CHAPTER 5

INTER-LINKAGES OF THE DIMENSIONS OF FINANCIAL DEVELOPMENT

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Having carried out an in-depth analysis of each of the four dimensions of financial development across financial institutions and markets, this chapter further investigates the intra and inter linkages of the four dimensions of financial development. It seeks to examine the correlations between the dimensions and establish important associations with reference to India.

Financial development is not about improvements in individual aspects of the sector in isolation. The construct of financial development rests on the reinforcing effects of its multi-dimensional nature. It is about the interactive nature of the dimensions that matter. It is expected, for instance, that an increase in the width of the sector would also lead to an increase in depth of the sector. While it is desirable that increased financial access and depth comes along with greater efficiency and ensures a stable financial system, it may not always be the case. Often the spread and depth of the sector may come at the cost of efficiency and stability. Much efforts are required to strengthen the institutional, regulatory and legal framework in the country with effective governance so that all dimensions of financial development synergize for best outcome.

In the above context, this chapter is divided into two broad parts. Following Han and Melecky (2013), the first part examines the pair-wise correlations between various measures of the dimensions along with testing of their statistical significance, under three sections, 5.1 to 5.3. The second part, covered under section 5.4, deals with the analysis of the structural equation modelling approach of confirmatory factor analysis that investigates the indicators and dimensions that contribute significantly to the development of the financial sector.

5.1 INTER-DIMENSIONAL LINKAGES

In relation to the correlation analysis between the dimensions, following are the hypotheses addressed in this section:

- Access and depth of financial institutions are positively correlated.
- Financial efficiency of financial institutions is positively correlated with their access, depth and stability.

- Financial stability of financial institutions is positively correlated with their access and depth.
- There are positive intra-dimensional correlations of financial institutions.
- There are positive correlations within the financial dimensions of financial markets.

5.1.1: Inter-linkages between Financial Depth and Financial Access

It is expected that improved access to financial services would lead to deepening of the financial sector. This gets established by the correlation coefficients between access and depth dimensions. As per findings discussed in Chapter 4, there is considerable improvement in access to banking services, insurance as well as stock market. Table 5.1 presents the findings on pair-wise correlation analysis between indicators of depth and access. It can be seen that all indicators of depth have high degree of positive correlation with the coefficient values almost close to 0.90 with reference to bank penetration in terms of deposit accounts. With regard to credit account penetration the coefficients are even higher than the former. Same is the case with bank branches. All coefficients are significant at five percent level.

Table 5.1 Inter-linkages between Financial Depth and Financial Access (*r*)

INDICATORS	Deposit Accounts per 1000 Adults	Credit Accounts per 1000 Adults	Bank Branches per 100,000 Adults
M_3/GDP	0.892**	0.929**	0.914**
Bank deposit/GDP	0.897**	0.933**	0.918**
Bank credit/GDP	0.893**	0.938**	0.917**
Bank asset/GDP	0.886**	0.924**	0.914**
BCCS/GDP	0.894**	0.936**	0.918**

***Significant at 1%, ** Significant at 5%**

These findings are important because they establish the robustness of the outcome related to financial inclusion. This is because depth indicators such as bank deposits and bank credit are also measures of 'usage' of banking services. It may be recollected from the analysis of the Financial Inclusion Index that, the dimensional index of usage exhibited the sharpest rise over the study period compared to other dimensions. The high values of correlation coefficient reinforce the results of financial inclusion index.

5.1.2: Inter-linkages between Financial Efficiency and Financial Access

It is common knowledge that while the government has paid much attention on improving financial access so as to have financial inclusion of all, often it is at the cost of considerations of financial efficiency. In the case of India, with the emphasis on social and mass banking,

particularly, after nationalization of banks, access to financial services by the unbanked and underbanked population including households, small businesses, farmers and underprivileged sections of the society, has received much attention. This approach has certainly improved financial inclusion in India as seen in the analysis in the previous chapter. However, the commercial banking sector, particularly, the public sector bank group, has been penalized to a great extent, with the concerns of commercial viability and profitability often being sacrificed. It is therefore imperative to inquire into how the increased measures of financial access have impacted efficiency of the financial sector.

This section seeks to examine the association of financial efficiency with the increase in financial access that has been witnessed in the Indian economy. The three measures of access are bank deposit and credit accounts per 1000 adults and bank branches per one lakh population. Table 5.2 shows the correlation coefficients (*r*) between the indicators.

Table 5.2 Inter-Linkages between Financial Efficiency and Financial Access (*r*)

INDICATORS	Deposit Accounts per 1000 adults	Credit Accounts per 1000 adults	Bank Branches per 100,000 adults
Net Interest Margin	-0.368**	-0.327***	-0.374**
Interest Expense to Deposits Ratio	-0.490*	-0.547*	-0.459**
Bank Overhead Costs to Total Assets	-0.613*	-0.728*	-0.668**
Total Income to Operating Expenses	0.426**	0.520*	0.502*
Non-interest Income to Total Income	0.063	0.043	0.011
Return on Assets	-0.750*	-0.628*	-0.685*
Return on Equity	-0.872*	-0.750*	-0.840*

***Significant at 1%, ** Significant at 5%, *** Significant at 10%**

Net Interest Margin:

As a measure of intermediation cost, NIM is found to have a statistically significant negative correlation with measures of financial access, although they are mildly correlated with coefficient values ranging from -0.32 to -0.37. While correlation with deposit accounts and bank branches is found to be significant at 5%, correlation with number of credit accounts is significant at 10%. The negative correlation implies that increase in financial access is associated with fall in NIM. And, fall in NIM is a sign of increased efficiency. It can therefore be concluded that improvement in financial access in India is accompanied by increased efficiency in terms of cost of intermediation.

Interest Expense to Deposits Ratio:

The correlation of interest expense ratio with financial access is found to be negative, implying that increase is financial access is associated with lower interest expense on deposit mobilization, that is, the cost of intermediation has declined over the years. The values of the

negative coefficients range from -0.45 to -0.55. All coefficients are found to be statistically significant. It may be concluded that financial development in India in terms of increased access to banking services is accompanied by improvement in intermediation cost efficiency which is a good sign.

Bank Overhead Costs to Total Assets Ratio:

With reference to operational efficiency indicator, this ratio measures non-interest expenses to total assets, excluding financial costs which are essentially interest expenses. Thus, lower the ratio, greater is the level of operational efficiency of the banking sector. The correlation of bank overhead costs to total assets ratio with measures of financial access, namely, deposit accounts and credit accounts per 1000 adult population, and bank branch penetration, is found to be negative which is a sign of increased efficiency. The coefficients range between -0.61 to -0.73 which means reasonably high degree of correlation. All coefficients are statistically significant.

Total Income to Operating Expenses Ratio:

With the increase in number of bank accounts and improvement in branch spread, the opportunities of income generation also increase. This is evident in the positive correlation of total income to operating cost ratio with financial access. The degree of correlation is moderate in the range of 0.42 to 0.52. All coefficients are highly significant at 1% and 5% levels. It suggests that banks have been able to achieve operational efficiency along with increase in proportion of banked population and spread of bank offices.

Non-Interest Income to Total Income Ratio:

Another efficiency measure, more in the sense of efficiency of scope, and creating scope for more profitability, is the non-interest income to total income ratio. With the existing physical infrastructure and cliental base, it would be more profitable if banks can diversify its service base to provide fee-commission-brokerage based services. However, the results of its correlation analysis with financial access shows near absence of any association, with correlation coefficients hovering between 0.01 to 0.06. Also, the coefficients are not significant.

Return on Assets:

The correlation of return on assets with measures of financial access is found to be highly significant, with level of significance being 1%. However, the coefficients bear a high negative correlation, ranging between -0.63 to -0.75. This implies that while banking sector has achieved

efficiency in intermediation cost and in its operations, it has come at the cost of profit efficiency.

Return on Equity:

The correlation between ROE and access is also found to be negative and highly significant. It indicates the need to focus on converting operational efficiency gains into profitability for long run sustainability.

It may be concluded that the Indian banking sector has been able to penetrate the economy with higher intermediation efficiency and operational efficiency. But 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.

5.1.3: Inter-linkages between Financial Efficiency and Financial Depth

Table 5.3 Inter-Linkages between Financial Efficiency and Financial Depth (*r*)

INDICATORS	M_3/GDP	Bank Deposit/GDP	Bank Credit/GDP	Bank Asset/GDP	BCCS/GDP
Net Interest Margin	-0.545*	-0.534*	-0.492*	-0.524*	-0.499*
Interest Expense to Deposits	-0.651*	-0.645*	-0.626*	-0.618*	-0.623*
Bank Overhead Costs to Total Assets	-0.857*	-0.858*	-0.873*	-0.874*	-0.870*
Total Income to Operating Expenses	0.705*	0.704*	0.708*	0.727*	0.709*
Non-interest Income to Total Income	0.143	0.135	0.088	0.101	0.089
Return on Assets	-0.452**	-0.454**	-0.430	-0.416	-0.435**
Return on Equity	-0.659*	-0.662*	-0.650*	-0.638*	-0.654*

***Significant at 1%, ** Significant at 5%**

Net Interest Margin:

Interestingly, with the increase in financial depth, the NIM has declined over the period, resulting into negative correlation between the two. All measures of depth, namely, broad money to GDP, deposits, credit, assets and credit to commercial sector as ratios to GDP are found to be moderately correlated with NIM with the negative coefficients ranging between -0.49 to -0.54, and significant at one percent level.

Interest Expense to Deposits Ratio:

Another measure of intermediation cost, the ratio of interest expense to deposits is also found to bear a negative correlation with the measures of financial depth. The negative coefficients indicate that with deepening of the financial sector, greater efficiency has been achieved by banks in mobilizing deposits at lower interest expense. Given the high intra-depth correlation, their coefficients with respect to interest expense are found to lie within close range of -0.61 to -0.65 which can be considered as somewhat high degree of correlation. All coefficients are significant at 1% level.

Bank Overhead Costs to Total Assets Ratio:

The operational efficiency measure of bank overhead costs to total assets is found to be significantly correlated with all measures of financial depth. The coefficients bear the expected sign, that is, they are found to be negative. The correlation is not only significant but also of high degree with the coefficient values as high as -0.86 and -0.87.

Total Income to Operating Expenses Ratio:

This measure of operational efficiency is also highly significantly correlated with the financial depth measures with high degree ranging from 0.70 to 0.73. The coefficients bear the expected positive sign.

Non-Interest Income to Total Income Ratio:

As found in the case with financial access, this ratio shows very poor association with financial depth. Moreover, the coefficients, though positive, are not found to be significant. It implies that though the width and depth of Indian financial sector has increased over the study period, it has not drastically improved the level of diversity in the services provided by the banks in terms of fees, commissions, brokerage, penalties, etc.

Return on Assets:

The correlation of return on assets with measures of financial depth, namely, M3/GDP, bank deposits/GDP and bank credit to commercial sector/GDP, is found to be significant at five percent level. However, the coefficients bear negative sign, with moderate correlation, ranging between -0.42 to -0.45. This implies that while banking sector has achieved efficiency in intermediation cost and in its operations with increase in depth of the sector, it has come at the cost of profit efficiency.

Return on Equity:

Likewise, the correlation between ROE and depth is also found to be negative and highly significant with one percent level of significance. It indicates the need to focus on converting operational efficiency gains into profitability for sustainability in the long run. Also, it may be noted that there is a lot of bank-group-wise difference in performance of banks. While foreign banks and new private sector banks are found to be in a better position compared to public sector banks, it should be noted that the Indian banking sector is predominated by public sector banks. Therefore, in the overall picture, it results into average profitability for the banking sector.

5.1.4: Inter-linkages between Financial Efficiency and Financial Stability

It is anticipated that a more efficient financial sector will also make it more resilient to financial stress. 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). Examination of inter-linkages between stability and efficiency measures is found in Sysoyeva (2020), where bank z scores have been correlated and regressed with measures of efficiency as well as stability. In the present analysis the findings observed are as follows.

Table 5.4 Inter-Linkages between Financial Efficiency and Financial Stability (*r*)

INDICATORS	Bank Credit to Bank Deposit	Z-score	NPL	PCR
Net Interest Margin	-0.201	-0.068	-0.223	0.194
Interest Expense to Deposits	-0.628*	-0.557*	0.591*	-0.581*
Bank Overhead Costs to Total Assets	0.502**	0.116	-0.598*	0.271
Total Income to Operating Expenses	0.567*	0.437**	-0.450**	-0.512**
Non-Interest Income to Total Income	0.049	-0.162	-0.134	0.548*
Return on Assets	-0.041	-0.479**	-0.600*	-0.127
Return on Equity	-0.328	-0.583*	-0.294	0.106

***Significant at 1%, ** Significant at 5%**

Net Interest Margin:

- Bank credit to deposit ratio has a moderately negative correlation with NIM. Lower NIM implies improved efficiency. While for the Indian banking sector the NIM has declined over time, the ratio of bank credit to deposits has increased, which justifies the negative coefficient value although not found to be significant. Negative correlation is desirable in the sense that increased bank credit ratio is accompanied by falling NIM which implies lower cost of intermediation.

- The association between z score and NIM is found to be insignificant and negligible.
- NPL and NIM are not found to be significantly correlated. The coefficient bears a negative sign meaning that non-performing assets ratio increases as the net interest margin declines.
- NIM is also found to be poorly correlated with PCR and is statistically insignificant.

Interest Expense to Deposits Ratio:

- With the efficiency measure of interest expense to deposits, the stability measure – bank credit to bank deposit ratio, is found to have a significant negative correlation of -0.63. Lower interest expense of deposits makes it possible to mobilize more deposits and thereby increase bank credit. It implies a desirable feature of both greater operational efficiency leading to greater stability with the backing of deposit base.
- Likewise, as the interest expense of deposit mobilization increases it has negative effect on the cushion of margin as captured by the z score, which is found as expected. The correlation coefficient is -0.56 with significance at 1% level. This further, reinforces the findings of the earlier section, that the Indian banking sector has experienced improved operational efficiency but it is at the cost of profit efficiency.
- The risk level as measured by the NPL ratio is found to be positively associated with increased interest expense on deposits, and is highly significant. Higher interest cost on deposits translates into higher interest on loans which is likely to increase the probability of NPL. The degree of correlation may be considered as moderately high, the value being 0.59.
- Interest expense to deposit ratio is found to be negatively correlated with PCR. Increase in efficiency in terms of the former, that is, low values of the interest expense ratio are accompanied by higher PCR values. In a general interpretation, it may be said that lower interest expense results into higher profits, keeping other things constant, and this allows banks to maintain a higher coverage ratio. The coefficient is significant at one percent.

Bank Overhead Costs to Total Assets Ratio:

- This measure of efficiency shows positive correlation with bank credit to bank deposit ratio with one percent level of significance. The coefficient shows moderate degree of correlation of 0.50. It means that though the banking sector has been able to create credit on the strong and reliable base of deposits, it has come about at higher overhead costs. So, while operational efficiency measures have shown improvement with broader access of financial services and deepening of the sector, with reference to stability measure bank

overhead costs have increased. It may also be said that this criteria of stability has come at a higher cost.

- With reference to Z score, financial efficiency as measured by bank overhead cost ratio is also found to have very weak positive correlation of 0.12 and is not statistically significant.
- In relation to NPL ratio, bank overhead cost bears a moderately high negative correlation, significant at one percent level. It implies that higher financial stability comes at the cost of lower operational efficiency.
- With regard to PCR, bank overhead cost to total assets ratio shows mild positive correlation of 0.27 which is significant but at a higher level of 12 percent. In a loose manner, it may be said that more provision coverage has been made but with increase in overhead costs.

Total Income to Operating Expenses Ratio:

- Bank credit to bank deposit ratio is found to have a moderately positive correlation of 0.56 with the efficiency measure of total income to operating expenses and is significant at 1%. It may be noted that for the Indian financial sector, the credit-deposit ratio, although it has increased over time to reach about 75 percent, is well below 100 percent. This implies that it is funded on the base of deposits, creating less chances for crisis to arise. It shows the cautious approach of the Indian banking sector which has always helped the system to be more resilient during the times of financial crisis. Increased ratio of bank credit is associated with greater efficiency as measured by higher total income to operating expense ratio, which is a positive feature of the financial sector that comes into observation.
- Higher operational efficiency in terms of total income to expenses ratio implies higher and stable returns, and therefore higher z score. Increase in total income to expenses has a mild positive correlation of 0.44, and has significant association with the z score for banks.
- The total income to operating expenses ratio has moderately negative correlation with the level of risk, that is, the NPL ratio, and is statistically significant at 5% level. Higher income to expense ratio is expected to lend greater stability to the banking sector. This again is a desirable feature of the financial sector observed in the case of India.
- There is negative correlation between the PCR and total income to operating expenses. Increased efficiency in terms of higher income ratio reduces the need for provision coverage in the relative sense.

Non-Interest Income to Total Income Ratio:

- Bank credit to bank deposit ratio is found to be uncorrelated with the ratio of non-interest income with the coefficient value as low as 0.05 which is also statistically insignificant.
- The z score measure of stability is not found to be significantly correlated with non-interest income.
- Risk level is found with the expected negative correlation with non-interest incomes ratio but is not statistically significant.
- PCR and non-interest income ratio are positively correlated with the coefficient equal to 0.55, and is highly significant. As the proportion of non-interest income increases, banks get some space in connection to provision to be made for bad debts.

Return on Assets:

- Bank credit to deposit ratio is found to be almost uncorrelated with the ROA with a coefficient value of -0.05.
- Z score and ROA are found to have a significant negative correlation of -0.48. It is difficult to establish the reasoning for the correlation as the z score has many elements in it the way it is measured, with the standard deviation of ROA also appearing in the formula. As the data reveals, ROA of the Indian banking sector has declined over the study period, while z score has an upward slope. This explains the negative correlation to some extent.
- The NPL ratio has a somewhat high negative association of -0.6 with ROA, implying that increased risk level reduces the ROA, which is as expected. The coefficient is significant at one percent level.
- ROA is found to have mildly negative correlation with the PCR. However, it was not found to be significant. The coefficient value is as low as -0.13.

Return on Equity:

- Bank credit to deposit ratio is found to be negatively correlated with the ROE. Although not statistically significant, it implies that increased ratio of bank credit is not resulting into improved profit efficiency. The *p* value of the coefficient with ROE is 0.12.
- Bank z score and ROE are also found to have significant negative correlation. The coefficient bears the value of -0.58. It may be recalled that ROE exhibits a negative trend. With falling ROE, reserves and surplus account suffers, thereby increasing the instability of the returns.

- NPL and ROE appear with negative correlation which is of mild degree. However, it is not found to be significant. Increased level of risk reduces ROE.
- ROE and PCR are not found to be much correlated, with the coefficient value being 0.10, and insignificant. Although positive coefficient value may be taken as a desirable sign, implying higher profit efficiency is consistent with higher PCR, in a crude interpretation.

Inter-linkages of Financial Stability with Access and Depth

Financial stability has also been a neglected factor, particularly, in terms of macro prudence to be maintained in the functioning of the financial sector. While micro prudential norms have been focused upon, it is only after the global financial crisis that financial stability at macro economy level and global level has gained significance. With this context, this section seeks to examine the association of financial stability with the increase in financial access and depth that has been witnessed in the Indian economy. Four measures of financial stability have been examined, namely, bank credit to bank deposits ratio, z score, bank non-performing loans (NPL) to gross loans and provision coverage ratio (PCR). The associations of these measures can be seen in Table 5.5.

5.1.5: Inter-linkages between Financial Stability and Financial Access

Table 5.5 Inter-Linkages between Financial Stability and Financial Access (*r*)

INDICATORS	Deposit Accounts per 1000 Adults	Credit Accounts per 1000 Adults	Bank branches per 100,000 adults
Bank Credit to Bank Deposit	0.586*	0.715*	0.603*
Z-score	0.757*	0.868*	0.748*
Non-Performing Loan to Gross Loan	0.062	-0.203	0.041
Provision Coverage Ratio	-0.085	0.047	-0.186

***Significant at 1%, ** Significant at 5%**

Bank Credit to Bank Deposits

The stability measure, bank credit to bank deposits, is found to be positively correlated to all the three measures of access, namely, bank deposit accounts per 1000 adult population, credit accounts per 1000 adult population and bank branches per 1,00,000 population. While deposit accounts and branches have a moderate positive correlation of 0.58 and 0.60, the coefficient for credit accounts shows high correlation of 0.71. All coefficients are statistically significant at 1% level. It implies that as the breadth of the financial sector increases, it lends greater stability during times of stress as the banking sector enjoys a larger deposit base, and loans are

spread across more number of borrowers. More number of bank branches increase the ease of availability and results into more deposits being converted into bank credit. These findings are consistent with those of Prasad (2010), Hannig and Jansen (2010), and Khan (2011).

Z score

Z score is also positively related with all the three measures of access, with coefficient values showing high correlation of 0.76, 0.87 and 0.75, respectively, all being significant at one percent level. More number of bank accounts give greater opportunities of earning for the banks as they form their core business.

Non-Performing Loans to Gross Loans

Non-performing loans to gross loans are not found to be associated with the measures of access with very low values of correlation coefficients of 0.06, -0.20 and 0.04, respectively with deposit accounts, credit accounts and bank branches. All coefficients are small in magnitude and statistically insignificant.

Provision Coverage Ratio

Provision coverage ratio is also found to be poorly correlated with deposit and credit accounts and bank branches, with coefficient values as low as -0.08, 0.04 and -0.18, respectively. The stability measure is found to be negatively associated with increased access by depositors and creditors, although, they are not statistically significant.

5.1.6: Inter-linkages between Financial Stability and Financial Depth

Stability of the banking sector has been examined with reference to five measures of the dimension of financial depth, namely, broad money to GDP, bank deposit and bank credit to GDP, bank assets to GDP and bank credit to commercial sector as a ratio to GDP.

Table 5.6 Inter-Linkages between Financial Stability and Financial Depth (*r*)

INDICATORS	M_3/GDP	Bank Deposit/GDP	Bank Credit/GDP	Bank Asset/GDP	BCCS/GDP
Bank Credit to Bank Deposit	0.760**	0.765**	0.787**	0.760**	0.780**
Z-score	0.855**	0.855**	0.861**	0.841**	0.857**
Non-Performing Loan to Gross Loan	-0.318	-0.314	-0.338	-0.316	-0.328
Provision Coverage Ratio	-0.134	-0.141	-0.137	-0.183	-0.146

***Significant at 1%, ** Significant at 5%**

Bank credit to Deposit Ratio

As in the case with access, bank credit to deposit ratio is positively and significantly associated with all measures of depth. The coefficient values are high, ranging from 0.76 to 0.86. Greater financial depth which does not amount to overheating of the system will have positive impact on stability, even more so when associated with reasonable bank credit to bank deposit ratio.

Z score

As in the case with access, z score is positively and significantly associated with all measures of depth. The coefficient values are high, ranging from 0.84 to 0.86. Greater financial depth lends an element of stability to the profitability of the banking sector and provides a greater margin before the banks' capital and surplus gets used up to cover potential losses. It thereby lowers the likelihood of bank insolvency. (Beck and Laeven, 2006; Laeven and Levine, 2009).

Non-Performing Loans to Gross Loans

In relation to NPL ratio and depth measures, all coefficients are negative and mild in the range of -0.31 and -0.39. Negative correlation is quite likely, if greater financial deepening tends to increase the threat of non-performing assets. However, given that financial deepening in India is not too high the negative coefficients are not found to be statistically significant. The robustness of the results is revealed from the fact that these coefficients turn significant at slightly higher level of significance ranging from 11% to 14%.

Provision Coverage Ratio

The PCR is found to be negatively correlated with all five measures of depth with very low coefficient values ranging from -0.13 to -0.18, and statistically insignificant.

5.2 INTRA-DIMENSIONAL LINKAGES

5.2.1: Intra-Access Linkages

Pairwise correlations of intra-access measures have the expected positive sign with statistical significance at 1% level. The coefficient values range from 0.94 to 0.99. Better availability of bank branches is positively correlated with number of deposit and credit accounts. The findings are consistent with those of Beck, Kunt and Peria (2005) and Ardic, Hiemann, and Mylenko (2011).

Table 5.7 Intra-Dimensional Linkages of Financial Access (*r*)

INDICATORS	Deposit Accounts per 1000 Adults	Credit Accounts per 1000 Adults	Bank Branches per 100,000 Adults
Deposit Accounts per 1000 Adults	1		
Credit Accounts per 1000 Adults	0.950*	1	
Bank Branches per 100,000 Adults	0.992*	0.942*	1

***Significant at 1%, ** Significant at 5%**

5.2.2: Intra-Depth Linkages

All measures of financial depth are highly correlated with each other with the coefficient values almost equal to one in each pairwise associations. It implies that any one of the measures is sufficient to represent the level of financial depth in India.

Table 5.8 Intra-Dimensional Linkages of Financial Depth (*r*)

INDICATORS	M_3/GDP	Bank Deposit/GDP	Bank Credit/GDP	Bank Asset/GDP	Commercial Sector Credit/GDP
M_3/GDP	1				
Bank deposit/GDP	1.000**	1			
Bank credit/GDP	0.997**	0.998**	1		
Bank asset/GDP	0.998**	0.998**	0.998**	1	
ComSecCr/GDP	0.998**	0.998**	1.000**	0.998**	1

***Significant at 1%, ** Significant at 5%**

5.2.3: Intra-Efficiency Inter-linkages

Table 5.9 Intra-Dimensional Linkages of Financial Efficiency (*r*)

INDICATORS	NIM	Interest Expense to Deposits	Bank Overhead Costs to Total Assets	Total Income to Operating Expenses	Non-Interest Income to Total Income	ROA	ROE
NIM	1						
Interest Expense to Deposits	0.618*	1					
Bank Overhead Costs to Total Assets	-0.123	0.035	1				
Total Income to Operating Expenses	-0.402**	-0.218	0.771*	1			
Non-Interest Income to Total Income	0.557*	-0.682*	0.535*	-0.059	1		
ROA	0.107	0.134	0.101	0.311	0.119	1	
ROE	0.215	0.232	0.396	0.025	0.232	0.896*	1

***Significant at 1%, ** Significant at 5%**

Net Interest Margin

In the case of associations between different measures of financial efficiency, the two measures of intermediation cost efficiency, namely, NIM and interest expense to deposits, are found to have moderately high correlation which are also statistically significant. The correlation is as expected because a fall in both indicates increased efficiency.

There is not much correlation found between NIM and bank overhead cost to total assets ratio, which is another measure of operational efficiency. However, NIM is found to be negatively correlated with the measure of operational efficiency - total income to operating expenses. This is as expected because in terms of an efficiency measure the total income ratio should be increasing and the NIM should decrease as efficiency improves. Since both the measures in their individual capacities have the desirable trends over the study period, they are found to be negatively correlated, although, to a moderate degree of -0.40 and is significant at 5% level.

NIM is found to be positively correlated with non-interest income to total income at one percent level of significance. The linkage channels between the two are difficult to be isolated as the variables underlying their measurement are different. Correlation of NIM is not found to be significant with profit efficiency measures of ROA and ROE.

Interest Expense to Deposits Ratio

With regard to association of interest expense to deposit ratio with other measures of financial efficiency, it is only found to be significantly correlated with non-interest to total income ratio. Their coefficient is -0.68 indicating moderately high negative correlation. Looking to the two measures independently, both show increased efficiency over the study period. This justifies the negative association as non-interest income ratio is rising over the study period while interest expense to deposit ratio has declined over the same period, both of which imply improvement in financial efficiency.

Bank Overhead Costs to Total Assets

The third measure of financial efficiency, bank overhead costs to total assets, is found to have high positive correlation, significant at five percent, with total income to operating expenses, which may suggest that banks may be able to generate higher income but with higher overhead costs. The former is also found to be moderately correlated with non-interest income to total income ratio with a positive correlation coefficient.

ROA and ROE

The two measures of profit efficiency, ROA and ROE are found to have high degree of positive coefficient of 0.89 which is significant at one percent level. This again, is as expected as both ratios have a similar declining trend over the study period.

5.2.4: Intra-Stability Linkages

In connection to the intra-dimension association of financial stability measures, it can be seen that better utilization of mobilized savings in terms of bank credit has a significant positive impact on the bank z score. The correlation is found to be highly significant at 1% and with a high coefficient value of 0.745. Bank credit to bank deposit ratio is also found to be negatively and significantly correlated with risk level as measured by NPL to gross loans. However, they are expected to be positively correlated. As bank credit ratio increases, there is greater likelihood of NPL. But it may be noted that in the case of India, the bank credit ratio is sufficiently deposit funded. That is probably the reason why for our realized values, there is a negative association between the two. Bank credit to bank deposit ratio is not found to be correlated with PCR.

Table 5.10 Intra-Dimensional Linkages of Financial Stability (*r*)

INDICATORS	Bank Credit to Bank Deposit	Z-score	Non-Performing Loan to Gross Loan	Provision Coverage Ratio
Bank Credit to Bank Deposit	1			
Z-score	0.745*	1		
Non-Performing Loan to Gross Loan	-0.712*	-0.348***	1	
Provision Coverage Ratio	0.096	0.156	-0.263	1

***Significant at 1%, ** Significant at 5%, Significant at 10%**

Bank z score is found to be negatively associated with the risk level as expected though it is found to be significant at level of significance of 10%. It is evident that lower risk level contributes to stable returns, keeping other things constant. The association of alternative measures of stability is not clear with reference to PCR.

5.3 INTER-LINKAGES BETWEEN DIMENSIONS OF FINANCIAL MARKETS

This section provides interesting findings related to financial market interlinkages. The purpose is to examine if improved market access and depth have a positive or negative association with efficiency and stability. Table 5.10 includes all four dimensions of financial development related to financial market.

Inter-Linkages of Financial Market Access with Efficiency and Stability

It can be seen in Table 5.10 that the measure of financial market - access to small and medium sized firms, is negatively related to stock turnover ratio. That is, as market capitalization outside of top ten companies increases, it negatively impacts stock turnover ratio. It indicates that trading is concentrated among top large companies. That is, on the efficiency parameter, increased financial access to small and medium companies does not ensure improvement in efficiency.

Likewise, the same access measure is negatively associated with stock price volatility. This suggests that more the spread of financial markets in favour of companies excluding the top ten, it augurs well for stability of the market as the stock market is less concentrated. These findings are very important from the point of view of strong development of the financial sector.

Table 5.11 Inter-Linkages of Dimensions related to Financial Markets (*r*)

INDICATORS	Stock Turnover Ratio	Stock Price Volatility	Stock Market Returns
M-Cap. excluding Top 10 Traded Companies to Total M-Cap.	-0.626*	-0.702*	-0.151
Value Traded excluding Top 10 Traded Companies to Total Value Traded	-0.677*	-0.368	-0.019
No. of Listed Companies per 100,000 Adults	0.574*	0.431	0.037
Market Capitalization per 1000 Adults	-0.594*	-0.456	0.117
Market Capitalization to GDP	-0.643*	-0.643*	-0.389**
Total Value Traded to GDP	0.253	-0.294	-0.277
Gross Portfolio Equity and Investment Funds Share Liabilities to GDP	-0.496**	-0.243	-0.096
Corporate Bond Issuance Volume to GDP	-0.570*	-0.360	0.092

***Significant at 1%, ** Significant at 5%**

Value traded excluding top 10 traded companies to total value traded, another measure of access is likewise negatively associated with stock turnover ratio, which is a measure of market efficiency. In other words, it may be stated that increased access to financial markets has not been associated with improved efficiency. However, improved access in terms of more trading of shares excluding top ten companies, is found to be positively associated with financial stability as borne out by the negative correlation coefficient of stock price volatility. However, it is not found to be statistically significant. Both measures of access show weak association with stock market returns.

Other two measures of access, number of listed companies per one lakh adults and market capitalization per 1000 adults, are found to be positively and significantly correlated with stock turnover ratio. More number of companies and relatively more market capitalization give greater choices to investors and thereby is likely to improve stock trading. However, the variables are not found to have meaningful association with stability indicators.

Inter-Linkages of Financial Market Depth with Efficiency and Stability

Indicator of size element of financial market depth – market capitalization to GDP – is found to be negatively correlated with both, market efficiency and market stability measures. All three coefficients are significant at one percent level. It implies that in the case of India's stock market, increased market capitalization depth is not positively associated with increased trading. That means, retail investors are still limited in number and they are not as active on the stock market. However, the increased depth is negatively associated with stock price volatility, which means, greater depth is associated with lower stock price volatility – an improvement in the stability dimension. Same is the case with stability measured in terms of stock market returns, though, the magnitude of the coefficient suggests mild correlation.

Indicator of activity element of financial market depth – traded value to GDP – is not found to have statistically significant coefficients with respect to efficiency and stability measures, though, the coefficient with stock turnover ratios is mildly positive as expected. With stock price volatility, its coefficient is negative suggesting improved stability.

The remaining two measures of depth, gross portfolio equity and investment funds share liabilities to GDP and corporate bond issuance volume to GDP are found to have significant negative relation with market efficiency variable, stock turnover ratio. Both coefficients are significant at one percent level. It may be said that deepening of the stock market has not been marked by increased stock trading, which is a weak point of the financial markets in India.

5.4 STRUCTURAL EQUATION MODEL OF FINANCIAL SECTOR DEVELOPMENT

Financial sector development being a multi-dimensional and a complex construct, the present study has applied the technique of structural equation model in an attempt to consolidate its multi-dimensional nature so as to ascertain what factors contribute more to overall sector development. The primary purpose of the SEM is to evaluate how much of the model assumed by the researcher is supported by the data. The study uses confirmatory factor analysis to formalize the structural relationship of the observed variable used to construct the abstract theory of the latent variables. The model shows how well the latent variables are measured using the observed variables. The models are constructed using the four dimensions of the financial sector development namely, financial access, depth, efficiency, and stability.

The analysis is divided into two sub-sections, the first one analyses the cause-and-effect relationship between the indicators and the single dimension they represent, and the second sub-section analyses the relationship between the dimensions and the overall financial sector development.

5.4.1 Structural Equation Models of Individual Dimensions

This section shows the individual impact of indicators on their respective dimensions. It shows four different models for the four dimensions used to measure financial development.

Model - 1 Financial Access

The observed variables representing financial access are bank deposit and credit accounts per 1000 adults, post office deposit accounts per 1000 adults, bank branch and post office density per one lakh population. Among these five variables, demographic density of bank branches is found to have the highest loading of 1.18, which indicates that it is the most contributing variable and has a high association with the latent variable – access. The loading of all the variables is close to one, suggesting that the observed variables are able to explain the latent variable with less error, and all are significant at 1% level. One variable, the number of post offices per 100,000 adults shows a negative impact on financial access as over the period of time the number of post offices have reduced. The result of the model converges with the findings of the Financial Inclusion Index that improved infrastructure in the form of bank branches has led to increase in the penetration and usage of the financial services.

Fig. 5.1 depicts model of financial access generated by the software. It may be noted that the thickness of the lines represents the magnitude of the coefficients. Greater the magnitude, thicker is the line, and vice-versa. Green lines indicate positive effect and red lines indicate negative effect of the factor, as generated by the software. The equation for financial access is also software generated as per notations fed into the program.

The model is a good fit as can be seen from the measures of goodness of fit. The incremental indices of goodness of fit, namely, CFI, TLI and NFI, measure the improvement in the fit from its baseline, hence its desirable value is greater than 0.9. The absolute indices of goodness of fit, that is SRMR and RMSEA, measure the ‘badness of fit’ in the sense how far the model is from a perfect model, and so, the value should be less than 0.1. The model satisfies all the measures of fit and is found to be significant at one percent level. Accordingly, the following equation can be used to get the values of financial access, as follows:

FA = ~NA*FADAP1KA + FACRP1KA + FADEPO1KA + FABR1LP+FAPO1KA

Fig. 5.1: SEM Model of Financial Access

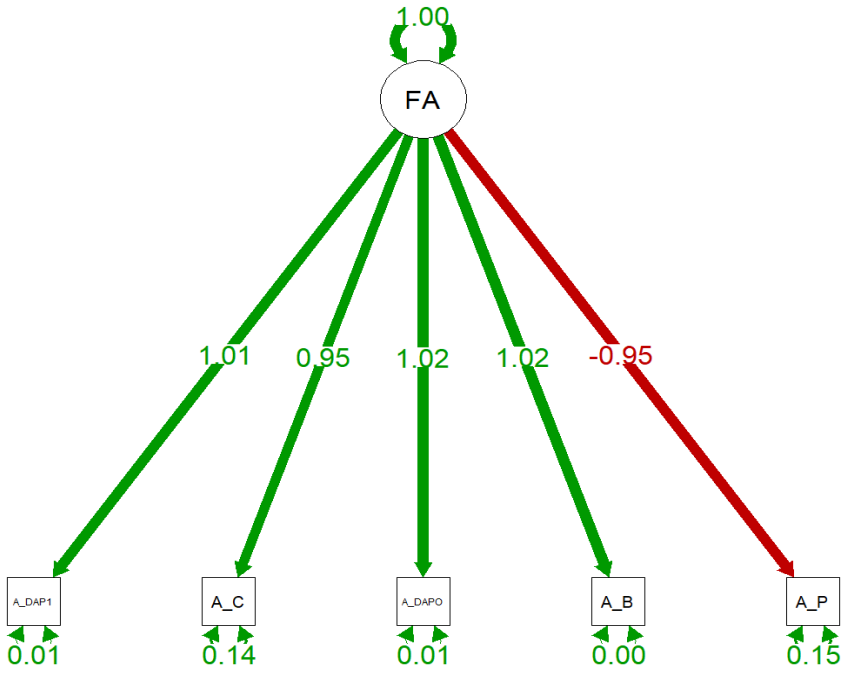

Table 5.12: Model of Financial Access

Factor Loading	Indicators	Measure of fit	Value	Model Acceptance Level
1.01*	**A_DAP1KA**	**Chi-square/DF**	5.080	**< 5**
0.95*	**A_CRP1KA**	**CFI**	0.920	**> 0.9**
1.02*	**A_DEPO1KA**	**TLI**	0.940	**> 0.9**
1.02*	**A_BR1LA**	**NFI**	0.907	**> 0.9**
-0.95*	**A_PO1LA**	**SRMR**	0.017	**< 0.1**
-	-	**RMSEA**	0.040	**< 0.1**
-		**P VALUE**	0.000	-

***Significant at 1%; **DF** = Degree of Freedom; **CFI** = Comparative Normed Fit Index; **TLI** = Tucker Lewis Index; **SRMR** = Standardized Root Mean Square Residual; **RMSEA** = Root Mean Square Error of Approximation; **A_DAP1KA** = Deposit Accounts per 1000 Adults; **A_CRP1KA** = Credit Accounts per 1000 Adults; **A_DEPO1KA** = Deposit Accounts of Post Office per 1000 Adults; **A_BR1LA** = Branches per 100,000 Adults; **A_PO1KA** = Post Offices per 100,000 Adults

Model – 2 Financial Depth

The observed variables representing financial depth are broad money, bank deposits, bank credit, bank assets, bank credit to commercial sector, stock market capitalization and stock traded value, all taken as a ratio to GDP.

All the indicators of depth related to banks used in the model have almost the same factor loading of 1.02, and among the indicators of financial market, market capitalization shows factor loading of 0.95 and while total value traded is found to have negative impact on the financial depth. These findings imply that all the indicators related to financial institutions are equally and significantly associated with the latent variable, depth, and contribute to explain it reasonably well. Also, financial market indicator of depth is found to contribute to the depth dimension, although less than banking indicators.

The measures of goodness of fit – the absolute and incremental indices – are found to lie in the acceptable range, and hence, the model can be considered as a good fit, and is found to be significant at 1% level. Fig. 5.2 and Table 5.14 present the findings.

Fig. 5.2: SEM Model of Financial Depth

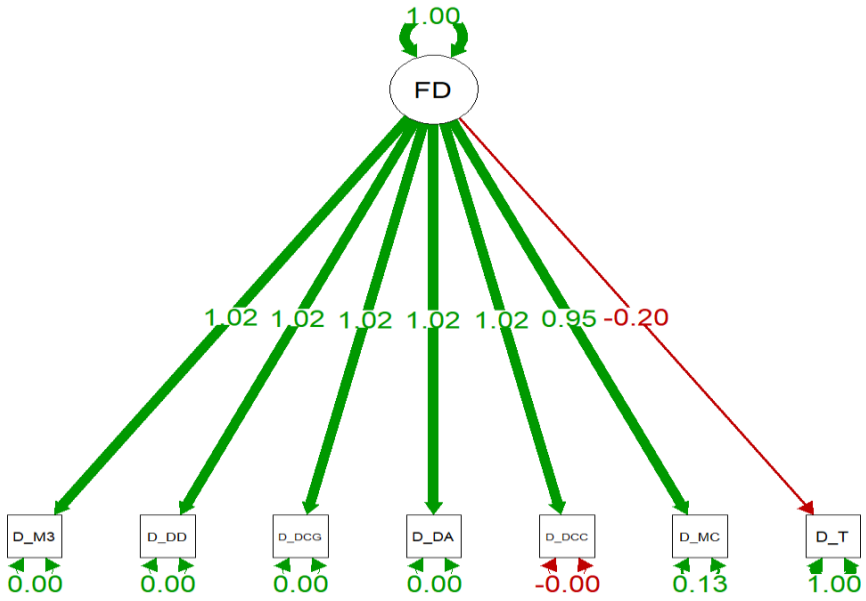

Table 5.13: Model of Financial Depth

Indicators	Factor Loading	Measure of Fit	Value
D_M$_3$GDP	1.02*	**Chi-square/DF**	4.82
D_BDGDP	1.02*	**CFI**	0.924
D_BCGDP	1.02*	**TLI**	0.886
D_BAGDP	1.02*	**NFI**	0.907
D_BCCGDP	1.02*	**SRMR**	0.031
D_MCAPGDP	0.95*	**RMSEA**	0.099
D_TVTGDP	-0.20*	**P VALUE**	0.000

* Significant at 1%; **D_M$_3$GDP** = M$_3$ to GDP; **D_BDGDP** = Bank Deposit to GDP; **D_BCGDP** = Bank Credit to GDP; **D_BAGDP** = Bank Asset to GDP; **D_BCCGDP** = Bank Credit to Commercial Sector to GDP; **D_MCAPGDP** = Market Capitalization to GDP; **D_TVTGDP** = Total Value Traded to GDP

Based on the results of the goodness of the model fit, financial depth can be measured by means of the following equation.

FD = ~NA*D_M3GDP + D_BDGDP + D_BCGDP + D_BAGDP + D_BCCGDP + D_MCAPGDP +D_TVTGDP

Model – 3 Financial Efficiency

The variables used to represent financial efficiency in the model include non-interest income to total income, total income to operating expenses, return on equity, return on assets and stock turnover ratio. Fig. 5.3 depicts the factor loading of each variable.

Fig. 5.3: SEM Model of Financial Efficiency

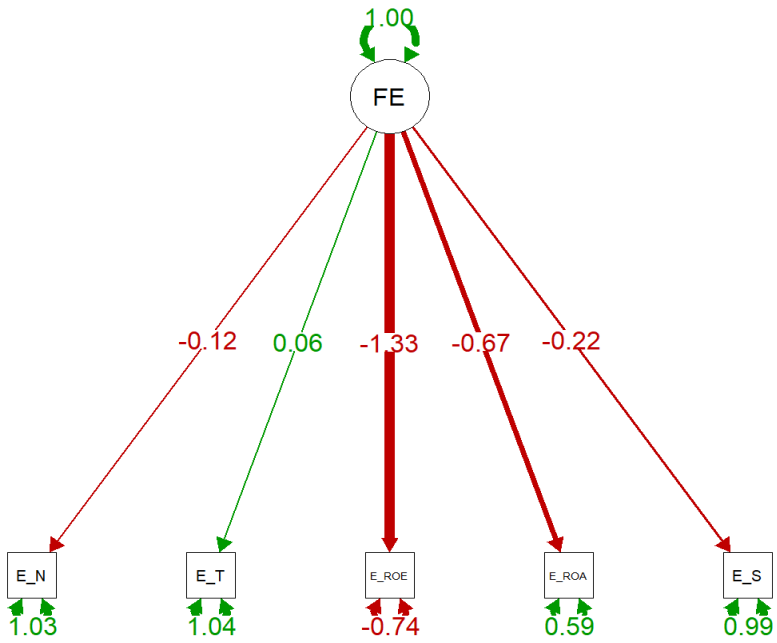

Table 5.14: Model of Financial Efficiency

Indicators	Factor Loading	Measure of fit	Value
E_NINTI	-0.12	**Chi-square/DF**	3.392
E_TIOE	0.06	**CFI**	0.729
E_ROE	-1.33*	**TLI**	0.459
E_ROA	-0.67*	**NFI**	0.687
E-STR	-0.22	**SRMR**	0.165
-	-	**RMSEA**	0.316
-	-	**P VALUE**	0.005

***Significant at 1% level; **E_NINTI** = Non-interest income to total income**,**
E_TIOE = Total income to operating expense; **E_ROE** = Return on equity;
E_ROA = Return on asset; **E_STR** = Stock turnover ratio

All the indicators except total income to operating expense show a negative impact on the financial efficiency. The reason behind the negative impact is that ROE, ROA and stock turnover ratio have declined over the study period, and non-interest income to operating expense has had a flat trend over the period. Only ROA and ROE have statistically significant loading.

Over and above these, there are other indicators like net interest margin and interest expense to deposit used in the present study to measure efficiency but they are excluded in this particular examination. The reason is that in the case of these indicators, a falling trend represents improvement in efficiency, which is creating convergence error in running the model on their inclusion.

The findings of this model substantiates the results obtained in the analysis carried out in chapter 4 which show that while there is a mild improvement in the intermediate cost efficiency and operating efficiency, there is very poor performance as far as profit efficiency is concerned. Table 5.15 shows that only one criteria – chi-square based goodness of fit – is satisfied, while all other values are outside the acceptable range. Hence, the model is not a good fit and this outcome is found to be significant at 1% level.

FE = ~NA* E_NINTI + E_TIOE + E_ROE + E_ROA + E_STR

Model – 4 Financial Stability

The indicators of financial stability are bank credit to bank deposit ratio, bank z score, capital adequacy ratio, non-performing loans to gross loans, provision coverage ratio and stock price volatility. All, except the NPL ratio and stock price volatility, show negative impact on financial stability. This is because both the ratios have declined over the study period implying that they have been favourable for financial stability. The other indicators have either behaved unfavourably or they have registered very mild improvement, not amounting to much impact. For instance, the capital adequacy ratio has a predefined range as prescribed in the Basel Norms and accordingly the CAR are lying within the range of 10-15. For this reason, the CAR is found to show negative impact in the model.

The model is not found to be a good fit on most of the criteria.

Fig. 5.4: SEM Model of Financial Stability

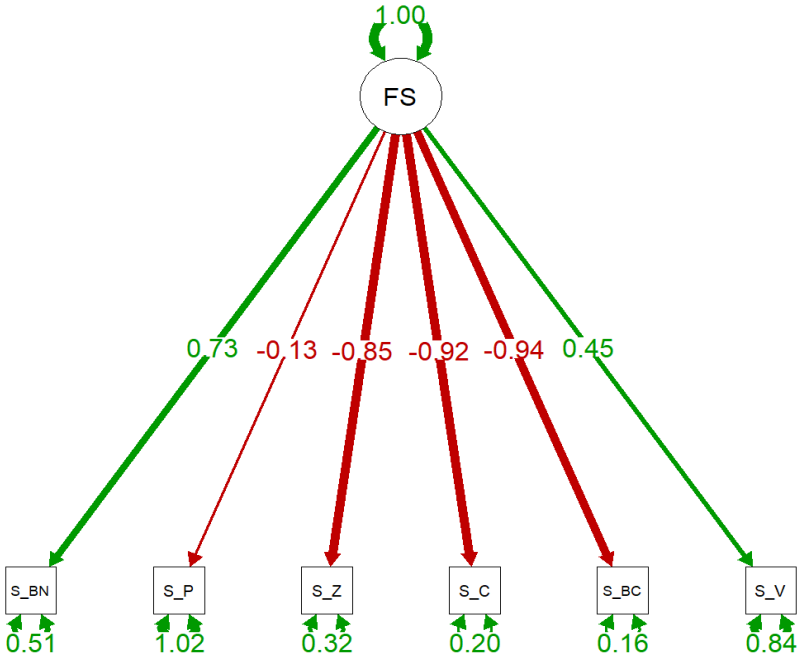

Table 5.15: Model of Financial Stability

Measure of Fit	Value	Indicators	Factor Loading
Chi-square/DF	4.5	**S_BNPL**	0.73*
CFI	0.676	**S_PCR**	-0.13
TLI	0.460	**S_ZSCORE**	-0.85*
NFI	0.639	**S_CAR**	-0.92*
SRMR	0.155	**S_BCBD**	-0.94*
RMSEA	0.382	**S_VOL**	0.45
P VALUE	0.000	-	-

* Significant at 1% level, **BNPL** = Bank Non Performing Loans; **PCR** = Provision Coverage Ratio; **CAR** = Capital Adequacy Ratio; **BCBD** = Bank Credit to Bank Deposit; **VOL** = Stock Price Volatility

FS = ~ NA*S_BNPL + S_PCR + S_ZSCORE + S_CAR + S_BCBD + S_VOL

5.4.2 Structural Equation Model for Financial Sector Development

It may be noted that the analysis carried out in this section is preliminary and in the nature of exploration to see if a structural model of the entire sector development can be built with the required statistical reliability. It may be borne in mind that the studies reviewed from the related literature contains application of SEM technique to single constructs of some aspect of financial sector, such as, financial literacy, inclusion, and access.

In the context, the present study has attempted to bring the four dimensions together to build the financial sector development model. However, because of the problem of non-convergence related to the models of efficiency and stability, the attempt is only partially successful. The lack of convergence is on account of the nature of the values of the indicators of efficiency and stability which are different than those of access and efficiency. Several attempts to transform the data related to efficiency and stability could not resolve the problem of non-convergence. Under such circumstances, combining all the four dimensions together fails to generate the required statistics as the models of efficiency and stability were not found to be good fit under the SEM technique. Therefore, the study proceeds with the structural models of two dimensions, access and depth which converge with each other.

The current section presents the outcome of this attempt. The model that is constructed here is to be taken as preliminary finding, where two dimensions, access and depth have been brought together to see if together they show significant contribution to financial sector development.

Model 1 refers to the model of financial access (FA), Model 2 refers to the model of financial depth (FD) and model 3 refers to the model of financial sector development (FSD) which is built on Model 1 and 2. The equations given below represent these models.

FA = **~NA*FADAP1KA** + **FACRP1KA** + **FADEPO1KA** + **FABR1LP**+**FAPO1KA**

FD = ~NA*D_M$_3$GDP + D_BDGDP + D_BCGDP + D_BAGDP + D_BCCGDP + D_MCAPGDP +D_TVTGDP

FSD = ~ FA+FD

The combined models of access and depth which make up the financial sector development model as generated by the software is shown in Fig. 5.5. As can be seen in figure, the factor loading value of financial access is 5.15, which represents its contribution to financial sector development. The factor loading value of financial depth is 3.58, which shows its contribution to financial sector development. In other words, access has higher contribution than depth towards financial sector development. Both are statistically significant.

Fig 5.5 SEM model of FSD on FA and FD

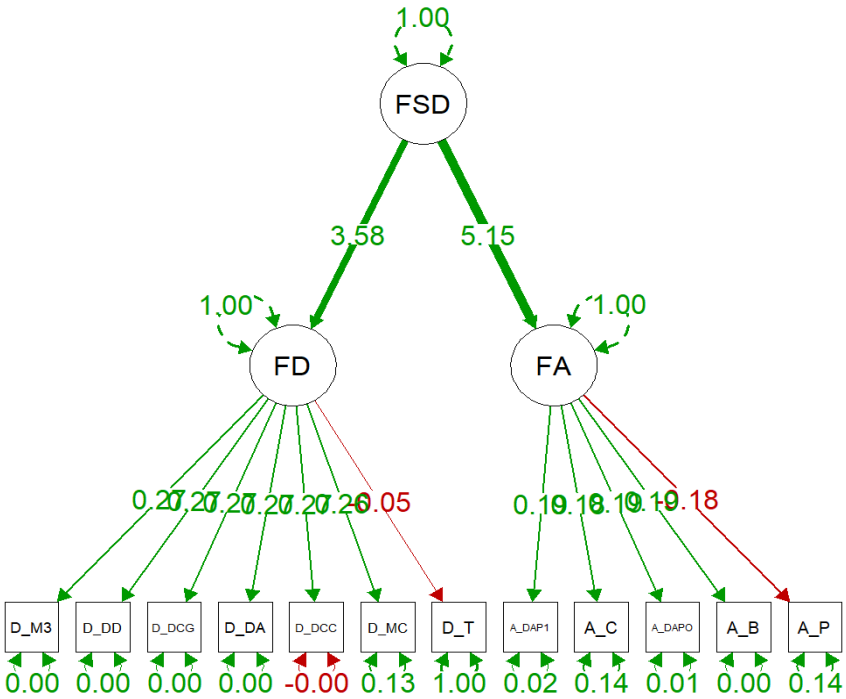

Table 5.16 Model of FSD on FA and FD

Measure of fit	Model 1	Model 2	Model 3
Chi-square/DF	5.12	4.24	5.06
CFI	0.89	0.889	0.91
TLI	0.763	0.267	0.373
SRMR	0.052	0.06	0.071
RMSEA	0.428	0.367	0.412
P VALUE	0.000	0.002	0.000

It can be seen in Table 5.17 that not all goodness of fit measures are satisfied, although that is not the requirement. But CFI, for instance, in the case of Model 1 falls marginally short of the lower limit of 0.9. Likewise, for Model 2 also the CFI value is 0.889, which is marginally lower than 0.9. The SRMR value also breaches the limit of 0.05 marginally. However, based on chi-square test and CFI, it may be concluded that the model is a good fit.

Thus, while the results are not entirely robust, they may be interpreted as preliminary findings, which can form a base for further inquiry with better data sets. The preliminary findings suggest that access and depth together form major contributors to the development of the Indian financial sector.

5.5 CONCLUSION

The in-depth analyses carried out in the preceding sections clearly bring out the vibrancy of the Indian Financial Sector and highlight the intricacies of the inter-connectedness of various aspects of financial institutions and markets, which is missing in the literature, particularly, on India. It may be noted with reference to the hypotheses enumerated at the beginning of this chapter, that a well-developed financial sector implies that increased access and depth would be associated with improved levels of efficiency and stability. Table 5.17 provides the summary picture of the inter-relationships between indicators and dimensions of financial development in terms of correlations.

The '✓' mark implies the correlations have the desired sign and are statistically significant. It may be kept in mind that in some cases positive correlation would be the desired outcome while in others it could be negative. Therefore, the '✓' mark only indicates the correctness of the correlation but does not specify the sign of the correlation. The '(✓)' mark implies that though the correlations have the desired sign, they are not statistically significant. The '✕' mark means the correlation coefficients do not appear with the expected sign but are statistically significant. The '(✕)' mark indicates the coefficient neither bear the expected sign nor are they found to be significant. Other measures are not found to have any meaningful association. While access and depth are dimensions, other variables are indicators of efficiency and stability. This is because the outcomes related to *all* indicators of access and depth are the same.

Table 5.17. Summary Findings of Intra and Inter-Dimensional Linkages of Financial Institutions

Dimensions	Access	Depth	NIM	IE/DEP	BOC/TA	TI/OE	NII/TI	ROA	ROE
Access	✓	✓	✓	✓	✓	✓	-	✕	✕
Depth	✓	✓	✓	✓	✓	✓	-	✕	✕
BCBD	✓	✓	(✓)	✓	✕	✓	-	-	(✕)
Z	✓	✓	(✓)	✓	-	✓	-	✓	✓
NPL	-	(✓)	-	✓	✕	✓	(✓)	✓	(✓)
PCR	-	-	-	✓	✕	✓	✓	-	-

IE/DEP: Interest Income to Deposit Ratio; BOC/TA: Bank Overhead Cost to Total Assets;
TI/OE: Total Interest to Operating Expenses; NII/TI: Non-Interest Income/Total Income;
BCBD: Bank Credit to Bank Deposit Ratio

It can by summarized that intra as well as inter linkages of access and depth have the correct sign for correlation coefficients and are statistically significant. Increased financial access is found to be associated with increased financial depth. Increased access and depth are also found to be associated with improved intermediation cost efficiency (NIM, and IE/DEP) and

improved operational efficiency (BOC/TA and TI/OE). However, the increased spread and depth of the financial sector is found to be negatively associated with profit efficiency (ROA and ROE).

With reference of stability measures, increased access and depth have come along with improved stability in terms of bank credit to deposit ratio and bank z score. All stability measures are found to be correctly associated with intermediation cost efficiency (IE/DEP) and operational efficiency (TI/OE). Stability indicators, z score and NPL are found to be associated with profit efficiency measures as hypothesized with the correct sign and significance, except NPL and ROE.

In the matrix above, the financial sector of India is found to have reinforcing dimensions in the case of 52 percent of the pair-wise associations. With reference to financial markets, represented by stock market dimensions, there is much to desire in terms of deepening of trading activity even as market capitalization has increased substantially.

Apart from the intra and inter-dimensional linkages, the robustness of the findings have been checked by using the SEM approach to financial sector development. The results reveal that the models of financial access and depth satisfy all goodness of fit tests and the two together form important components of overall financial sector development. Efficiency and stability related models were not found to be good fit, although some indicators of both had positive and significant factor loading values. While the findings based on the use of SEM approach are to be treated as preliminary results which can be improved with better data sets, they do help in establishing the robustness of the results obtained in earlier sections and chapters of the present study.