration, and 25 percent to both availability and usage. The results are depicted in Fig. 4.17.

Fig. 4.17 A-FII of Institutions, Markets and Technology-based Access [2010-2020]



Source: Computation based on data sourced from RBI publication and World Bank

The penetration index involving electronic access shows remarkable growth of nearly 30 percent on compound annual basis. This is the highest rate of growth in the penetration index when compared to the penetration index constructed excluding technology based access to

financial services. For instance, in the first index which focuses only on banking service penetration, the penetration index has grown at the CAGR of 11 percent, while the second index which extends access to insurance sector and stock market, shows penetration index increasing at the CAGR of 24 percent, driven by stock market capitalization growth.

The availability index has shown the highest CAGR of five percent compared to the previous two indices, on inclusion of geographical and IT penetration. The major contribution is that of ATM availability per one lakh population which has grown at the CAGR of 12.62 percent. Also, the density of ATM per 1000 sq. km. has also increased at a rapid rate of 17 percent on compound annual basis.

The usage index which includes value of electronic transactions as a ratio to GDP, has increased at the CAGR of 7.6 percent. As far as usage index is concerned the banking services usage has shown the highest growth rate of nine percent on compound annual basis. The broad based FII inclusive of electronic access to financial services and vast array of financial institutions, shows the highest improvement in financial inclusion at a CAGR of 24.66 percent over a short period from 2010 to 2020.

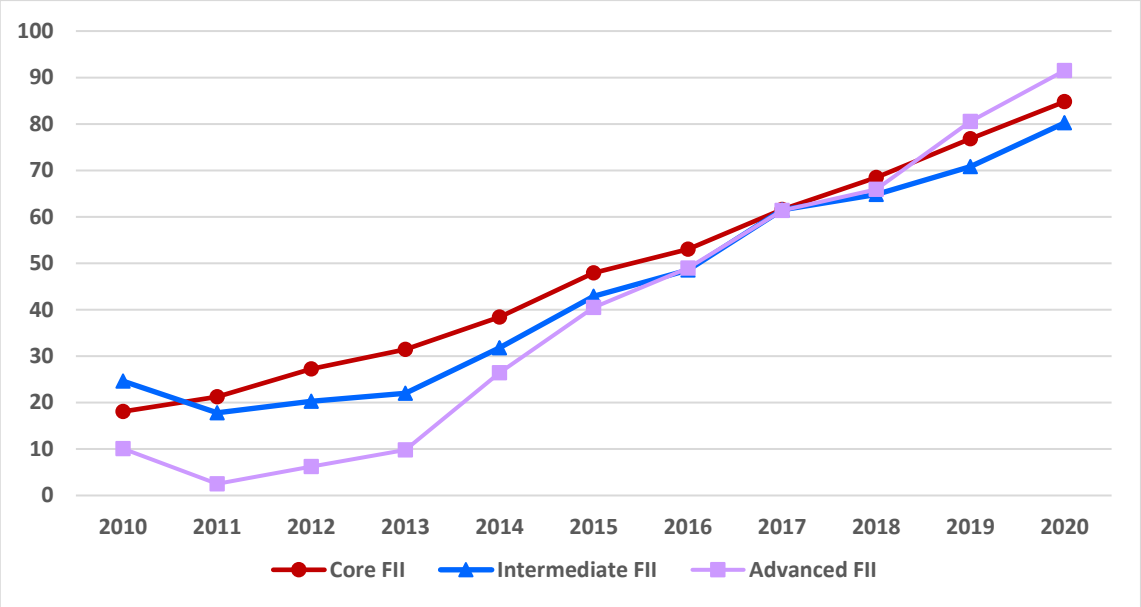
The financial inclusion index shows an overall improvement throughout the years in all three indices. This improvement can be attributed to several initiatives taken by the government improve financial inclusion. The government has launched many schemes such as, Basic Savings Bank Accounts under the PMJDY, Direct Benefit Transfer, MNREGA, Kisan Credit Card, farmer pension scheme, etc. With these initiative the banking sector is effectively covering the excluded population within the formal financial sector. Also, the JAM Trinity, that is, the synergy created by the linking of the bank account opened under the Jan Dhan Yojana, the Aadhaar card (Unique Identity Number) and the mobile phone number, has enabled the government to an efficient targeted distribution of benefits.

Comparison of the Financial Inclusion Indices

A comparison of the FIIs has been undertaken to bring into highlight the qualitative aspect of financial inclusion that has happened in India. For this purpose, the first indices have been re-worked to compare all three over the same time period, 2010-2020., as data is available for all the indicators for this period. Fig. 4.18 presents all the three indices together. While the three indices have very similar path and also converge with each other, some finer observations can be made. The C-FII has been on the higher side for most of the years examined. This implies that from financial inclusion point of view they continue to play an important role. The second

index I-FII, includes, apart from banks and post offices, other financial institutions such as insurance companies, NBFCs, mutual fund assets, and listed companies, stock market capitalization and trading activity excluding top ten companies. Financial inclusion in these institutions and markets is lower than in banking service providing institutions, which is as expected as the financial sector of India is still in early stages of development, particularly, beyond the banking sector. There is still a long way to go before every adult would have an insurance policy or a mutual fund investment.

Fig. 4.18 Comparison of Financial Inclusion Indices based on Different Components



Source: Author's calculations

Interestingly, the third index A-FII, has grown most sharply at the CAGR of 24 percent from a low level compared to the other two indices and surpassing the two in the later years. this shows the increasing adoption of technology based financial inclusion as more and more people have adopted internet based financial services and expansion of the stock market capitalization outside of top ten companies. The examination of the three indices suggest that financial inclusion can be further improved by greater use of technology based usage.

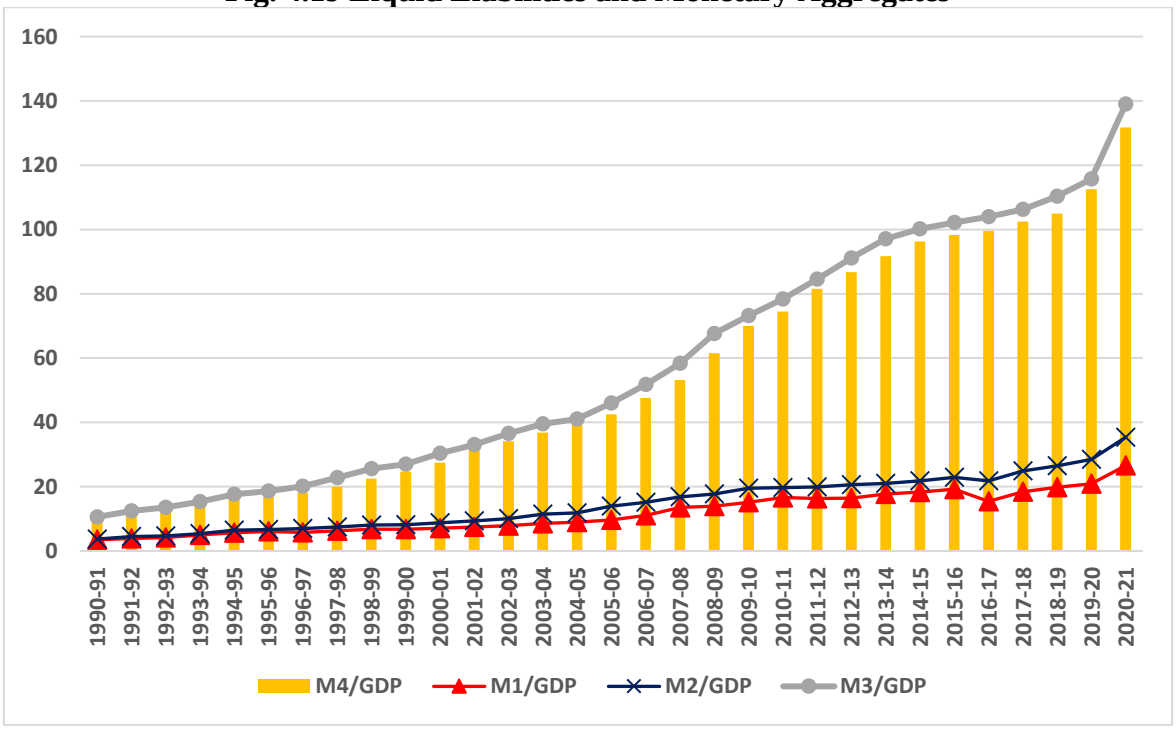
4.3 FINANCIAL DEPTH

Financial depth is amongst the oldest and most common measure used across countries to measure the relative size of the financial sector vis-à-vis the real sector. It is of particular significance for underdeveloped and developing countries. The sector deepening is measured using alternative variables such as, money supply (M1, M2, M3, M4) to GDP, bank credit to GDP, bank deposit to GDP, bank credit to commercial sector to GDP and for financial market measured used are market capitalization to GDP, total value traded to GDP.

Liquid Liabilities and other Monetary Aggregates

Liquidity liabilities include the currency in circulation in the economy. The greater the size of the monetary aggregates in relation to GDP, the higher the degree of monetization of the economy. The ratio of narrow money to GDP increased from merely 3.49 in the year 1990-91 to 26.55 in the year 2021, increasing at the CAGR of 6.76 percent. Compared to this, broad money has grown drastically from 10.57 times to GDP in the 1990-91 to as high as 138.98 in 2021 at a CAGR of 8.66 percent. M2/GDP ratio increased from 3.69 to 35.36 percent while M4/GDP increased 10.85 to 131.77 percent from the period 1990-91 to 2020-21. This shows that there is considerable degree of monetization of the Indian economy. The changes over time are shown in Fig. 4.19.

Fig. 4.19 Liquid Liabilities and Monetary Aggregates

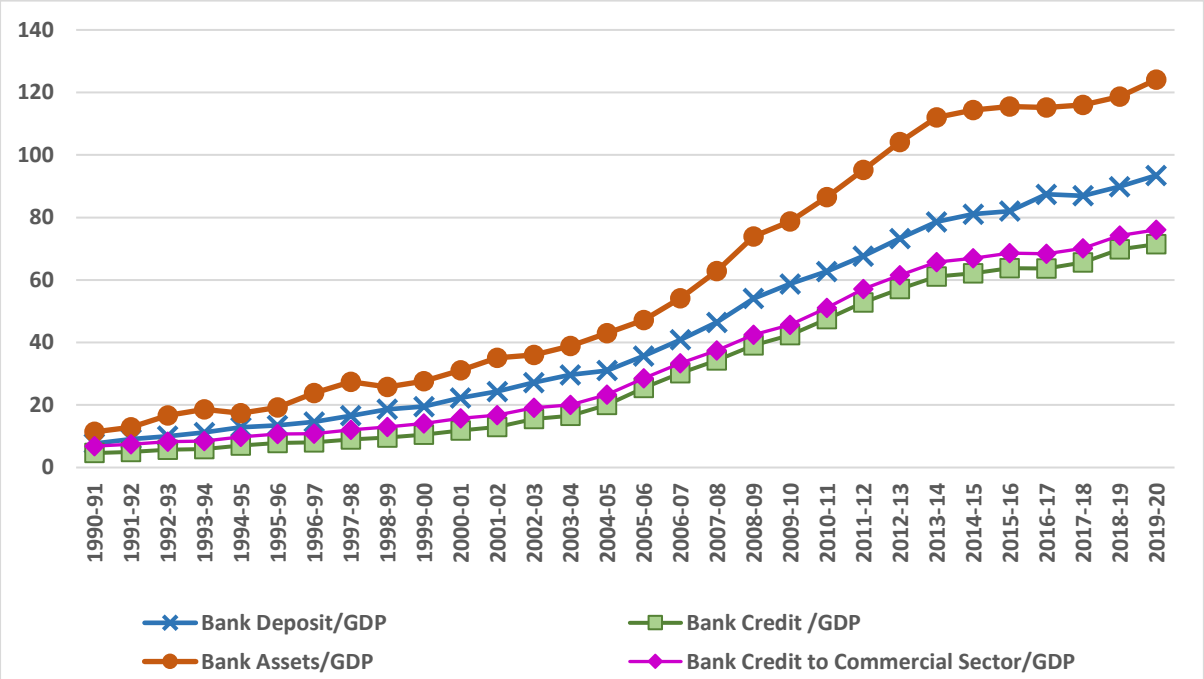


Source: Basic Statistical Returns of SCBs, RBI Publication

Banking Sector

Higher levels of bank deposits imply good mobilization of resources. Bank deposits to GDP has increased from a low of 7.65 to 93.46, growing twelve times of the 30-year period from 1990 to 2020. Likewise, availability of bank credit means that people have access to formal financial sector. Bank credit to GDP has increased at more than 15 times and at a CAGR of nearly 10 percent. Total assets of the banking sector have also grown remarkably from 11.40 times the GDP to 124.10 between the years 1990-91 to 2019-20 which is a 10 times increase. The ratio of bank credit to private (commercial) sector to GDP implies greater access to funds compared to the pre-emption of resources by the government up to the 1980s. Their proportion increased from as low as 6.83 percent to 76.04 percent with a CAGR of 8.3 percent. It may be noted that if bank credit to GDP or private sector credit to GDP becomes excessive, it may become inflationary in nature if it is in excess of the absorptive capacity of the real economy. Fig. 4.20 shows the banking sector related depth of the financial sector vis-à-vis the real economy.

Fig. 4.20. Banking Sector Specific Financial Depth

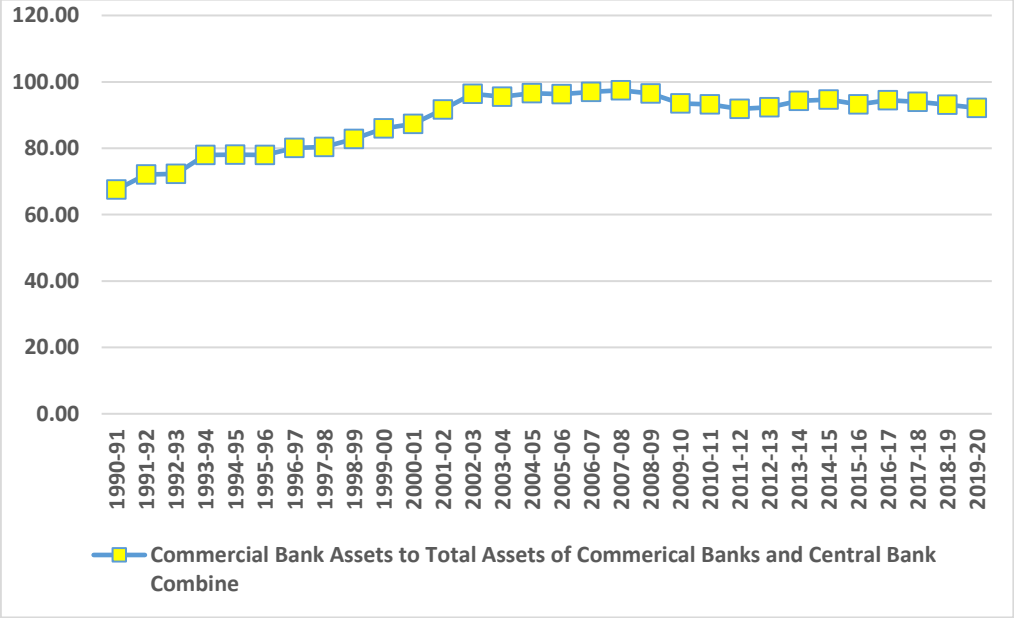


Source: Calculation based on data sourced from Basic Statistical Returns of SCBs, RBI

The extent of financial depth can also be measured in terms of ratio of assets of commercial banks to total assets of both commercial banks and central bank. Such a ratio would indicate the relative significance of the two. Higher the ratio the better, because it indicates that the intermediation process of commercial banking is functioning well and claims on non-financial real sector, be it private firms, public enterprises or governments (local, state and central) are

created on market based commercial considerations rather than uncompetitive central bank lending, especially, if done on non-market considerations. This ratio is found to lie within a narrow range of 60 and 90 (Fig. 4.21). In the year 1990-91, this ratio stood at 67.52 percent and increased to 92 percent over the 30-year period, which is a desirable change as it shows greater role for commercial banks.

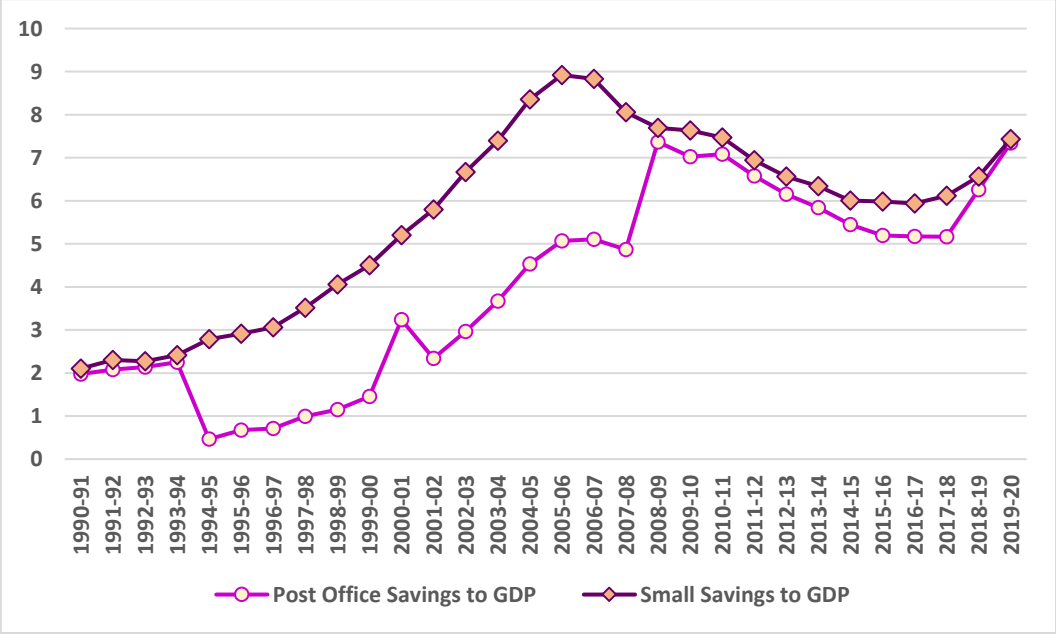
Fig. 4.21 Commercial Banks vis-à-vis Total Banking Sector including Central Bank



Source: World Bank Database

Post Office Savings and Small Savings

Fig. 4.22 Post Office Savings and Small Savings



Source: STRBI, RBI and Annual Reports of Department of Post

Since post offices have been performing the banking function in India since long, particularly in the rural areas, and with small savings being another alternative to fixed deposits for the mass population in India, the present study has incorporated the two in gauging the extent of financial depth achieved in their respect too. Small savings comprises of all the government schemes offered to the population such as Kisan Vikas Patra, National Savings Certificate, Public Provident Fund, etc. The ratios serve the same purpose as other savings accounts with banks. Both post office saving deposits and small savings have grown at the CAGR of more than four percent over the study period (Fig. 4.22).

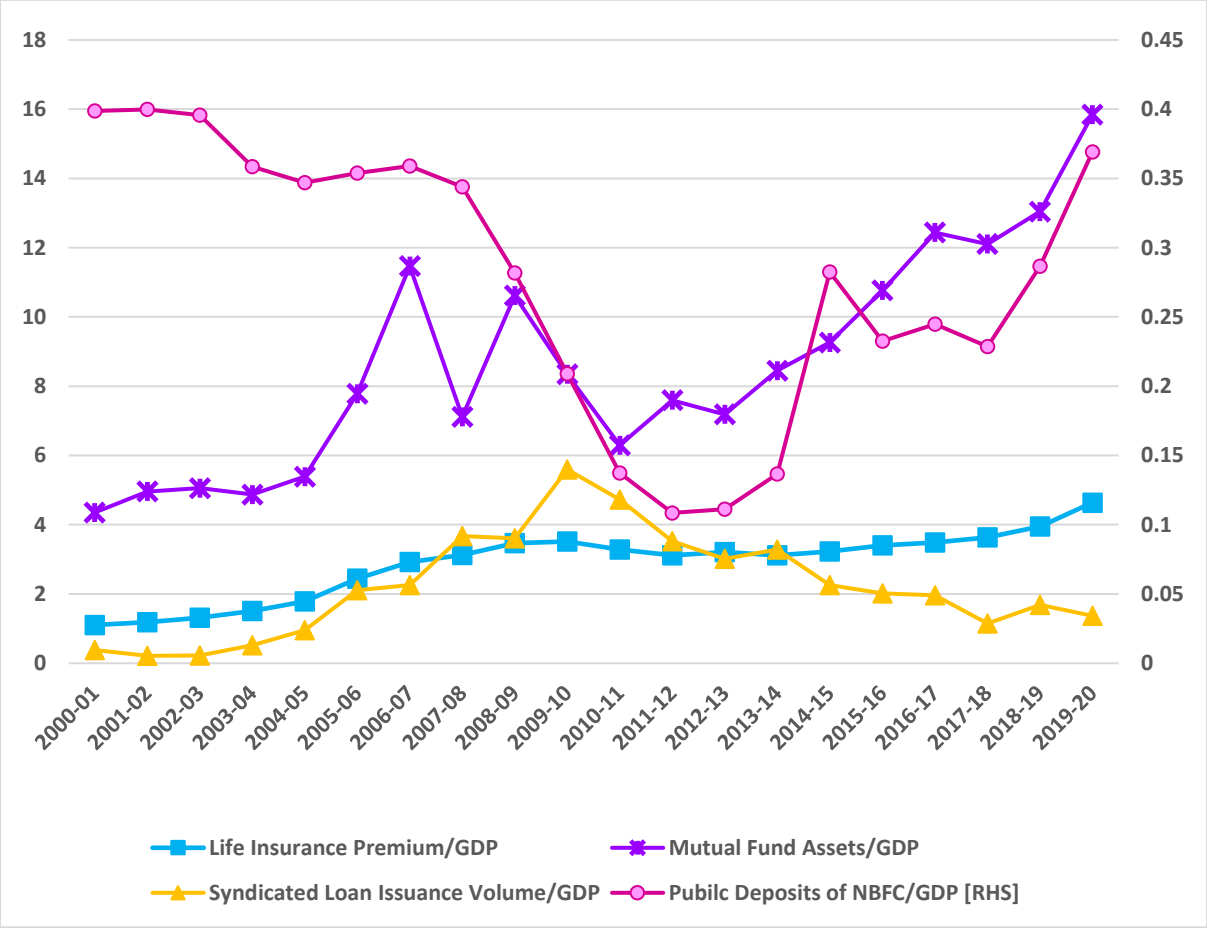
Non-banking Institutions

Financial resources mobilized by other than banking institutions such as insurance companies, non-bank financial institutions, asset management companies, etc., also reflect depth of the financial sector apart from the banking sector. The more the fund mobilization by these institutions, the greater is the diversity and the greater the depth of the financial sector. Fig 4.23 depicts the resources mobilized by these institutions as a ratio to GDP. Further, syndicated loan issuance reflects the sophistication of the financial sector in terms of resource mobilization through different instruments and modes. All variables show upward trend except public deposits garnered by NBFCs. Mutual fund assets as a ratio to GDP has shown a reasonable growth of seven percent on compound annual basis. Insurance premium to GDP has also grown at the CAGR of 7.8 per cent.

Pension Fund

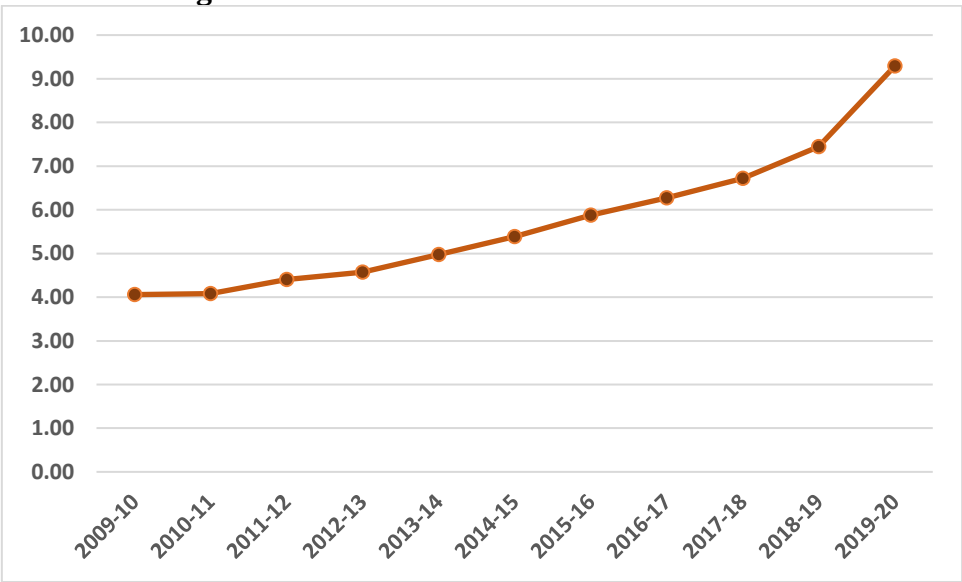
Pension funds involve huge amounts of money accumulated on account of contributions made by employees from their incomes into designated savings plans for retirement. As per the Census 2011, about twelve percent of the labour force in India, working in organized sectors such government departments, public sector undertakings, private sector undertakings with 20 or more employees, are covered under various pension schemes. It can be seen in Fig. 4.24 that the volume of money under pension fund has grown tremendously from four percent of the GDP in 2009-10 to 9.26 in the year 2019-20; more than two times increase within a period of ten years. It has recorded a CAGR of 8.6 percent which is higher than the growth rate of any other non-bank institutions resources.

Fig. 4.23 Resource Mobilization by Non-Bank Financial Institutions



Source: Handbook of Statistics on Indian Economy, RBI and World Bank Database

Fig. 4.24 Pension Fund Accumulation in India



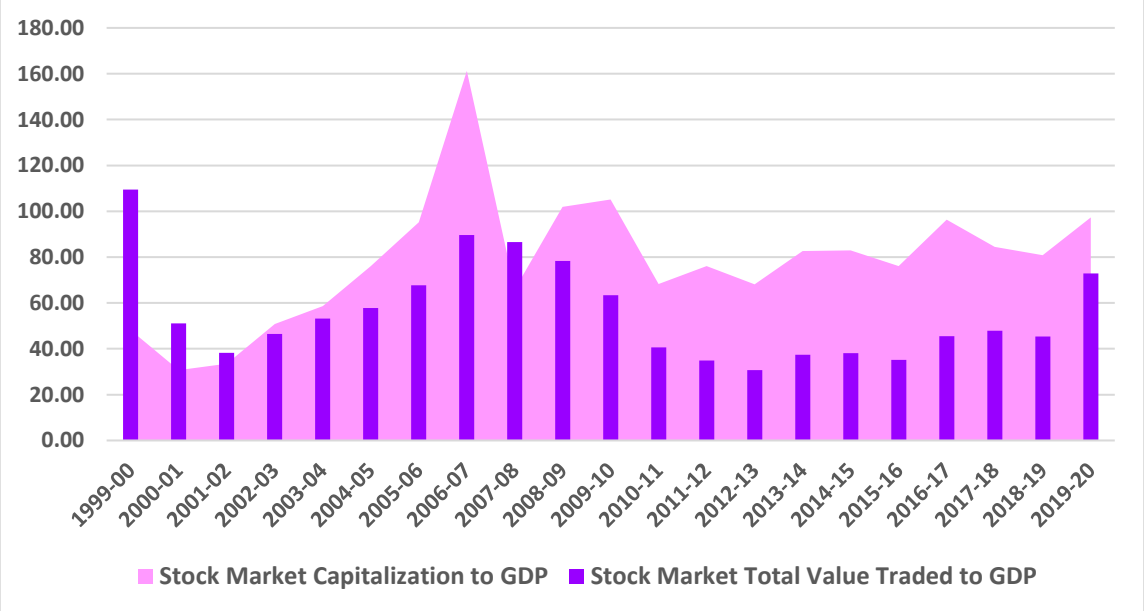
Source: World Bank Database

Financial Market: Stock Market Capitalization

Depth of the financial sector can also be reflected in terms of financial market. In that sense it is measured in terms of stock market capitalization to GDP ratio. Stock market capitalization is the total value of all listed companies on the stock market, obtained by multiplying the number of shares by the price of shares for all companies. This ratio has doubled from 48.17 percent to 97.29 percent between the year 2001 and 2020 (Fig. 4.25) The sharpest growth in the market capitalization ratio has occurred between 2005-06 and 2006-07, reaching the peak of 161.24, which coincides with the peak period of the Indian economy as it experienced the positive impact of the economic reforms unleashed in 1991. The sharp rise got upended only on account of the global financial crisis.

While stock market capitalization captures the size aspect of financial markets vis-à-vis the real economy, not all of it signifies the level of financial market activity. For instance, government equity holdings are not meant for trading purpose; similarly, stock held by some institutions and promoters are not traded. Another measure, the stock market traded value to GDP ratio gives a sharper picture of the true level of depth of financial markets as it takes into account the value of stocks actually traded, which is the activity dimension of financial market depth. Over the 20-year period, stock market trade has shown a fluctuating trend. Between the years 2011-12 to 2018-19, it has hovered between 35 to 45 percent, only to rise to 73 percent in 2019-20. Much remains to be desired in terms of trading depth for the Indian Financial Market.

Fig. 4.25 Financial Market Depth



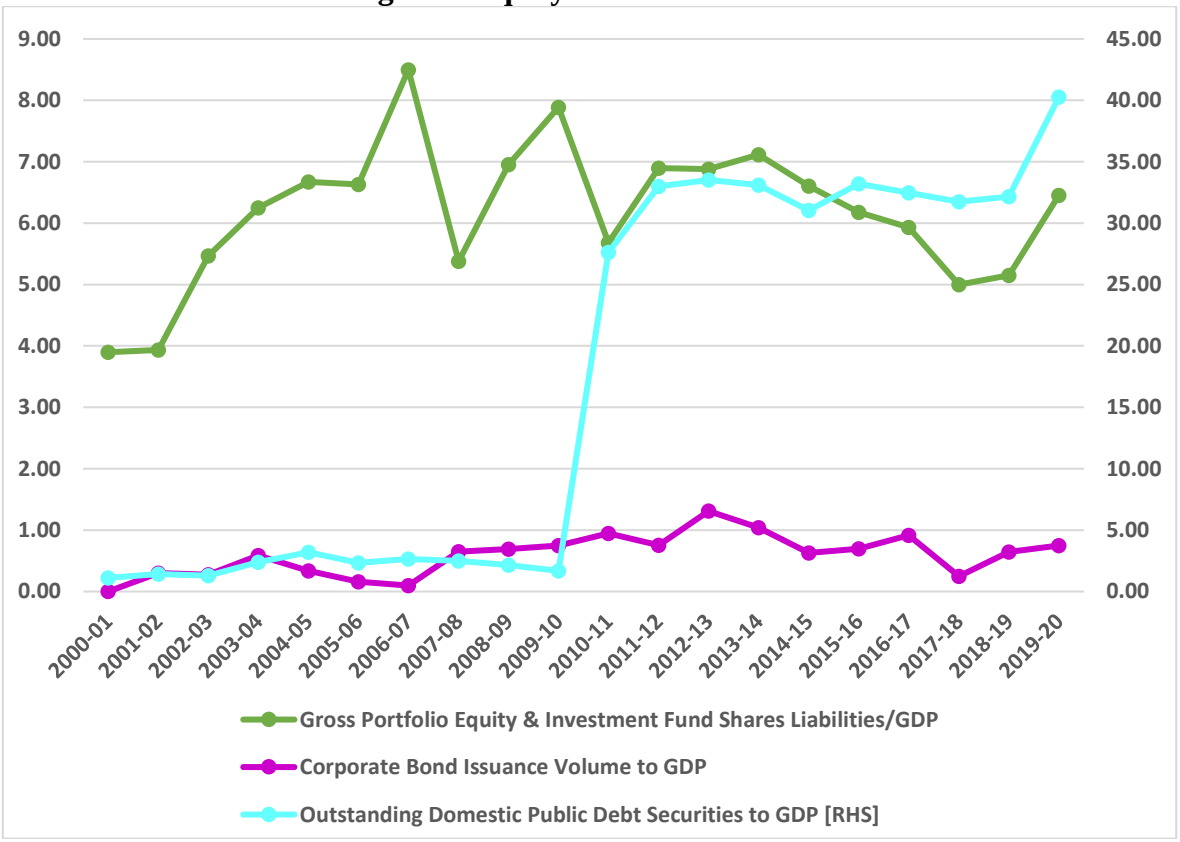
Source: World Bank Database

Equity and Bond Issuance

Taking into account other modes through which access to finance is available to the private sector, and therefore, adding to financial depth of the sector, the study has incorporated total amount of domestic private debt securities (amount outstanding) issued in domestic markets as a ratio to GDP as a measure of financial depth. Domestic private debt securities refer to long-term bonds and notes, commercial paper and other short-term notes. Similarly, other forms of financial assets which adds to the depth the financial sector include equity liabilities and bond issuance. Equity liabilities include finance raised from shares, stocks and other forms equity like American Depository Receipts, etc. Likewise, the volume of new corporate bond issues by private non-financial companies also indicate additional source of access to finance.

Domestic Public Debt Securities to GDP grew at a high CAGR of almost 21 percent, while gross portfolio equity and investment fund shares liabilities has grown at a low rate of 2.6 per cent. Corporate bond issuance though minuscule as a ratio to GDP, has grown at a high CAGR of 44 percent (Fig. 4.26).

Fig. 4.26 Equity and Bond Issuance

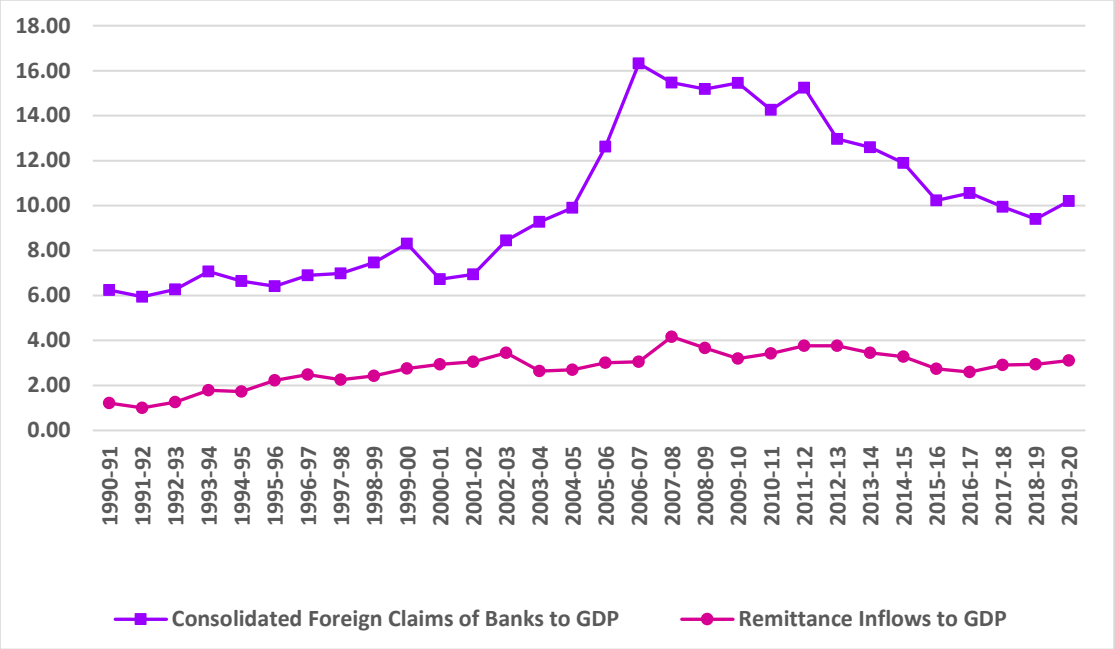


Source: World Bank Database

Foreign Claims and Remittances

An important component of financial depth is the cross-border foreign claims of banks against non-residents. Also, remittance inflows by workers and non-resident workers, are an important component of the financial sector. When these inflows are taken as a ratio to GDP, they become measures of financial depth. The cross-border foreign claims of banks to GDP has grown at the CAGR of 17 percent, although remittances have grown slowly with a CAGR of three percent (Fig. 4.27). Both add to deepening of the financial sector.

Fig. 4.27 Foreign Claims of Banks and Remittances

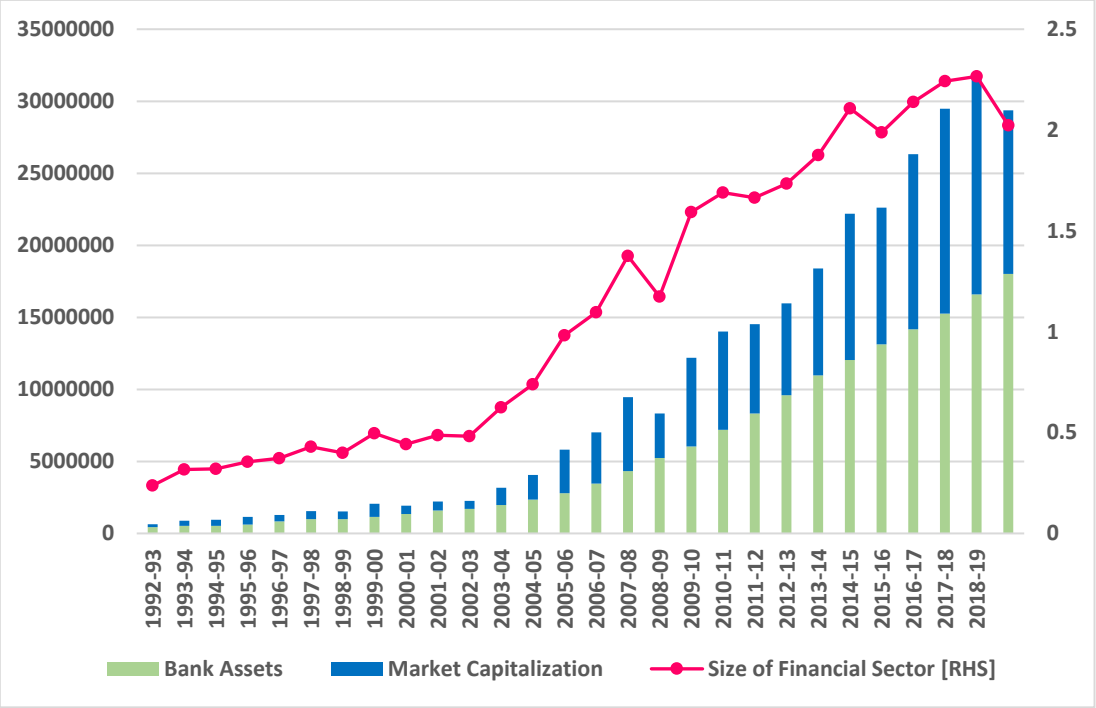


Source: World Bank Database

Size of the Financial Sector: Banking Sector and Financial Market

Combining the size of the banking sector and the stock market as a proxy for the financial market in relation to GDP would give the total size of the financial sector vis-à-vis the real economy. It can be observed in Fig. 4.28 that the size of the financial sector has outgrown the real sector since the year 2006-07 with the ratio crossing the mark of one. Starting at 82 percent in relation to the real economy in the year 1992-93, the size of the financial sector increased to 137 percent in the year 2007-08, only to decline to 117 percent due to the impact of the global financial crisis. But thereafter, the size of the financial sector has been increasing, ending at double the size of the real economy, after staying at 2.25 times for the previous two years.

Fig. 4.28 Financial Sector vis-à-vis Real Sector



Source: Calculations based on data sourced from Handbook of Statistics on Indian Economy (HSIE) RBI and BSE India

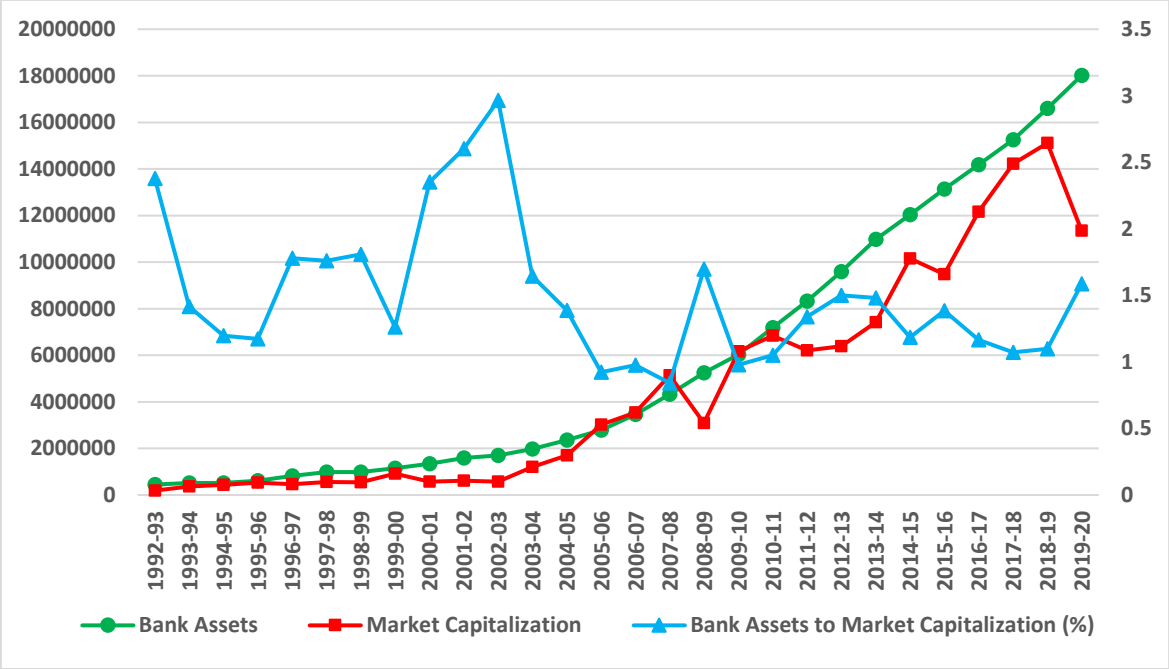
Structural changes in the Depth of Financial Sector

It is also insightful to compare the changing structure of financial depth in terms of bank-based financial sector vis-à-vis market based financial sector. There are two elements is this. One, related to structural change in the size aspect of the financial sector, and two, related to structural change in the financial activity (Demirguc-Kunt and Levine, 1999; Wacabaca, 2004).

Size-wise Structural change in the Financial Sector

Structural change in relative size of bank-based financial sector vis-à-vis market based financial sector is measured by the ratio of bank assets to market capitalization. Fig. 4.29 shows how over time the ratio of bank assets to market capitalization has declined. From bank assets being 2.37 times more than market capitalization in the year 1992-93, the margin between the two has declined by 33 percent to 1.58 times.

Fig. 4.29 Size based Structural Change in Financial Deepening in India



Source: Calculations based on data from HSIE, RBI and BSE India

It can be observed in Fig. 4.29 that during the first half of the decade of 2000, the size of the banking sector has shot up much higher than the stock market. This phase of the Indian economy was marked by the all-round positive impact of economic reforms and a very expansionary period in bank lending with the increased competition among new private sector banks and foreign banks, as also the public sector banks. From 2000-01 to 2003-04, the size of bank assets ranged from 1.64 to 2.96 times the size of the stock market. Thereafter, there has been a declining trend. For nearly ten years out of 15, from 2005-06 onwards, the ratio of banking size to stock market capitalization has been close to one, which implies a gradual shift to market-based financial sector in India.

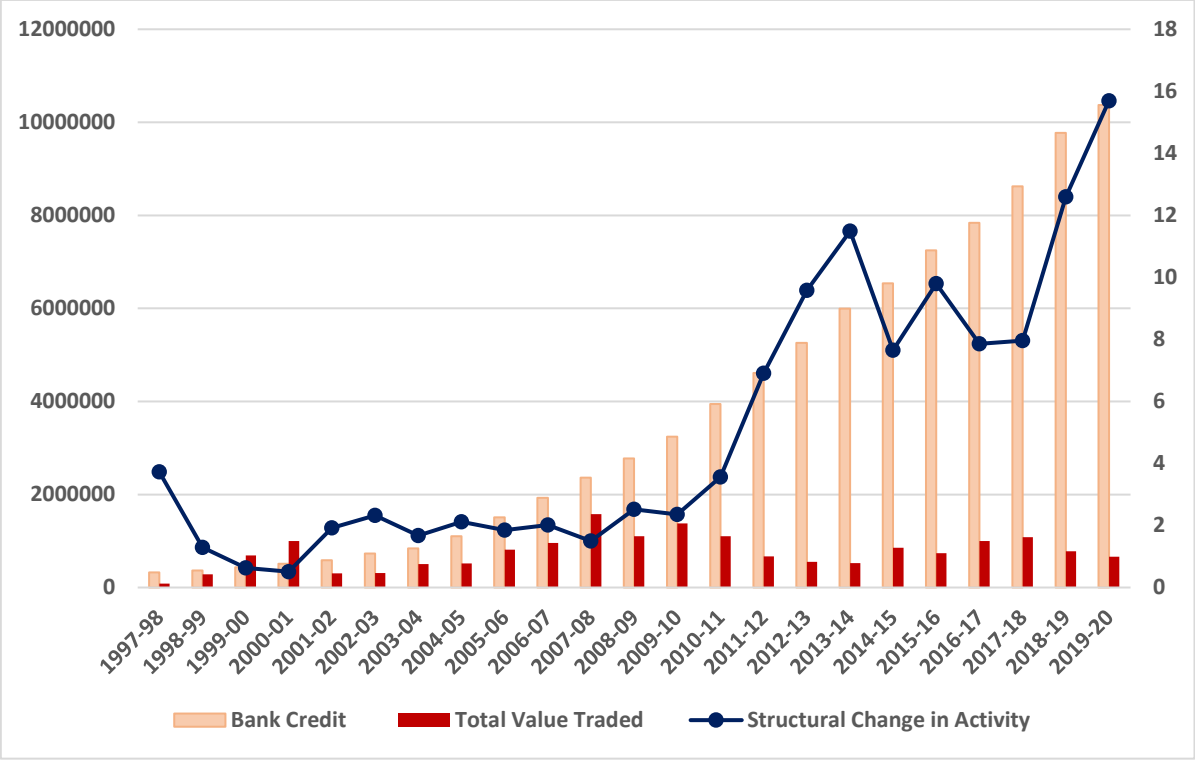
Corresponding to the time of global financial crisis and the *taper tantrum*, which led to capital flight abroad and rising interest rates, as expected the size of banking sector has risen vis-à-vis stock market. It is generally expected that as an economy becomes more market oriented and as it develops, there is a gradual disintermediation of the banking sector and the capital market becomes more vibrant with people shifting their investment preferences towards it. This is true of the Indian economy as well with mutual funds and direct investment in the stock market growing and becoming more attractive for investors. It shows that the financial sector of India is slowly but gradually moving from the traditional banking sector towards the capital market. It is a sign of a more mature and sophisticated financial sector. It indicates a relative fall in the intermediation of banks, and direct access of firms to the capital market. Falling interest rates

in the backdrop of more market oriented economy is also responsible for this shift as people look for greater returns on their investment.

Activity-wise Structural change in the Financial Sector

Another element of structural change in the financial sector is in relation to financial activity measured in terms of banking activity, that is, volume of bank credit, and financial market activity which is captured in terms of stock market traded value. Fig. 4.30 depicts the activity based structural change in the Indian financial sector. It can be seen that while in terms of size, the banking sector and the stock market - as a proxy for financial market, are coming closer, in terms of volume of activity, the structure is highly titled towards the banking sector. Over the last two decades, while bank credit has grown at the 17 percent on compound annual basis, the value of stock traded has grown much slower at the CAGR of two percent. On account of this, between 2000-01 to 2019-20, the size of banking activity has grown to 15 times that of the stock market activity. This indicates that the financial sector of India still has a long way to go in terms of graduating to more direct involvement of general public in terms of investment.

Fig. 4.30 Activity-based Structural Changes in the Financial Sector



Source: Calculations based on data sourced from HSIE, RBI

4.4 FINANCIAL EFFICIENCY

Financial access and inclusion have been the focus of the government through multi-pronged efforts with the resultant impact on financial depth, but it often raises the question of the cost in terms of efficiency of the financial sector. The primacy of the objective of complete inclusiveness often overshadows the imperatives of cost efficiency and profitability of financial institutions. This is particularly so for banking institutions, more so in the context of India, where social banking has been stressed upon since the nationalization of banks. Also, efficiency of the banking sector implies that it effectively performs its basic function of mobilization of resources as well as allocation of resources thereby positively impacting economic growth. With this premise and based on the global financial development framework of the World Bank, the present study has undertaken an examination of the efficiency of the financial institutions and markets using the indicators included the framework.

Efficiency is a wide concept and there are alternative ways in which it can be conceptualized and measured. In the general efficiency means generating more income or output at the least cost or with the least inputs. In the present study, measures of different types of efficiency have been examined, both with reference to financial institutions and financial markets. Efficiency measures of financial institutions are basically with reference to banking institutions. In their context, three types of efficiencies analysed in the present study are intermediation cost efficiency, operational efficiency and profit efficiency. The ratios used are, net interest margin (NIM) and interest expense to deposits ratio as measures of intermediation efficiency. Bank overhead costs to total assets and total income to operating expenses ratio as measures of operational efficiency, and profitability ratios, namely, return of assets and return on equity and non-interest income to total income ratio as measures of profit efficiency.

In connection to efficiency of financial markets, the measure used is turnover ratio which calculated as total traded value of stocks to market capitalization ratio. The turnover ratio also represents liquidity of the financial market which is an element of efficiency. The market is said to be efficient if it gives scope of exit which in turn is possible when trading in stocks in dynamic.

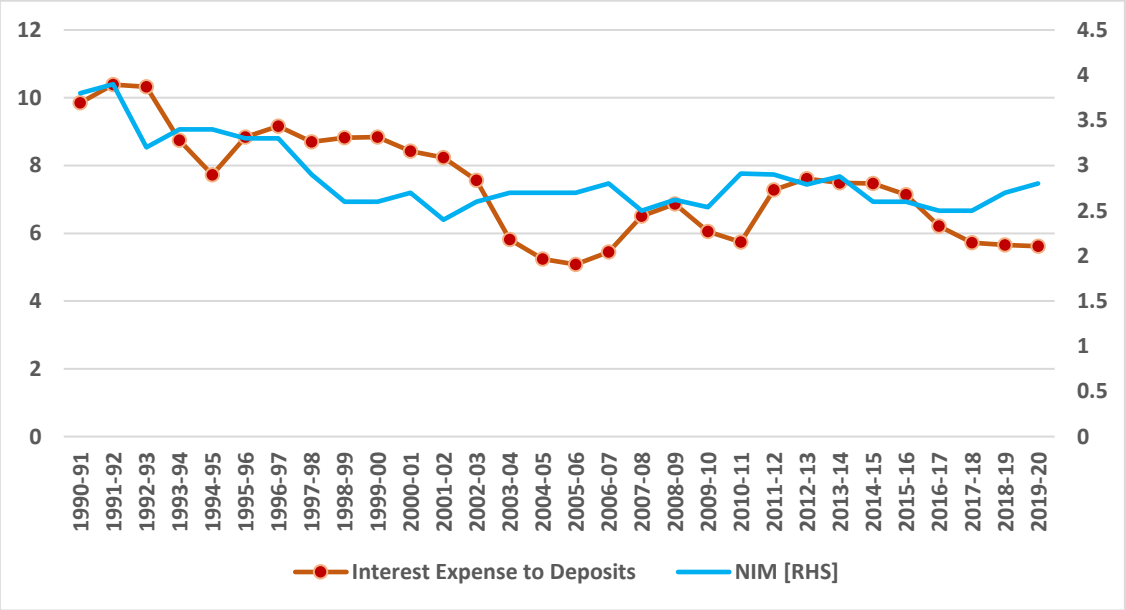
4.4.1 Intermediation Cost Efficiency:

Two measures have been included under intermediation cost, the Net Interest Margin (NIM) and the ratio of interest expense to deposits. That financial development improves financial intermediation and reduces is cost is also found in Harrison, Sussman and Zeira (1999).

- **Net Interest Margin**

  NIM is calculated as interest income less interest earnings as a ratio to total bank assets. A fall in the net interest margin over the long run is a sign of increased efficiency as it shows fall in the cost of intermediation. With a more efficient system, information asymmetry on credit worthiness and other borrower characteristics reduces. As information becomes easily and accurately available, it allows banks to reduce the interest rate spread (interest charged less interest paid). For the Indian economy, the banking sector in the overall sense shows a 28 percent fall in NIM over the 29-year period from 1992 to 2020, which certainly indicates increased competition among the banks and a fall in the cost of intermediation. In fact, from 1991-92 to the early 2001-02 which marks the peak period for the Indian economy and also the banking sector, NIM shows a decline of more than 38 percent in the period of ten years. In terms of compound annual rate of decline, it amounts to -4.74 percent (Fig. 4.31).

Fig. 4.31 Intermediation Cost Efficiency



Source: Statistical Tables Relating to Banks in India (STRBI), RBI

It will not be incorrect to state that the NIM for the Indian banking sector declined consistently up to the global financial crisis in 2008, registering a rate of fall of 2.74 percent on a compound annual basis. The NIM has increased mildly thereafter to 2.8 percent in the

year 2019-20. However, over the long year period, it shows a declining trend. While a much closer look is required into the behaviour of NIM, such as in terms of bank-group wise performance, given the important implications of the competitive structure and ownership structure of the banking sector for NIM, to get a more a clearer picture, it must be noted that in the context of the present study, it is required to check the overall NIM for the entire banking sector.

- **Interest Expense to Deposits Ratio:**

  Deposit mobilization is the primary function of banks. Deposits are liabilities of banks which are leveraged to generate income earning assets. Banks require to pay interest on the deposits depending upon their nature whether they are demand deposits, savings deposits or time deposits. Interest paid on deposits by banks form a major part of their financial costs. How efficiently banks are able to mobilize deposits means whether they are able to mobilize more deposits for a given level of interest expense or whether the given level of deposits have been mobilized at lower interest expenses. In this sense, intermediation cost efficiency can also be measured in terms of interest expense to deposit ratio. The lower the ratio the greater is the level of efficiency.

  The interest expense to deposit ratio is found to have reduced in the long run. From 9.85 per cent in the year 1990-91, the ratio has fallen to 5.62 in the year 2019-20 (Fig.4.31). In terms of CAGR, it has declined by two percent every year. Over the 30-year period, it has fallen by 43 percent of its level at the beginning of the study period. This means that the banking sector has certainly gained in terms of intermediation cost efficiency. Both the measures of intermediation cost are found to be positively correlated (discussed in chapter VI), which establishes the robustness of the findings.

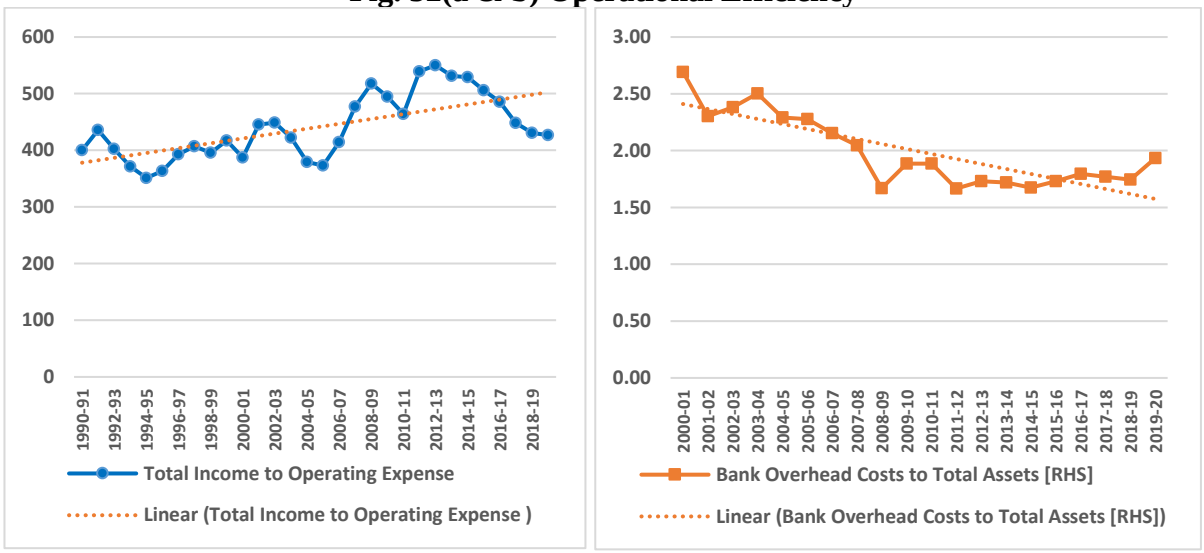
4.4.2 Operational Efficiency:

Operational efficiency of banks is with reference to their operating costs as different from financial costs. Operating costs of banks differ from financial costs which include interest expenses which are incurred to perform the basic banking function of deposit mobilization and lending. Operating costs include payments and provision for employees, promotional expense, insurance expenses, stationery expenses, legal expenses and other miscellaneous expenses. How effectively these expenses are used in raising total income is one measure of operational efficiency. Another measure of operational efficiency is the ratio of bank overhead costs to total assets.

- **Total Income to Operating Expenses**

  Total income of banks includes interest income and non-interest income. As banks expand their business of loans and advances, they would tend to generate more income. As they diversify their activities and scope of operations, more non-interest income can be generated from the same labour, fixed and administrative inputs. Cross selling of other products such as credit and debit cards, locker facility, mutual fund products, insurance, home loans and other retail loans and agency services to the same set of banking clients can reap more off-balance sheet incomes to the banks which would improve the total income to operating expenses. Fig. 4.32a depicts the upward trend in the ratio. In the year 1990-91, total income was four times more than the operating expenses, which indicates good degree of operational efficiency of the banking sector. It peaked to 5.5 times in the year 2012-13 but declined thereafter to 4.26. However, for the overall period it shows an upward trend indicating operational efficiency.

Fig. 32(a & b) Operational Efficiency



Source: Profile of Banks, RBI and World Bank Database

- **Bank Overhead Costs to Total Assets**

  With reference to operational efficiency measure, this ratio measures bank overhead costs, that is, non-interest expenses with reference to total assets. In other words, it takes into account operating costs only, excluding financial costs which are essentially interest expenses. For a financial institution such as a bank operating costs would indicate efficiency more meaningfully than would financial costs, that is, interest cost. This is because interest expense for any bank largely depends on the general level of interest rate prevailing in the economy at the time, given the liquidity position and many other factors, including global

factors. Also, this ratio is more relevant in measuring efficiency of banks during times of significant changes in interest rates, in general, and between interest paid and charged. Thus, lower the ratio, greater is the level of efficiency of the banking sector in terms of operational efficiency.

Fig. 4.32b shows that bank overhead costs were 2.96 percent of the value to total bank assets in the year 2000-01, which has declined to 1.93 percent in the year 2019-20. The ratio being quite low suggests good level of operational efficiency in the Indian banking sector. Over the 20-year period, there is 35 percent fall in the ratio which implies further increase in operational efficiency.

Thus, on the basis of both the measures, total income to operating expenses and bank overhead costs to total assets, it is found that the banking sector of India demonstrate operational efficiency.

4.4.3 Profit Efficiency:

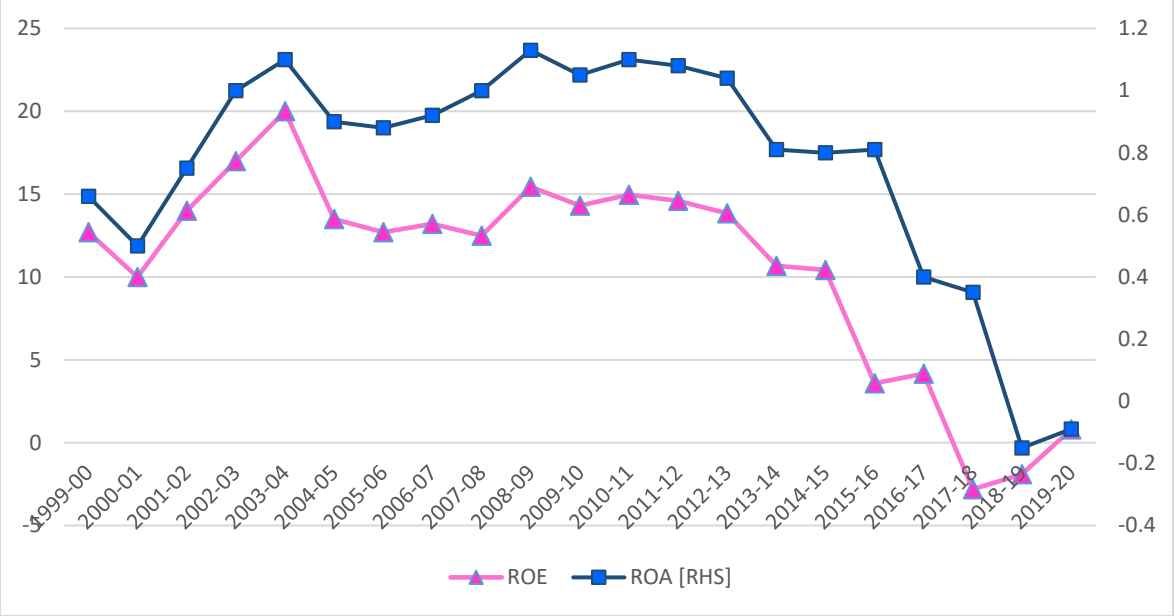
Another type of efficiency that also matters is profit efficiency. While banks may have achieved efficiency in their intermediation function and in their operations, it may or may not result into profitability. Therefore, to check the profit efficiency three ratios have been used, namely, return of assets, return on equity and non-interest income total income ratios.

- **Return of Assets**

  Return on assets is measured indicates how earnings have been made on loans and investments of banks, that is, net income divided by average total assets. It may be pointed out at the outset that even if ROA values may be low for banks, it amounts to high returns. This is because banking is a highly leveraged business. They generate assets out of deposits mobilized from the public rather than their own money or equity. In this sense, a lower ROA does not necessarily mean poor profit efficiency in case of banking business, compared to other industries. Fig. 4.33 depicts the trend in ROA between the years 1999-2000 and 2019-20. For the period shown, ROA has ranged between 1.13 on upper side to -0.15 on the lower side. Bank ROA have improved in the years characterized by high growth of the economy as well the banking sector, that is, the period 2002-03 to 2008-09. For the years marked by global recession, domestic macroeconomic challenges that arose due to demonetization, hasty launch of GST, domestic slack in economic activities can be considered as the broader

reasons behind the downward movement of the ROA. It may be concluded that while the banking sector has experienced operational efficiency, it has not resulted into profitability.

Fig. 4.33 Return on Assets and Return on Equity



- **Return on Equity**

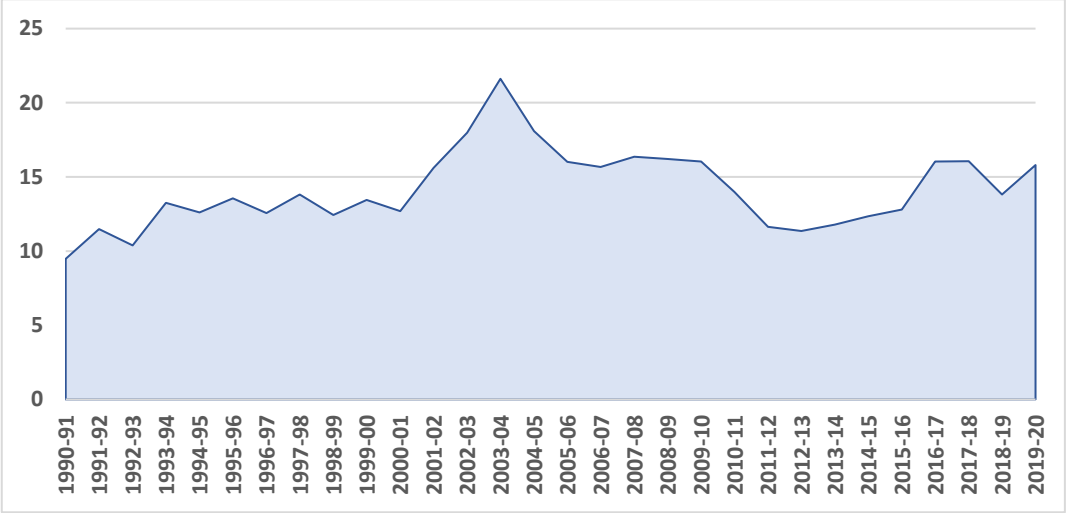
  ROE measures how efficiently shareholder capital is employed to generate profit and is more important to measure performance of banks as its capital base tends to be different from non-financial companies. It is calculated as the ratio of Net Income to Shareholders' Equity. A trend similar to ROA is observed in the ROE with high correlation. Of the 21 years for which values are available, except for the last five years, ROE has been in a moderate range of 10 to 20 percent for the Indian banking sector. Bank ownership type may affect the ROE as generally, private sector banks and foreign banks are reported to have higher levels of ROE. For the entire banking sector, it may be concluded that the performance is poor on the criterion of profit efficiency and it has worsened over the study period.

- **Non-Interest Income to Total Income Ratio**

  Another efficiency measure, more in the sense of efficiency of scope (King and Levine, 1993), and creating scope for more profitability, is the non-interest income to total income ratio. With the same physical infrastructure and cliental base, it would be more profitable if banks can diversify its service base to provide fee-commission-brokerage based services. These include income generated from the non-core activities of banks, such as, loan processing fees, late payment charges, credit card annual charges, insufficient fund charges,

penalties, etc. The ratio of non-interest income to total income has been taken as a measure of profit efficiency as it indicates diversity in the income structure of banks. Fig. 4.34 shows the trend in non-interest income ratio over a 30-year period from 1990-91 to 2019-20. The ratio has a mildly upward secular trend. From 9.48 percent in the year 1990-91, other income of banks has increased to 16 percent of the total income. However, there is a bank ownership-wise difference in this ratio. Foreign banks and private sector banks in India, have typically recorded higher other-incomes ratio compared to public sector banks (Fulwari, 2021).

Fig. 4.34 Ratio of Non-Interest Income to Total Income



Source: Profile of Banks. RBI Publication

It may be concluded that the Indian banking sector has been able to penetrate the economy with higher operational efficiency. While operational efficiency of the banking sector has improved with increased access, there is still scope for achieving greater diversity in the type of income generated by banks. It may be noted that foreign banks and private sector banks are found to have higher proportion of non-interest incomes compared to public sector banks which dominate the Indian banking sector (Fulwari, 2021). However, the efficiency in terms of lower cost of intermediation and operations doesn't seem to be accompanied by profit efficiency.

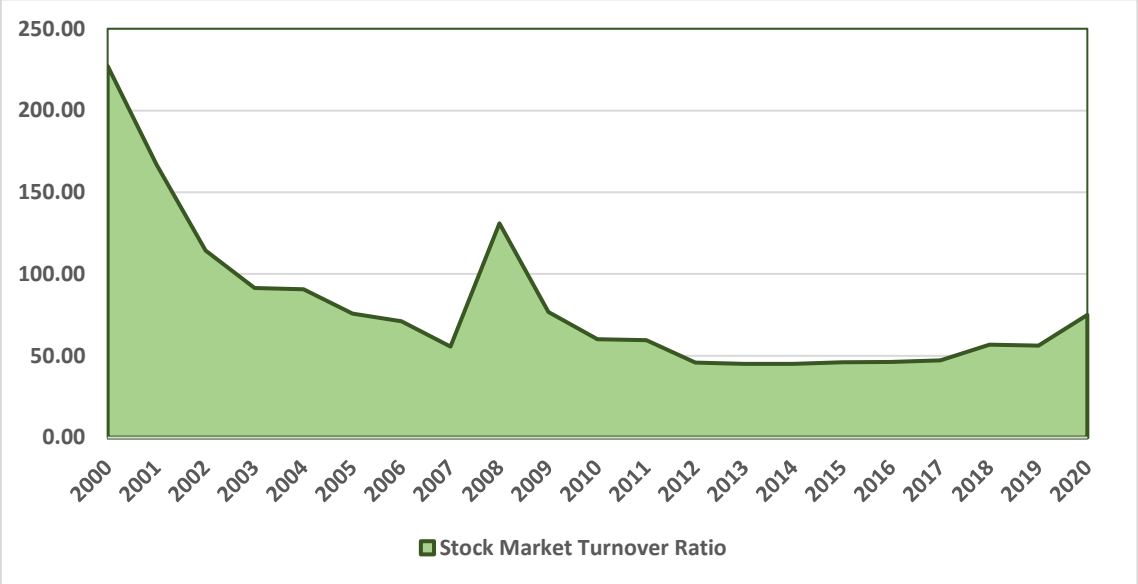
4.4.4 Efficiency of Financial Markets:

The financial market is largely represented by the stock market capitalization. It indicates how much access to finance is available to firms directly through investment in share capital of corporates, rather than indirectly through the banking intermediaries. However, simply higher stock market capitalization as a ratio to GDP need not show the correct picture. Increased depth of the financial market should be accompanied by improved level of activity in the stock

market. It is measured in terms of the total value traded as a ratio to average stock market capitalization in a given period.

Total value traded is calculated as the total number of shares actually traded in the market multiplied by their respective prices. If there is more trading of the stocks it implies there is a higher turnover ratio. Turnover ratio is calculated as total traded value of shares during the period divided by the average market capitalization of that particular period. Average market capitalization is calculated as the average of end of period values for the current and previous years. Higher turnover ratio is attributed as higher level of market efficiency. This is because when more trade takes place, it implies that investors have access to liquidity and exit without much loss. Fig. 4.35 depicts the movement in stock turnover ratio over a 24-year period.

Fig. 4.35 Financial Market Efficiency – Stock Turnover Ratio



Source: World Bank Database

In the initial years in the early 1990s there has been much volatility in the trading volume. The SEBI Act, 1992, was implemented to protect investors' interest along with the objective to develop the stock market. In the later part of the 1990s, SEBI implemented some reforms to avoid unwanted transactions and to work systematically by introducing mandatory demat accounts. Stock market turnover ratio was at its peak in the year 2000-01 and it was anticipated that the Bombay Stock Exchange Index would touch the benchmark of 4400 points by March 2002. In 2004, the BSE Sensex fell by more than 550 points amounting to 15.5 percent of the index value, which lead to reduction in the turnover ratio. For the period from 2000 to 2020, there is a decline in the stock market traded value which suggests lower efficiency of the financial market.

4.5 FINANCIAL STABILITY

A stable financial system is capable of withstanding economic shocks and able to ensure settlement of payments and diversification of risk. “It is capable of efficiently allocating resources, assessing and managing employment levels close to the economy’s natural rate and eliminating relative price movements of financial assets which affects monetary stability or employment level” (World Bank, 2016). According to the World Bank, only a stable financial system can dispel financial imbalances which may have originated endogenously or on account of some external unanticipated events. It is the ability of the system to absorb shocks in three ways; through mechanisms for self-adjustments and corrections; by effective measures to avert negative impacts on the real economy; by adopting accommodating measures for systemically important financial institutions so that the damaging effects do not spread to other financial institutions and systems.

According to Ferguson (2002) and Schinasi (2004), as cited in Sysoyeva (2020), financial stability is related to “the ability of the financial system to meet endogenous and exogenous shocks.” Alternative definitions of financial stability have one common thread which relates to “the absence of system-wide episodes in which the financial system fails to function….it is also about resilience of financial systems to stress”, (The World Bank, 2012).

It may be noted that financial access has been a prominent policy goal of the governments, particularly, in developing countries with concerted efforts to include the unbanked population in to the formal financial sector. It is also a dimension which is more easily manifested at the macro level in terms of financial inclusion indices and financial depth. However, often such efforts fail to address the issues and challenges related to stability of the financial sector. Also, it is expected that a more efficient financial sector will also make it more resilient to financial stress.

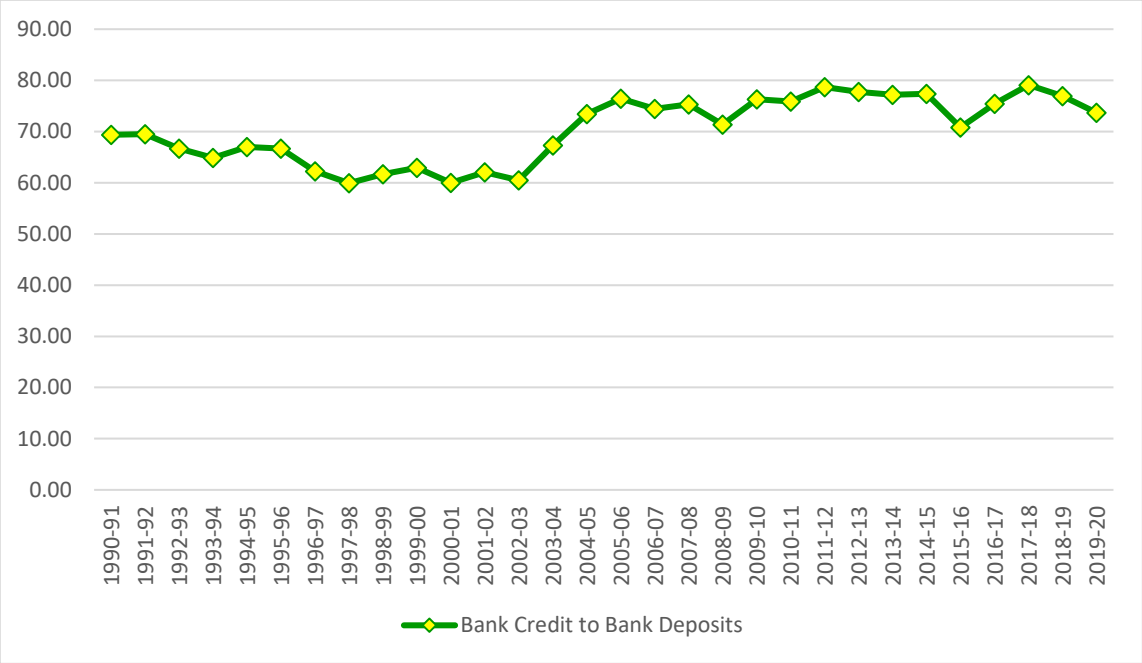
Financial development, particularly, in terms of quick pace of financial deepening is beneficial only when it is accompanied by stability and increment in efficiency. Thus, financial stability is of utmost importance for the steady economic growth. In the absence of financial stability, financial intermediaries would shy away from financing viable projects. Financial instability would also lead to assets being mispriced and general illiquidity further harming the investor confidence as also that of the general public.

The measures of stability used in the present study are, bank credit to deposit ratio, bank Z score, non-performing loans to gross loans (NPL), provision coverage ratio (PCR).

Bank Credit to Deposit Ratio

Bank credit to deposits is taken as an indicator of stability as it shows the deposit base on which credit has been granted. A value greater than one would imply that private credit is being financed by non-deposit sources which can be a cause of financial instability (Sysoyeva, 2020). In fact, high credit growth is found to be a predictor of crisis (Demirgüç-Kunt and Detragiache (1997). In Fig. 4.36 it can be seen that the ratio has a mildly upward slope, ranging from 69 percent to 80 percent. However, since the value is not exceeding 80 percent, it can be said that the credit growth is not destabilizing as it has a strong base of deposits. Credit creation should be as per the absorptive capacity of the economy otherwise it would lead to inflationary situation in the economy.

Fig. 4.36 Bank Credit to Bank Deposit Ratio



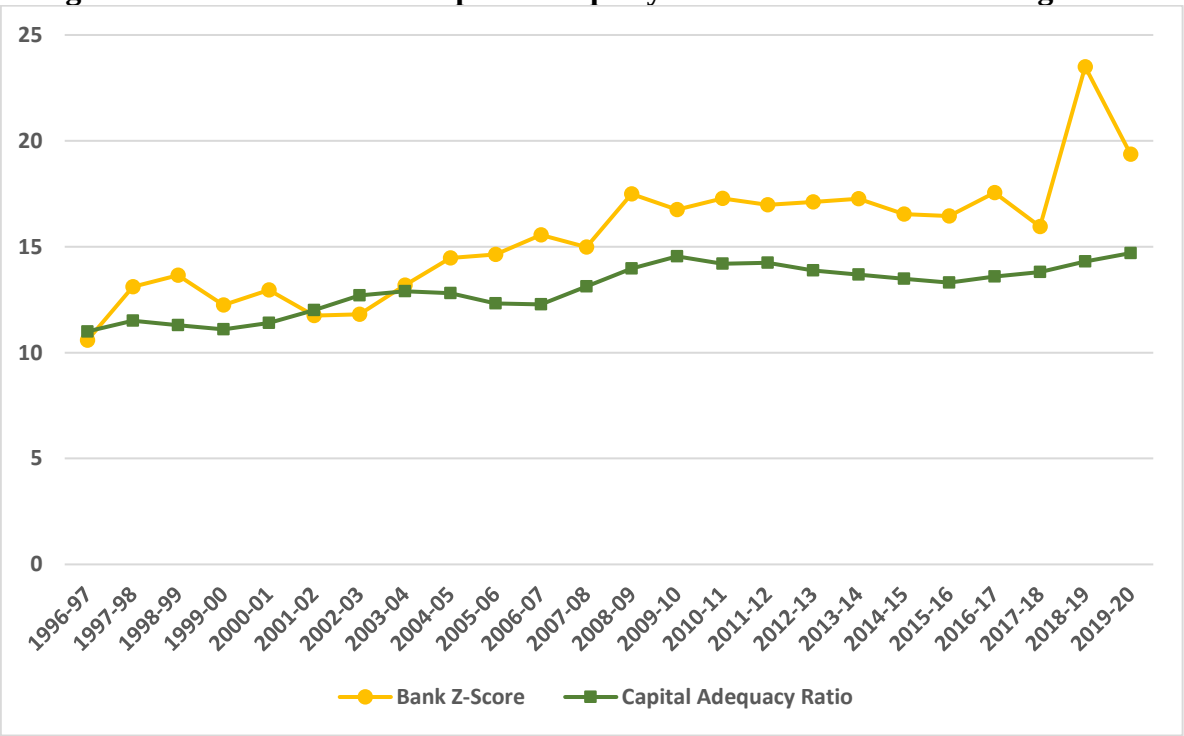
Source: BSR of SCBs, RBI

Bank Z Score:

This measure represents the margin of capital and returns of the banking sector in relation to the volatility of the returns. Lower cushion of capital would mean that the banking sector would be easily susceptible to financial distress. It is therefore, a measure of the risk of insolvency for the financial institutions. The bank z score is calculated as (ROA + Equity/Assets)/sd(ROA). From the value of 10.58 in the year 1996-97, the bank z score has improved to 19.36 in the year 2019-20, growing at a CAGR of 2.5 percent (Fig. 4.37). This shows that the financial

sector represented by the banking sector, in particular, has become more stable. It implies that the increased access and deepening of the financial sector in India is accompanied by a resilient financial sector as well. Cautious approach of the RBI and capital infusion of capital by the government in the public sector banks which occupy a major share of the Indian banking sector, are some of the reasons responsible for this stability.

Fig. 4.37 Bank Z Score and Capital Adequacy Ratio of the Indian Banking Sector



Source: Indian Banking Sector at a Glance, RBI

Capital Adequacy Ratio:

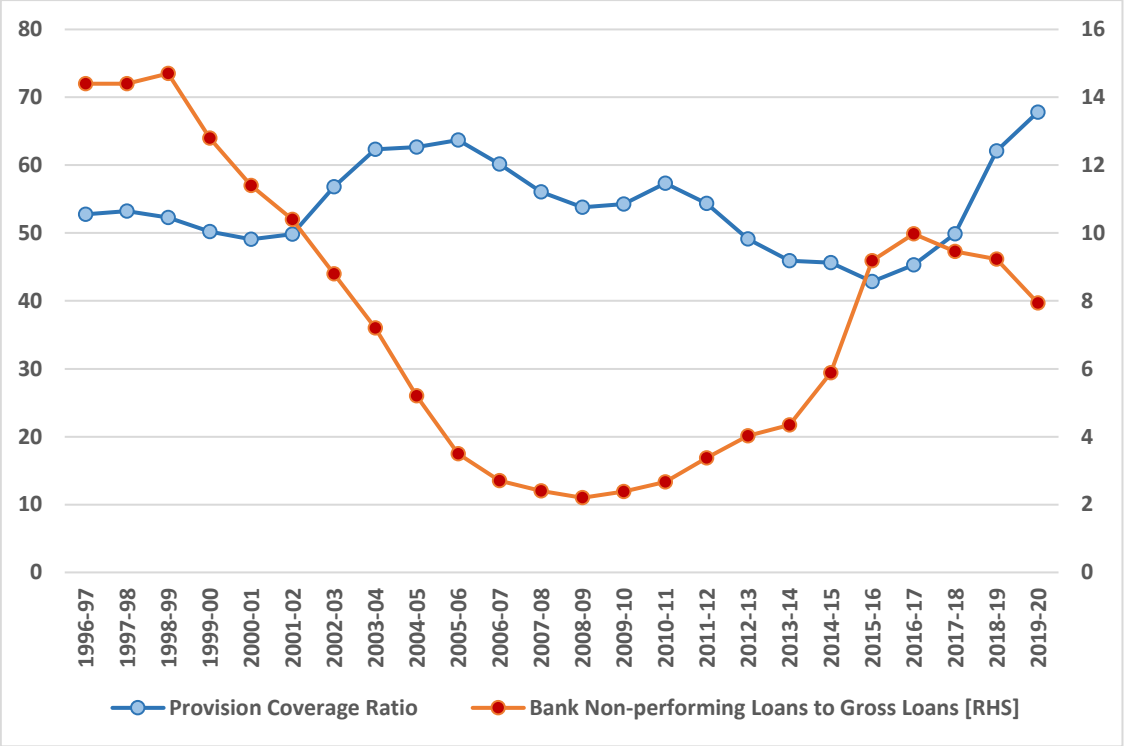
The capital adequacy ratio (CAR) measures the capacity of the banks to overcome losses in the event of default. It is measured as a ratio of bank's capital to its risk weighted assets. It ensures that banks have enough capital to withstand the risk of default, and thereby insolvency. The Indian banking sector has been maintaining more than the capital ratio suggested by the BASEL norms. Fig. 4.37 depicts that the CAR has increased from 11 percent to 15 percent over the 20-year period, which is a healthy level, implying a stable financial sector.

Provision Coverage Ratio:

Banks face credit risk when they lend money to the borrowers, in that, the latter may default in the repayment of the loan. To cushion themselves against such possibilities, banks make provision for doubtful debts, that is, the proportion of loans that they expect may not be repaid.

The provision coverage ratio (PCR) is calculated as total provision divided by gross non-performing assets. It may be noted that gross non-performing assets are loans that remain unpaid till 90 days. Fig. 4.38 shows that there is improvement in the PCR from 52.7 percent in the 1996-97 to 67.82 in 2019-20. This implies that on the criterion of provision coverage ratio also, the financial institutions as represented by the commercial banking sector have become more stable which is a positive development. Recently, the RBI has set the benchmark for the banks to have 70 percent PCR.

Fig. 4.38 Provision Coverage Ratio and Risk Level



Source: Indian Banking Sector at a Glance, RBI

Non-performing Loans (NPL) to Gross Loans

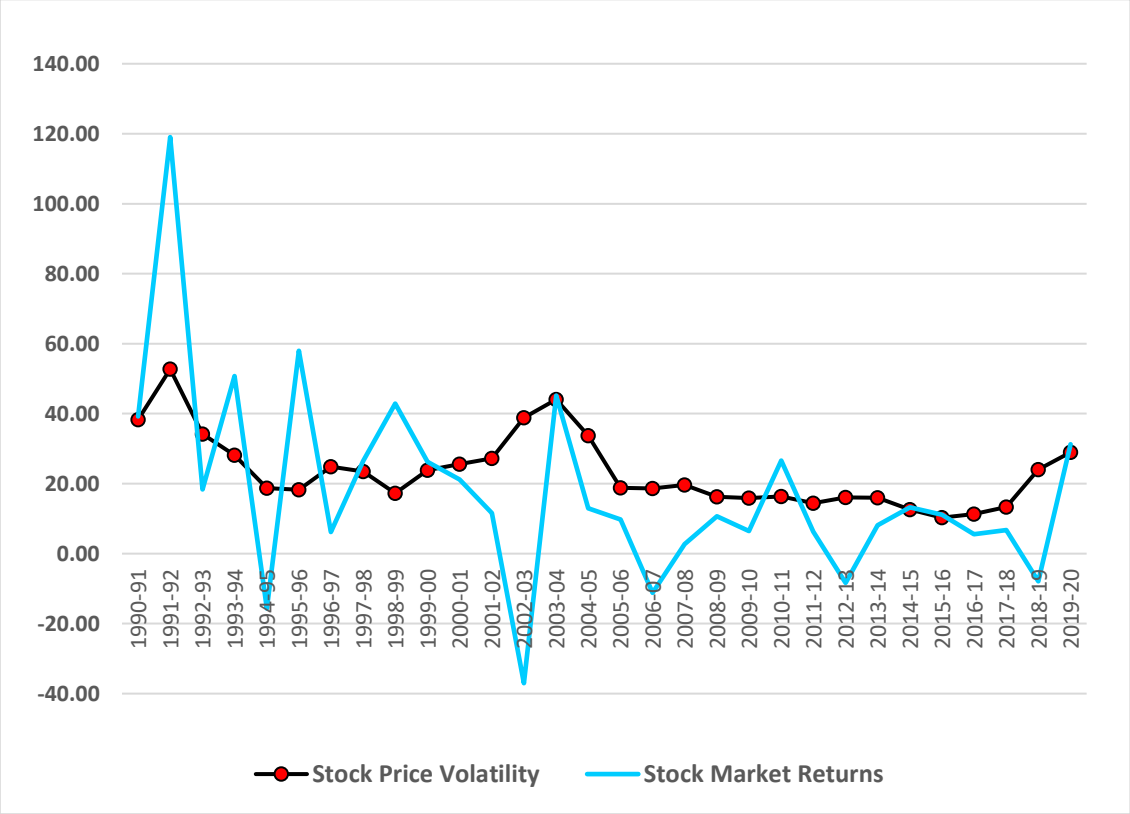
The higher the proportion of non-performing assets in the total loans of banks, the greater is the level of risk involved. For the Indian banking sector, the NPL ratio has reduced significantly from above 14 percent to about eight percent over the reported period, which is a positive aspect (Fig. 4.38). In fact, for nearly 19 years in the period between 1996-97 to 2019-20, the risk level as measured by the NPL ratio has been less than ten percent.

Stock Price Volatility

Stability with reference to financial markets can be measured in terms of volatility in stock prices over time. The concept volatility indicates the deviation of the values of a variable

around its mean value with reference to the time period. In terms of formula it is the product of the standard deviation and the square root of the number of periods of time. In the context of stock prices, volatility refers to the spread of market prices around the average price on an annualized basis. Lower the value of volatility, greater is the stability of the financial market. Fig. 4.39 shows that volatility of the stock prices has moved within a range of 20 to 40 for most of the years between 1990-91 to 2004-05, with two years where it has exceeded 45. But since the year 2004-05 to 2018-19, it has remained stable at around 20, in fact, declining close to 10. Only in the last two years it has increased to 24 and 29 respectively. Based on stock price volatility, it may be said that the financial market is not very volatile. Stock prices have fluctuated within a moderate rate of dispersion. The figure also depicts stock market returns, which for all 30 years, except in four, are found to be positive.

Fig. 4.39 Stock Price Volatility and Stock Market Returns



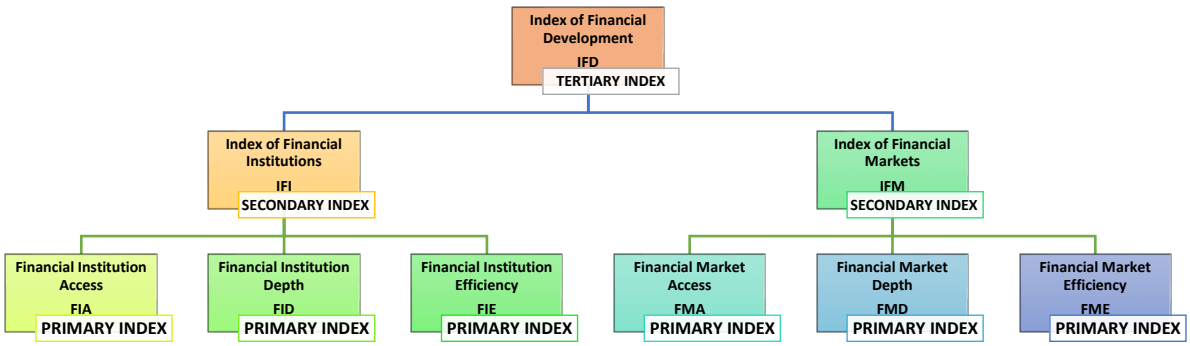
Source: World Bank Database

4.6 INDEX OF FINANCIAL DEVELOPMENT

The purpose of constructing the Index of Financial Development (IFD) is that single indicators of different dimensions are not sufficient to capture the level of financial sector development. The trends in the individual indicators over a long time is not easy to comprehend. Therefore, a measure is required that pools all these indicators into sub-indices of dimensions and which can then be further woven into the overall level of financial sector development. Such an approach would also help in identifying the weak links in the sector development (Svirydzenka, 2016). Similar analysis is found in Lenka (2015) and Gupta and Mahakud (2019). Further, the three stage indices can be used as arguments in the empirical study on the relationship between financial development.

The IFD measures the overall development of the financial sector by creating a pyramid structure of primary, secondary and tertiary level indices (Fig. 4.40). The primary index comprises a six-dimensional indices of access, depth and efficiency, where, two sets of the three dimensions aggregate to build two secondary indices. These secondary indices are the Index of Financial Institutional (IFI) and Index of Financial Markets (IFM). Finally, the tertiary index, namely, the IFD is constructed as a composite index of all these eight indices. It may be noted that the dimension of financial stability is not included in the construct of IFD. This is because stability differs from the first three dimensions, in the sense that it is more of a combined outcome of a host of institutional, regulatory and legal factors which can be highly country specific. Moreover, stability of the financial sector is also impacted by interconnections between financial institutions and markets, both, domestic and global. The index has been constructed for a 20-year period from 2001-2020, based on availability of data. The construct of IFD presented below is drawn from Svirydzenka (2016).

Fig 4.40 Pyramid Structure of Financial Development



The technique of principal component analysis (PCA) is used to extract the factors that are responsible for the variation in the dependent variable, but more importantly, to derive the weightage for the factors. Based on the application of PCA, the indicators of the three dimensions of financial development identified across financial institutions and financial markets, and their weights are presented in Table 4.1.

Table. 4.1 Indicators used in the Construction of the Index of Financial Development

Dimensions	Financial Institutions Indicators	Weights (PCA)	Financial Markets Indicators	Weights (PCA)
Access	No. of bank deposit accounts per 1000 adult population	0.95	Market capitalization per 1000 adult population	0.69
	No. of bank credit accounts per 1000 adult population	0.03	No. of listed companies per 100,000 population	0.18
	No. of deposit accounts of post office per 1000 adult population	0.02	Value traded excluding top 10 traded companies to total value traded	0.09
			Market capitalization excluding top 10 traded companies to total market capitalization	0.04
Depth	M3 to GDP	0.75	Stock market capitalization to GDP	0.53
	Bank deposit to GDP	0.14	Stock market total value traded to GDP	0.31
	Bank credit to GDP	0.09	Outstanding domestic public debt securities to GDP	0.11
	Bank assets to GDP	0.02	Corporate bond issuance to GDP	0.06
Efficiency	Net interest margin	0.37	Stock turnover ratio	1.00
	Interest expense to deposit	0.31		
	Non interest to total income	0.19		
	Total income to operating expense	0.09		
	Return on equity	0.03		

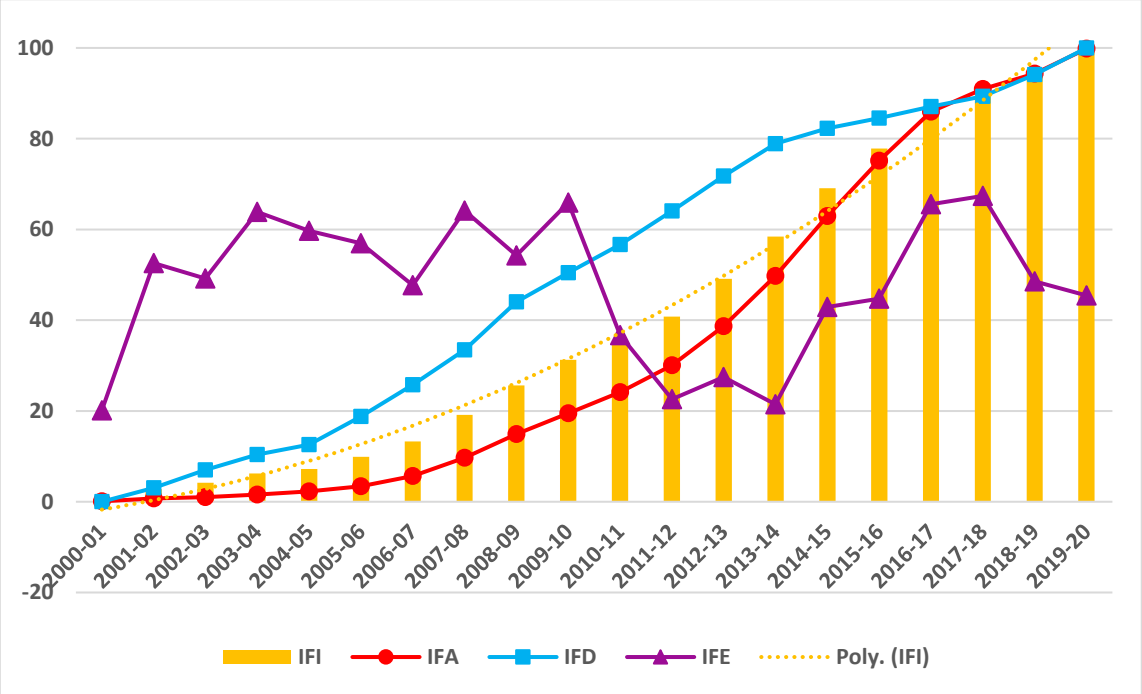
Having identified the factors and their weights, the primary indices, IFA, IFD and IFE are constructed following the steps elaborated in Chapter 3. In short, firstly, the values of the variables are normalized followed by applying the weights before summing them up.

The secondary indices, IFI and IFM are constructed following the same technique of PCA in order to find the weightage for the primary indices of access, depth and efficiency. The values of the primary indices are first renormalized and then assigned weights to derive the secondary indices. The weights applicable to the primary and secondary indices are presented in Table 4.2. The primary indices and the IFI based on them are depicted in Fig. 4.41.

Table 4.2. Weights assigned to Primary Indices based on PCA

Primary Index	Financial Institutions	Financial Markets
	Weights	Weights
IFA	0.65	0.64
IFD	0.33	0.22
IFE	0.02	0.14
Secondary Index	-	-
IFI	0.91	-
IFM	-	0.09

Fig. 4.41 Dimensional Indices related to Financial Institutions and IFI



Source: Computations as per procedure elaborated in Chapter 3.

Within the IFI, the index of financial access has improved at a high CAGR of 44 percent. From a very low value of 0.09 percent at the beginning of the analysis period to 99.48 percent in the last year of the analysis period. The index of financial depth has also grown at the robust rate of 21 percent on compound annual basis. In Fig. 39 it can be seen that the graphs of both IFA and IFD begin at the bottom of the scale and reach up to 100, which indicates greater extent of improvement.

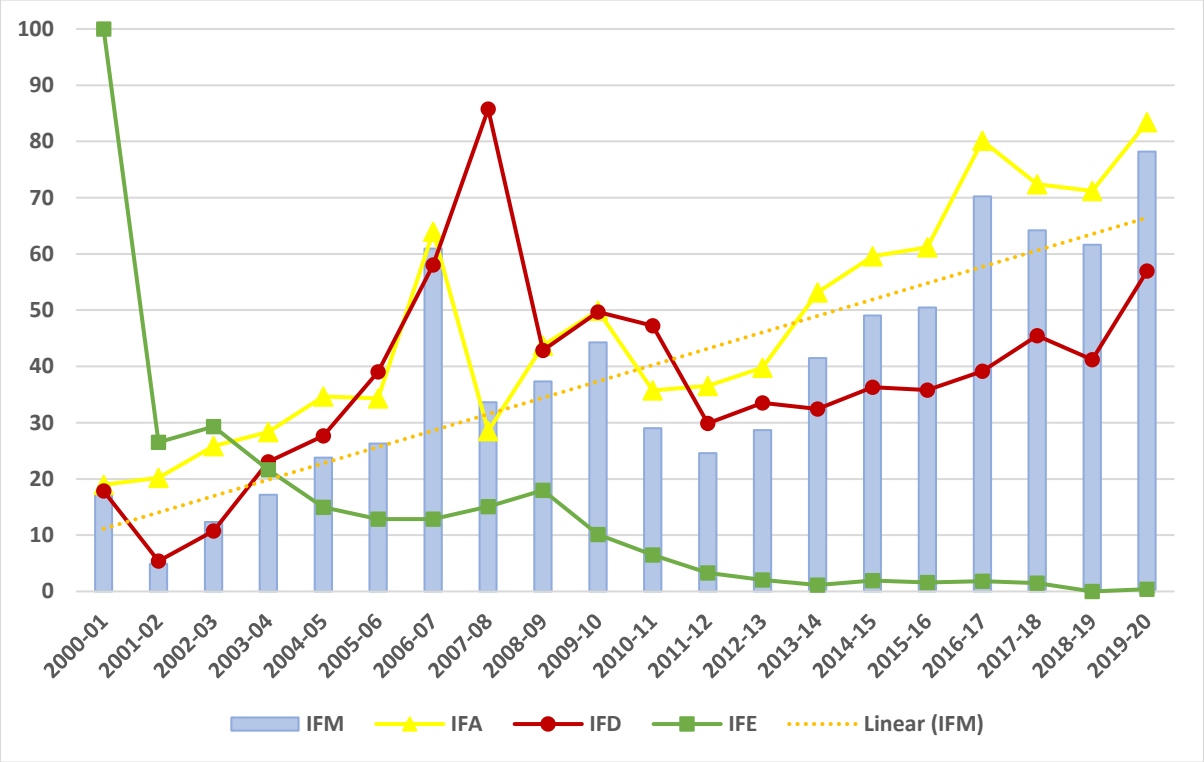
The institutional efficiency index shows a mixed result with lot of fluctuations. No particular trend is observable in IFE as only some of its components have performed in the desirable manner. The values of the index range between 20 and 67 percent. Particularly, after the impact of the global financial crisis was experienced on the Indian economy since 2008-09, followed by the period of great recession, the efficiency index has shown declining trend over those

years. After the impact of *taper tantrum* subsided, the index values show improvement, peaking at 67 percent in the year 2017-18. The fall in the last two years may be attributed to the impact of NBFC crisis which greatly impact bank lending activities. For the overall period, at the most it may be stated that the IFE has not worsened. It may be recollected from section 4.4 that while the financial institutions, particularly, banks have performed well on the criteria of intermediation cost efficiency and operational efficiency, it has not done so well on profit efficiency. Even the former two have been mildly achieved.

The composite IFI shows a continuous improvement throughout the period, growing at the CAGR of nearly 22 percent. It may be noted from Table 6 that the maximum contribution to the IFI, to the extent of 65 percent has been on account of the improvement in bank penetration, followed by that of IFD at 33 percent.

Fig. 4.42 depicts the same of sets of primary and secondary indices with reference to financial markets. It can be seen that the primary index of access related to financial markets has an upward trend, growing at the CAGR of eight percent. Comparatively, the financial depth index has trended upwards with a gradual course with a CAGR of six percent. Also, its trend is much flatter since the year 2008-09 to 2018-19 over which the values have remained in the range of 41 and 42 percent. Only in the last year, 2019-20, it has increased slightly to 56 percent.

Fig. 4.42 Dimensional Indices related to Financial Markets and IFM



Source: Computations as per procedure elaborated in Chapter 3

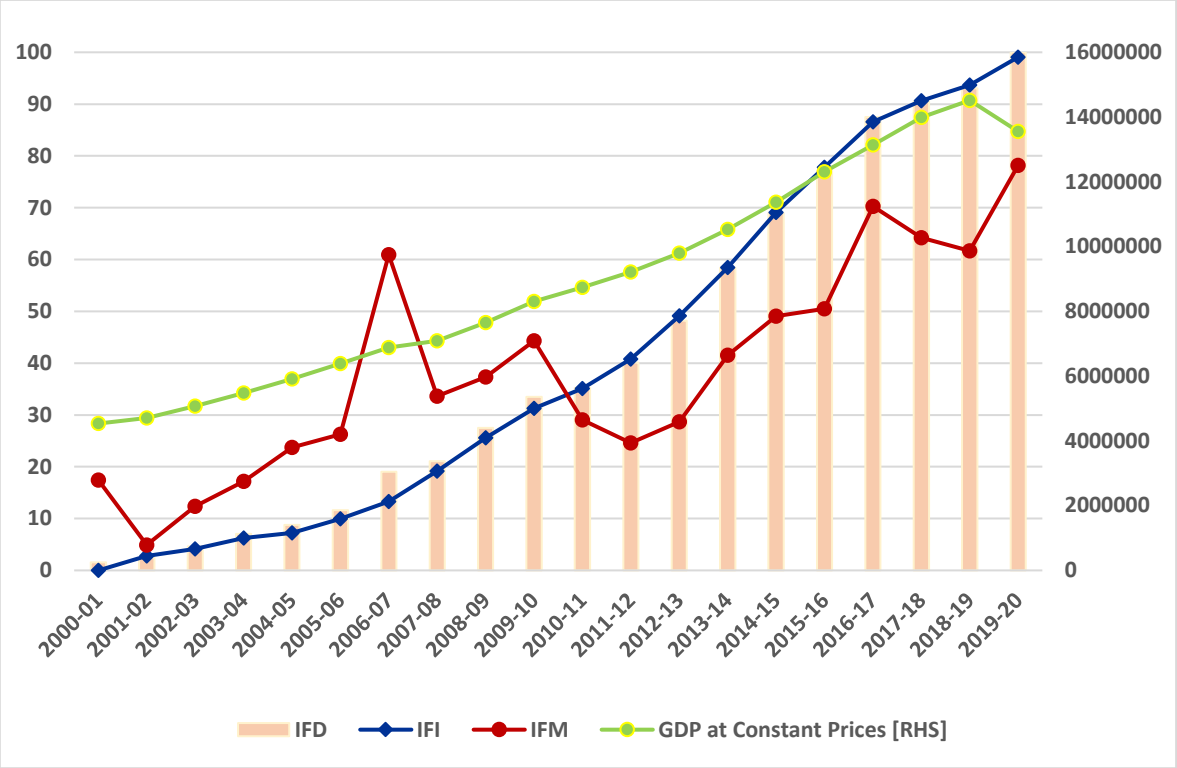
The efficiency index related to financial markets has a negative trend, falling from its maximum value of 100 percent to nearly zero in the last years. It may be noted that in the present study, financial market efficiency in represented by only one indicator, the stock turnover ratio. The drastic fall in the second year of the analysis period may be attributed to the Ketan Parekh Scam which adversely affected the stock market trading.

The overall result in terms of the composite index of the financial markets, IFM, shows reasonable improvement. Interestingly the linear trend of IFM is parallel to the linear trend in the IFA (not shown here), which implies that the access dimension has played an overpowering role compared to the other two primary indices, IFD and IFE, related to financial markets. This is also substantiated by the fact that the IFM has grown at the CAGR of eight percent just like the IFA. A closer look reveals that post global financial crises, the capital market in India became more well organized and highly equipped with technological advancement. This is evident in the fact that, for the six years preceding 2007-08, the IFA related to financial markets, grew at the CAGR of six percent, but in the next ten years since 2007-08, the financial access index has grown at the double CAGR of twelve percent.

The final analysis in this section is related to the tertiary index of financial development, which is the composite index of the two secondary indices, IFI and IFM, depicted in Fig. 4.43. Both the secondary indices show upward trend, with IFI having a continuously rising trend while the IFM rising with some fluctuations. The weights as obtained from the PCA technique are 0.91 to IFI and 0.9 to IFM (Table 4.2). It implies that the institutional index plays greater role in the financial sector development of India. In other words, banking and non-banking institutions still continue to play a more significant role in the Indian context compared to financial markets. In fact, it can be observed that the graph of IFI and IFD overall each other at almost all points.

The findings suggest that the authorities need to build further on this strength by improving the financial institutional, legal and regulatory framework in India to take the financial sector development to greater heights. At the same time, there is need of concentrated efforts on improving the facilitation and ease of procedures related to financial markets to improve its access for more people. Among other things, creating awareness and imparting financial literacy would go a long way in the dimensions of financial markets, in particular, with reference to India.

Fig. 4.43 Index of Financial Development and GDP



Source: Computations as per procedure elaborated in Chapter 3, GDP data from HSIE, RBI

The final index, IFD has grown at a robust CAGR of 24.59 percent in the period of analysis, which is commendable for the Indian economy. Fig. 4.43 also shows the graph of GDP at constant prices for providing a perspective. It may be seen that financial development and economic growth are positively associated with each other. The econometric analysis in this context is carried out in Chapter 6.

4.7 CONCLUSION

The in-depth analysis of all the four dimensions of financial development clearly bring out the trends in each. In relation to financial, most indicators related to banks, post offices and insurance companies show significant growth. Use of technology has particularly improved access of banking services. Penetration in terms of total stock market capitalization as also in the context of companies excluding top ten has improved over time. Further, financial development is also seen in the form of changing structure of the financial sector in favour of stock market vis-à-vis banking sector.

Improvement in access has resulted into greater financial inclusion as well as financial deepening of the Indian economy. In relation to both, financial institutions and financial markets, there is a great degree of deepening over the study period. With regard to financial

efficiency, the analyses suggest that while intermediation cost efficiency and operational efficiency has improved over the years, the banking sector has not gained in terms profit efficiency. Most indicators of financial stability show moderate level of improvement.

The pyramid structure of indices to capture how dimensional and institutional indices build into the overall financial sector development index, reveals that financial access is the most important dimension that contributes to financial development compared to financial depth or efficiency. At the secondary index level, financial institutions, compared to, financial markets have contributed more to financial sector development in the context of India. Thus, the analyses carried out so far reveals interesting developments of the financial sector in India.