CHAPTER – VI

Measuring Financial Sector Development

6.1 Introduction

There is growing consensus amongst economists that a sound financial system is quintessential for growth and development of any economy. There has been considerable debate in the literature on whether bank based (German-Japanese model) or market based financial system (Anglo-Saxon model) can help in a better way to achieve the growth objective (see Allen and Gale 2000). Nevertheless it can be safely argued that financial intermediaries and financial markets have a mutually reinforcing role in the overall development of financial system. Well-functioning financial systems helps to mobilize household savings, allocate resources efficiently, diversify risk, induce liquidity, reduce information and transaction cost etc. Experiences of developed countries suggest that their sound financial system contributed immensely in the growth process of those economies.

For policy prescription, we believe, after more than a decade of regime shift, now it is the right time to review dispassionately what we aspired and how much we achieved? Thus the objective of this chapter is to develop a well conceived indicator that will point to both quantitative and qualitative development of Indian financial system alone with its relative status among the fastest growing economy of the world. Present chapter is broadly divided into six sections. In first section, we would like to discuss the theoretical underpinning and empirical evidences suggesting the relationship between finance and development. Problems of measurement of financial development are the subject matter of second section. Third section mainly deals with methodological issues directly related with the construction of index. Extent of development of Indian financial system in absolute terms have been discussed in the forth section. Fifth section deals a comparative analysis of India in relative terms with fast growing economies. We will sum up our discussions in the final section.

6.2 Finance and Development

Research works on finance and development broadly centre around three major issues: (1) Is it realistic to assume that financial system influences the growth process of an economy, if yes (2) What is the nature of relationship between this two? Is it unidirectional, bi directional or there is a reverse causality? (3) How findings of the studies help LDCs with all its typical features to design its own growth strategy. Seminal work of Goldsmith (1969) inspired a number of

researchers to review the interrelationship between finance and development. McKinnon (1973) and Shaw (1973) fleshed out earlier work of Goldsmith to explain the intricate relationship between these two. According to Lynch (1996) the McKinnon and Shaw analysis injected life into the financial development debate and encouraged both theoretical and empirical contributions from young economists, most of whom supported their thesis. Authors like Green Wood and Jovanovic (1990) and King and Levine (1993) developed financial models to explain how financial sector services contribute to economic growth.

However, debate over causal relationship between finance and development is inconclusive. While some studies suggest that causality runs from finance to growth, some argues that there is a bi-directional causality ,while others opine that there is reverse causality[Jung (1986) Demetriades and Hussein (1996), Luintel and Khan (1999), Calderon and Liu (2003) and Favara (2003)].In a related work. (Fritz 1984; Jung 1986; Dee 1986) suggested that the developing countries rather have a supply-leading causality pattern of development than a demand following pattern.

Levine (1997) is absolutely correct when he argues that there are some severe analytical problems while linking financial development to economic performance. Undeniably, some non-financial factors influence functioning of financial system. Changes in technology (Merton 1992), non-financial sector policies like fiscal policies (Bencivenga and Smith 1991), the legal system (La Porta et al 1996), political changes and human resources development, influence financial system thereby growth (Outreville 1999).

True that most studies confirm the existence of a positive nexus between finance and development but counter evidences can hardly be ignored. In an altogether different environment of less developed country Lucas (1990) questioned applicability of the theory "financial development leads to growth" in LDCs. Some studies have gone so far as to challenge the notion of a positive nexus by claiming that banking development in reality may arrest economic growth. Ram (1999), has argued that the result pertaining to the finance-growth nexus are, at best, uncertain and ambiguous. Khan and Senhadji (2003) have similarly demonstrated that certain banking development indicators become statistically insignificant when growth equations are estimated through the use of panels. Interestingly study of Zhang (2003) revealed that there is a significantly – negative connection between banking development and growth. Arestis et al (2001) argued that stock markets and banks are clearly substitutive sources for corporate finance – when a firm issues new equity, its borrowing requirements from the banking system decline. From this view point, it seems that the relationship between bank development and growth may therefore, not be so robust.

In a more recent study, Wachtel (2003) and Driffill (2003) have argued that empirical literature has not yet adequately explained what happens when financial development causes growth. The specific mechanisms that relate financial development to changes in the behaviour of economic agents are still a mystery.

At the end, passion of policy makers for liberalization of financial system for better mobilization and allocation of resources suggest that they have an unshaken believe on the theory "robust financial system leads to rapid growth".

6.3 Measurement Problems

How financial development influences growth? Answer of this query largely depends on robustness of the model used to measure the state of development of financial system. Quantity indicators based on monetary and credit aggregates are the traditional measures of financial development and deepening.[1] These simple measures do not necessarily capture the different structural and institutional details of what is broadly meant by financial development. The financial structure of a country is composed of a variety of markets and financial products, and it is difficult to conceive of a few measures that could adequately capture all relevant aspects of development (Lynch 1996).

The standard quantitative indicators may at times gives a misleading picture of financial development. For instance, although a higher ratio of broad money (M2/GDP) is generally associated with greater financial liquidity and depth, the ratio may decline rather than rise as a financial system develops because people have more alternative to invest in longer term or less liquid financial instruments (Lynch 1996).

From early 90's, there is a relentless effort by economists to develop a more sophisticated, well conceived method to capture all the complexities involved in the measurement problem. Among others, King and Levine (1993, 1999) contribution in this area deserves special attention. A number of researchers subsequently enlarged, revised and enriched the measurement concept of King and Levine. Going beyond the standard quantitative indicators, Gelbard and Leite (1999) used measures of market structure, financial structure, financial products, financial liberalization, institutional environment, financial openness and monetary policy instruments to construct a comprehensive index for thirty eight sub Saharan African countries for 1987 and 1997. Similarly Abiad and Mody (2003) developed an index for a twenty four year period from 1973 to 1996 for thirty five countries.

[1] Goldsmith (1969) used a set of measures, which he called, the financial interrelation ratio' in tracing the close relationship between the financial sector and economic development in a cross country analytical framework over a period of 1860-1963.

They examined six measures of policy liberalization in the area of credit control, interest rate control, entry barriers, regulations and securities markets, financial sector, privatization and restriction on international financial transactions. But the definition of the variables used, its interrelationship and estimation method are not beyond criticism. Considering limitations of earlier studies, we attempt to develop a single valued aggregate index that would be convenient for a simple and comparative study.

6.4 Methodology and Data Source

Measuring financial sector is a complicated procedure since there is no concrete definition as to what financial development is.[2] An index of financial sector development as argued quite rightly by Bandiera et.al. (2000), should attempt to measure both the various aspects of the regulatory and the institution building process. Among numerous indicators that are commonly used to measure financial sector development [Beck, Demirguc-Kunt, Levine (1999), Kelly R.G. Marvotas (2001) P.R. Lawrence I.S. Longjam (2003), Devid Lynch (1996), King and Levine (1993) and Levine (1997)], we will focus on four important ratios. These are ratio of (i) commercial bank assets to total banking sector assets (CBAB) (ii) liquid liabilities of the financial sector to gross domestic product (LLY) (iii) private sector credit to gross domestic product (PVCRD) and (iv) Stock Market Capitalization to G.D.P. (STCAP).

The first measure is commercial bank assets vis-à-vis Central bank assets and is denoted by CBAB. This is the ratio of the assets of commercial banks to the total assets of the banking sector. The importance of the variable lies with the fact that commercial financial intermediaries are virtually responsible for identifying profitable investment, monitoring managers, facilitating risk management and mobilizing savings as compared to the central bank. The ratio indicates how much freedom commercial bank enjoys relative to central bank in allocation of resources.

The second measure of financial development is 'liquid liabilities' denoted as LLY, which is a traditional measure of financial sector development. LLY is defined as currency plus demand and interest bearing liabilities of financial intermediaries and non-bank financial intermediaries as a percentage of GDP. This is the broadest indicator of financial intermediation and a typical measure of financial depth.

The third measure is 'private credit' and is denoted as PVCRD. This is equal to the value of credit by financial intermediaries to the private sector divided by GDP. This measure includes all the credits that are issued to the private sector by all the financial institutions. Thus PVCRD

[2] There is no precise definition in the literature of 'financial development'. But as Fry (1978) notes, the key to financial sector development is the reduction and ultimately unification, of the fragmented financial market.

gives the degree of financial intermediations and measures the financial resources provided to the private sector through loans, purchases of non-equity securities and trade credits etc.

The fourth indicator is the stock market capitalization to GDP ratio, denoted by STCAP, which equals the value of listed shares divided by GDP. This indicator is influenced by market liquidity, growth and risk diversification.

We prefer to adopt the methodology developed by Lawrence and Longjam (L.L.) comparative analysis using four separate indicators and subsequently a single valued index which will reflect the state of financial development of India.

The construction of an index is cumbersome. However, we followed the steps articulated by L.L. We used the representative index computed by LL with the assumption that financial indicators are correlated with per capita income (See Appendix-I). LL has computed the index by taking weights equal to the co-efficient of the simple linear regression with the four variables against per capita income growth for the high income OECD countries'[3]. Thus index for financial sector development : —

$$\mathbf{IFD = 0.124\ CBAB + 0.307\ LLY + 0.348\ PVCRD + 0.22\ STCAP}$$

Though some researcher used principal component analysis (Demirguc Kunt and Levine 1999) or simple average (Gupta 1987) to find the representative index. While principal component analysis gives the vector with maximum variances, it makes sense, if appropriate weights are assigned which is equal to the co-efficient in the simple linear regression of the variables against per capita income growth.

The two important indicators as per the relative weights in the IFD equation are PVCRD and LLY. Average value of these two indicators for the period 1990-2001 were plotted against the per capita real GDP in US dollar (1985 base year) of 33 countries belonging to both developed and developing economy. At least the movements of these two important indicators support the assumption that there is a positive relation between growth and financial development.

[3] For each variable, the regression run against per capita income growth in two ways, (i) mean variable across countries in each year and (ii) mean variable overtime for each OECD country. In the first case, per capita GDP growth is year to year growth rate while for the second one, per capita GDP growth is the co-efficient of time in the linear time-trend regression of semilog GDP 40 annual data point, each data point being the mean across OECD countries has been considered in the first case while 28 data point for 28 OECD countries, each being the mean over time has taken into consideration for the second case.

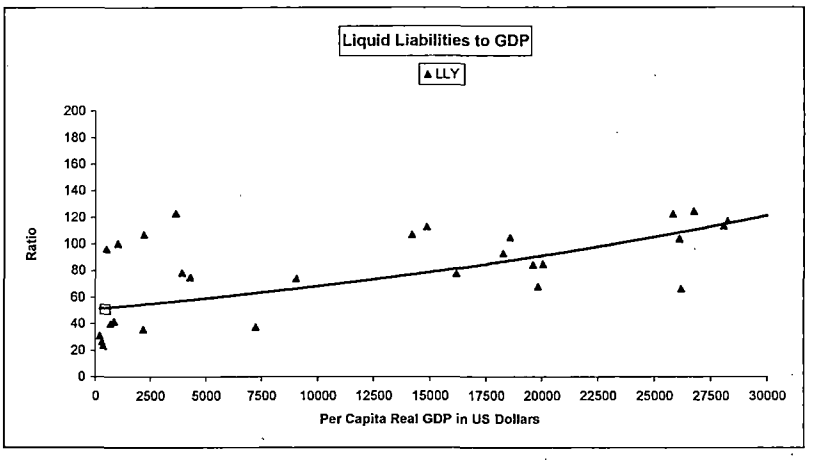

Fig. 6.4.1

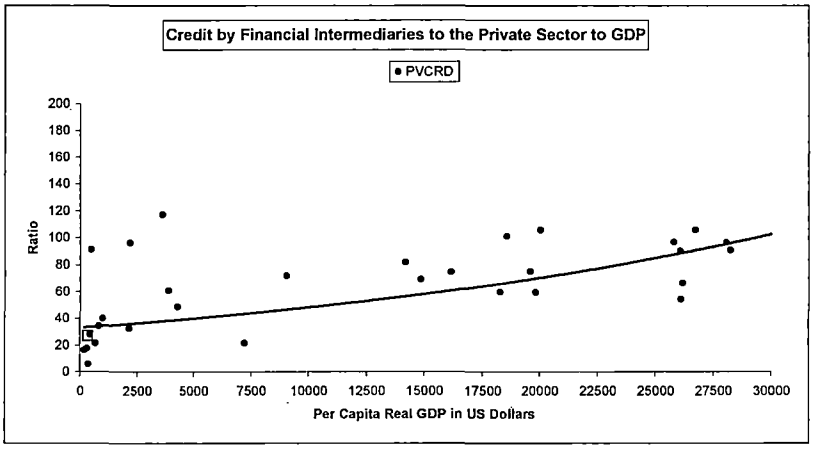

Fig.6.4.2

Countries

ARG
AUS
AUT
BGD
BEL
BRA
CAN
CHL
CHN
COL
DNK
EGY
FIN
FRA
GHA
IND □
IDN
ISR
ITA
JPN
KOR
MYS
NPL
NLD
NZL
PAK
SGP
ESP
LKA
SWE
THA
GBR
USA

However, simply based on the scattered diagram, it would be unwise to draw any conclusion regarding the nature of relationship that exists between this two, Rigorous econometric analysis is essential to suggest any relation and the nature of causation between finance and development. However, at this stage, ignoring the above query, we concentrate on the measurement aspect of the development of financial system of India.

The main data sources are World Development Indicators, IMF's International Financial Statistics, Global Development Finance, RBI bulletin, Bombay Stock Exchange Annual Reports besides the paper of Peter Lawrence and I. Longjam (2003)[4].

6.5 Financial Development in India: Empirical Evidences

In the figure 6.5.3, we have shown the performance of Indian financial sector from 1980-2004 and putting the values of the four indicators in the IFD equation we got the index score for India during the period.

Index score with some gyration moved slightly upward in the post reform period beginning from 1991. However, simply study of single value aggregate index is insufficient, thus an immaculate analysis of the movement of individual indicator is essential for policy prescription. Upward trend of CBAB after regime shift indicates increasing autonomy by commercial banks in the allocation of societal resources. STCAP whose coefficient value is minimum in the IFD index grew stupendously in the post reform period, followed by a stagnant private sector credit (PVCRD) and LLY—two variables whose value in the coefficient of IFD is maximum. These trends essentially defies the theory of financial economics that suggest more the private sector activities greater will be the value of market capitalization.

[4] The deflation of the variables where in a ratio are taken care off; since stock variables are measured at the end of a period, the deflation is corrected by the end of the year CPI indices.

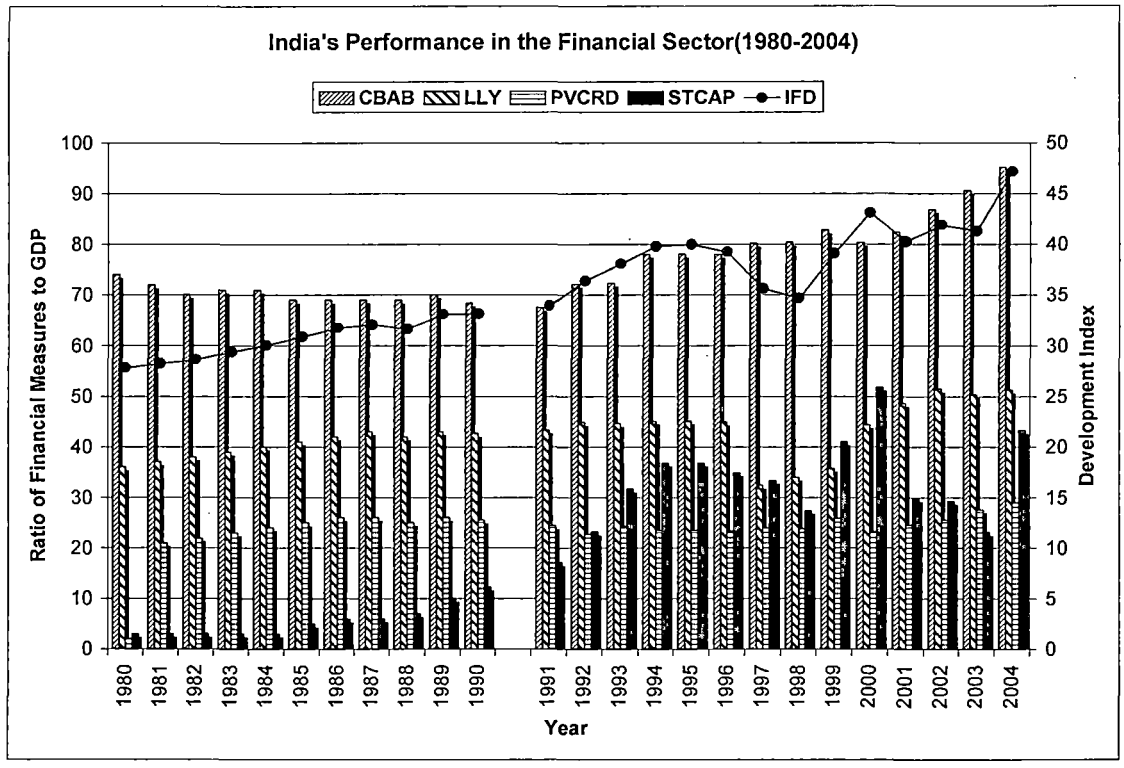

Fig. 6.5.3

To be more specific average value of four indicators with the growth rate of GDP during the pre and post reform period is shown below:

Table 6.5.1 Average Value of Major Indicators and Growth Rate of GDP

Period	CBAB	LLY	PVCRD	STCAP	IFD	GDP growth
Pre Reform 1980-90	70.47	40.27	24.77	5.54	30.58	5.9%
Post Reform 1991-04	80.14	43.92	24.50	32.78	39.21	5.4%

Thus tremendous rise in the low coefficient valued indicator STCAP pushed up the aggregate value of index though many indicators with high coefficient value remain constant in the post reform period which is reflected in the growth rate of the economy. Our study shows average value of three indicators for Malaysia is highest and the country may be treated as best, where as Argentina is the worst performer. A detailed description of the average value of all the indicators is given below:

Table 6.5.2 Average Value of Major Indicators in the Post-Reform Period

Period 1980-2002	CBAB	LLY	PVCRD	STCAP	IFD	GDP Growth
Malaysia	55.16	115.04	117.47	167.83	119.95	6.27%
Argentina	42.94	22.12	21.71	25.80	25.34	0.95%

Note: *STCAP is the period average of 1988 to2002.*

Highest value of three indicators (LLY, PVCRD, and STCAP) and an impressive CBAB of Malaysia suggest more competitiveness, greater liquidity, active stock market and supply of credit to private sector is encouraging and its contribution towards economic development is praiseworthy.

6.6 India and Fast Growing Economies: A Comparative Analysis

How India is performing in comparison with fast growing economy ? We intentionally avoided any such comparative analysis with developed economy, simply because it would be unwise. First ten countries according to average growth rate of per capita GDP (during the period 1992-1999) from East Asia Pacific region, South East Asia, Latin America and Middle East region were selected for a meaningful comparative analysis.[5] India's state of financial development was evaluated in the perspective of targeted countries.

Steps involved in the comparative analysis are : 1) Find smallest and largest values of each indicator during the entire sample period . This means that we select the best and worst performing economies for a relative comparison with respect to these benchmarks. 2)To measure the relative performance of each value ,we applied the following formulae:

$K_{it}^{*} = \frac{K_{it} - Min}{Max - K_{it}}$ Where K_{it} is the absolute performance of the i^{th} country in the year t and for variable *X*, if max and min are the largest and least values in the matrix of all values of countries against each year, then the relative performance of i^{th} country at t^{th} year is given by this formulae.

While selecting maximum and minimum value of each indicator from sample countries, we deliberately considered average value of the indicators (See Fig 6.6.4). Reasons for selecting average value as a measure of performance is, it helps to smoothen out year to year variation of select variables, which are rampant for most of the countries. Secondly, as timing of liberalisation

[5] First ten countries according to average growth rate of per capita GDP are in alphabetical order, Argentina (ARG), Chile (CHL), China (CHN) India (IND), Indonesia (IDN), Israel (ISR), Korea (KOR), Malaysia (MYS), Sri Lanka (SLK) and Thailand (THA).

varies which is supposed to influence development of financial system, any year to year measure of maximum and minimum value as a standard to judge relative performance may be misleading.

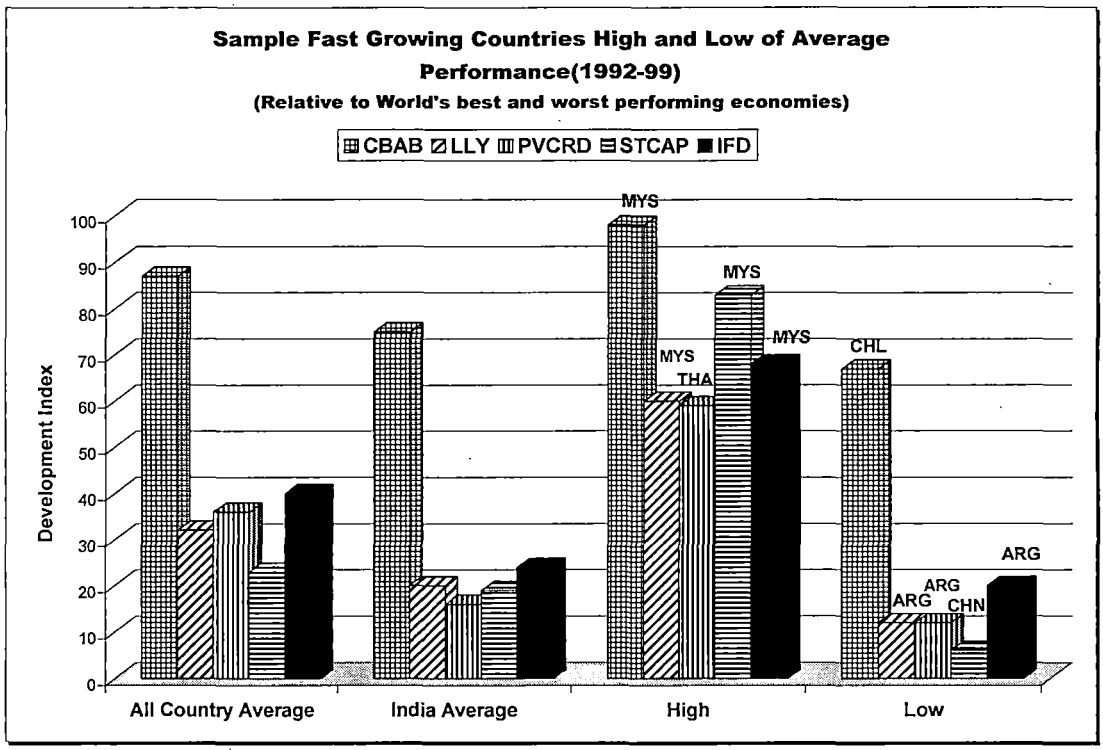

Fig. 6.6.4

We put the each year relative value of India on the scale of 0 – 100, with 0 being the least and 100 being the largest. Applying this technique, relative performance of India is shown in figure 6.6.5.

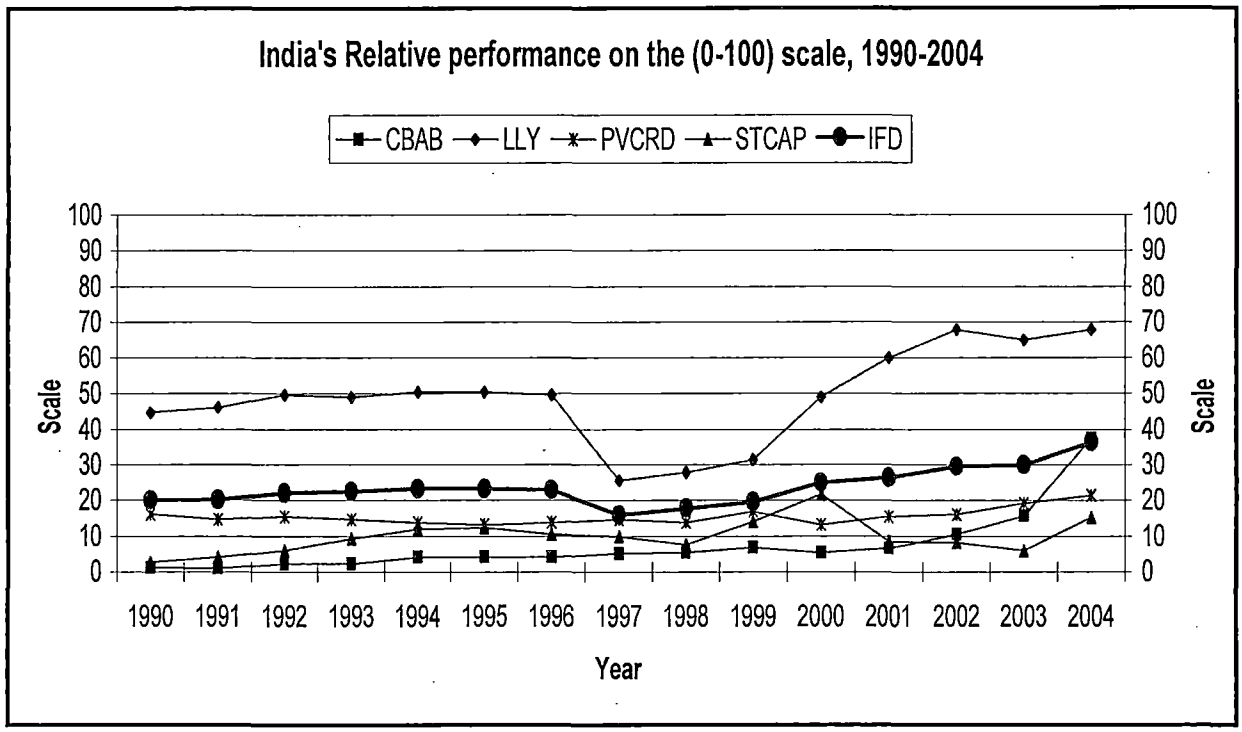

Fig. 6.6.5

Relative performance of Indian financial system in the post reform is also discouraging. IFD value reached 36 in the year 2004 but the period average is 24 only, which is far less than average of fast growing countries IFD, 40. In consonance with the findings of earlier section, CBAB shows a marginal upward movement, STCAP increased impressively, while PVCRD the most important variable remained stagnant, and LLY especially after 1999 raised nearly vertically. All these findings have some serious policy implications as it points to some inherent problems of Indian economy.

Conclusion

Both absolute and relative measure shows stagnating private credit that is detrimental for faster economic growth is a typical feature of Indian economy. Nearly all the South-East Asian countries performance with regard to this indicator is much more impressive than India. Greater autonomy to banks (CBAB), deepening of the financial sector (LLY), failed to accelerate private investment (PVCRD). Slow growth of private sector gradually contributing skepticism among economists (Rakshit, 2004, Marjit, 2005) who now believe that supply led growth strategy is indefensible either in theory or practice.

Appendix – I. OECD countries average and point to point measure. Coefficients of Linear Regression of the Variables against GDP, OECD Countries

Regression across countries (each data point is mean over time)		
Variables	**Coefficients**	**Relative weights**
CBAB	0.00000533	0.1245
LLY	0.00001314	0.3069
PVCRD	0.00001492	0.3485
STCAP	0.00000942	0.2200

Source: P. Lawrence and I.S. Longjam (2003/8) kerp.

Appendix -- II. Country List

Country Code	Country Name
ARG	Argentina
AUS	Australia
AUT	Austria
BGD	Bangladesh
BEL	Belgium
BRA	Brazil
CAN	Canada
CHL	Chile
CHN	China
COL	Colombia
DNK	Denmark
EGY	Egypt, Arab Rep.
FIN	Finland
FRA	France
GHA	Ghana
IND	India
IDN	Indonesia
ISR	Israel
ITA	Italy
JPN	Japan
KOR	Korea, Rep.
MYS	Malaysia
NPL	Nepal
NLD	Netherlands
NZL	New Zealand
PAK	Pakistan
SGP	Singapore
ESP	Spain
LKA	Sri Lanka
SWE	Sweden
THA	Thailand
GBR	United Kingdom
USA	United States

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