FINANCIAL DEVELOPMENT AND PUBLIC SECTOR PERFORMANCE IN INDIA

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1. Introduction:

To accelerate growth in many countries, Public Sector Reforms have been an important component of policy formulation. Public Sector Reforms consists of two distinct, but complementary approaches: **(a)** Public Sector Development Approach: this involves privatizing Public Sector Units (PSUs) and encouraging Private sector development both to enhance economic efficiency and to shrink the size of the public sector. **(b)** Corporatisation Approach: this involves enhancing managerial incentives and clarifying PSU budget constraints so that the PSUs become self-sufficient.

The mixed-economy nature of India had led to the allocation of huge amount of funds and resources to its PSUs since Industrial Policy 1956. Later on, when many of the units became sick, major steps were taken to retrieve them. Corporatizations of the PSUs began in the 1980s but were basically fruitless. It was claimed that this failure was mainly due to lack of good financial environment. However, the Public Sector Reforms since 1991 were attempted along with financial sector reforms and were supposed to be fruitful. The highlights of the reforms are as under:

Public Sector Reforms

i). Govt. equity has been brought down in all non-strategic PSUs to 26% or lower. Budgetary support to the PSUs has been progressively reduced.

ii). Potentially viable PSUs have been restructured and retrieved and those chronically sick have been referred to the BIFR.

iii). PSUs which cannot be revived has been closed down.

iv). Full protection of the interest of the workers has been looked upon and even when to reduce surplus labour in PSUs, proper VRS schemes have to be formulated.

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v). The existing system of monitoring public enterprises through Memoranda of Understanding (MOU) was strengthened with primary emphasis on profitability and rate of return. The real purpose of MOU is to manage PSUs by objectives rather than by return.

Financial Sector Reforms

Money Market Reforms:

i). Incremental net demand and time liabilities (DTL) and statutory liquidity ratio (SLR) has been reduced from 38.5% to 25%.

ii). The incremental cash reserve ratio (ICRR) of 10% has been abolished. RBI reduced the cash reserve ratio (CRR) from 15% to 5.5% to release funds locked up with the RBI for lending to the industrial and other sectors which were starved of bank credit.

iii). Interest rate slabs were gradually reduced from 20 to 2 by 1994-95 to stimulate healthy banking competition and encourage operational efficiency.

iv). Prudential system of recognition of income, classification of assets and provisioning of bad debts was undertaken to ensure that bank books reflect accurate and accepted accounting practices.

v). Capital adequacy norms were fixed at 8% by RBI in April 1992 and banks had to comply with them over a period of three years.

vi). Banking Companies Act was amended so that the banks could access the market for capital funds through public issues provided that govt. holding shouldn't fall below 51%.

vii). Commercial banks were allowed to open new branches and upgrade extension counters after obtaining capital adequacy norms and prudential accounting standards.

viii). New private sector banks were allowed to raise capital contribution from foreign investors up to 20% and from non-resident Indians up to 40%.

ix). Six special recovery tribunals were set up to facilitate and speed up the recovery of debt due to bank and financial institutions.

x). The traditional 91-days Treasury Bills were traded more frequently on weekly basis to make it popular and increase the participation of banks.

xi). New instruments were set up in the money market. The 182-days, 364-days and the 14-days treasury bills were introduced.

xii). Dated securities were sold on auction basis to develop a monetary instrument with flexible yields, to provide financial instruments to suit investor's expectations and to meet govt. needs directly from the market.

xiii). Repurchase auctions (Repos) were introduced since Dec'92 in respect of central govt. dated securities to even out sharp fluctuations in liquidity and rate of interest in the money market.

xiv). The Liquidity Adjustment Facility (LAF), the Certificates Of Deposits (CDs) and the Commercial Papers (CP) were reformed to suite changing needs.

Capital Market Reforms:

i). Securities Exchange Board of India (SEBI) was set up in 1998 and made statutory in 1992 to regulate all merchant banks on issue activity, lay guidelines and supervise and regulate the working of mutual funds and oversee the working of stock exchanges in India.

ii). Controller of Capital Issues (CCI) was abolished and SEBI took over its regulatory function. Hence, SEBI was given the power to regulate the new issues market and also the old issues market.

iii). SEBI also introduced a code of advertisement for public issues for ensuring fair and truthful disclosures.

iv). Merchant banking has been statutorily brought under the regulatory framework of SEBI.

v). Private mutual funds have been allowed to set up and were allowed to underwrite public issues.

vi). SEBI vets offer documents to ensure that all disclosures have been made by the company in the offer document.

vii). The Govt. allowed Indian companies to access international capital markets through dollar and euro equity shares.

viii). The Govt. also liberalized investment norms for NRIs and overseas corporate bodies so that they can buy shares and debentures without prior permission of the RBI subject to some norms.

ix). The Govt. allowed Foreign Institutional Investors (FII) such as pension funds, mutual funds, investment trusts, etc. to invest in Indian capital markets provided they are registered with the SEBI.

x). The Govt. also allowed many private companies in the insurance sector subject to some investment norms.

Having taken the various reformatory measures in the public sector, information about their performance suggests that the gross profit of the public sector has increased since the reforms. Many theories claim that their fruitfulness depends on the nature and efficiency of the financial sector. To assay these aspects, this chapter tries to establish a causal relationship between 'Public sector performance' and the 'financial environment' in India. While this chapter attempts to investigate whether development of financial sector promote successful public sector reform, it should be acknowledged that there is a causal relationship running both ways between financial development and public sector reform, and exogenous factors help determine the ultimate success of both public sector reform and financial reform. The second section of this chapter presents a conceptual approach to the linkage between public sector performance and financial environment. The third section proposes an econometric model and identifies variables for a formal statistical support of such linkages. In the fourth section, post-reform analysis is attempted to test whether public sector reforms attain success in a liberalized financial regime. The last section concludes stating the policy recommendations.

2. Public Sector Reforms and Financial Environment

Since public sector reform and financial reform are both long-run co-dependent reforms, they need to be coordinated. For the success of large scale public sector reform, financial reform is necessary because:

i). The financial system evaluates firms and allocates resources based on those evaluations,

ii). Financial; system mobilize capital from disparate savers through capital markets than depending solely on the treasury on the government, and,

Financial system, by proper monitoring, compels managers of the PSUs to act more in the interest of the firm claim holders (stock, bond, debt) otherwise managers might funnel firm resources to their own interest.

Privatization being an integral part of the public sector reforms, require, a friendly financial environment. This is brought about by a well-designed financial sector reform so that the financial sector is able to allocate resources efficiently, mobilize savings effectively and monitor PSU governance accurately. Specifically, to initiate financial sector reforms and to begin laying the foundation for future reforms, policy makers should begin liberalizing 'interest rate' and 'directed credit controls' along with improving the supervisory, legal and regulatory systems prior to the privatization of the PSUs. During PSU privatization, authorities should continue liberalizing and building a market oriented financial infrastructure and policy makers should remove impediments to financial intermediary development and initiate the

process of privatizing some national banks along with or soon after PSU privatization. Otherwise privatization with a poorly functioning financial system may prove disastrous.

The extent of stock market development helps determine available options for privatization. A well-developed stock market promotes privatizations by enabling public offerings. Making use of public offering to obtain widespread public ownership of enterprises requires a sufficiently liquid stock market to be able to absorb the new issues without negatively affecting the market as a whole. The existence of a well-developed stock market also makes it easier for the government to privatize, since privatization that lead to widespread public ownership are often potentially more acceptable to the public than sales to a small group of investors – particularly if the investors are foreign in nature. For example, in Turkey, block sales of PSUs to foreign investors were extremely controversial that led to charges that the government essentially gave away public assets to foreigners. But when the government decided to privatize by public sales through stock exchange, the public welcomed this change. In Mexico too, favoring a group of investors was highly criticized. In 1991-92, the government of India undertook limited disinvestments of a part of the public sector equity to the public. It was done through public financial institution and mutual funds in order to raise non-inflationary finance fort development.

Stock markets can play an important role in financing the privatization by complementing the banking system's ability to mobilize savings. Conversely, under-developed stock markets may hamper privatization. For example, Swanson and Wolde-Samait (1989) assert that one of the reasons for failure of the Ghanaian and the Senegalese privatization efforts was the lack of domestic equity market on which public share offerings could be floated.

Many countries with large PSUs have frequently exerted a strong hand in directing credit to favored PSUs and hence often created public banks to facilitate the mobilization of resources for the PSUs. In such a case, the public banks generally do not research and allocate credit on market criteria. In addition, the staff of public banks lack market based financial skills. To reform the PSUs, resources should be allocated on efficiency or market basis and this can be done by privatizing some public banks which will raise their efficiency due to rise in the level of competition and unwanted government interference. Allowing private banks to the financial market can also be highly effective in this aspect.

The financial system can also reduce adjustment costs. Newly privatized banks that need to be re-tooled will adjust and grow faster if financial markets can allocate capital quickly to promising firms. Similarly, by redeploying the assets of the bankrupted units efficiently, a sound financial system will reduce adjustment costs.

Again, the financial system will indirectly increase labour demand by accelerating private sector growth. Since unemployment is generally an common obstacle in the beginning of PSU reform, the financial system may pacify political pressures emanating from unemployment by boosting private sector labour demand.

PSU corporatization is also assisted by a market-oriented financial system by obliging newly corporatized firms to compete for financing with private firms. For corporatization to succeed, however, banks must be sufficiently strong and independent enough to reject loan requests from non-creditworthy PSUs and the government must credibly quell such expectations.

3. Econometric Investigation

Though other factors like political environment, labour market conditions, macroeconomy, legal system, openness to international trade determine the success of the PSU reform, the major determinant, as we argue, is the level of financial sector development. In this section, we try to investigate whether the financial sector reforms, which almost co-incided with the public sector reforms in India, have any contribution to the success of the PSU reforms.

Dependent and Independent variables:

a) To assay the conceptual arguments disused in the earlier section, the following variables are considered for an econometric analysis:

b) The **dependent variable** of the model is the ratio of the public sector profit (PSUP) to the Gross Domestic Product (GDP), i.e., $\mathbf{PSUP_t / GDP_t}$. Data for $\mathbf{PSUP_t}$ have been proxied by GDP of the Public Sector.

c) The **independent variables** are traditional measures of financial sector development. However, some additional variables generally determining the dependent variable are also considered. Some other ratios are also used as explanatory variables so that a comparative study can be made. Following are the independent variables:

i). To measure 'Financial Depth' we, like that of King and Levine(1993a,b,c), consider the ratio of liquid liabilities of the financial sector to the GDP. This indicates the degree to which the financial sector mobilizes domestic savings, so that larger depth should, in most cases, reflect greater financial development. Here the 'liquid liabilities' is proxied by M3 and hence the indicator is $\mathbf{M3_t / GDP_t}$.

ii). We use the ratio of Gross Fiscal Deficit (GFD) to GDP as a measure for how the public sector depends on the government. Since better developed financial markets along with lower govt. control make it

easier for firms to raise capital, lower values of $\mathbf{GFD_t / GDP_t}$ should reflect greater market-based financial development.

iii). To measure the importance of non-bank financial institutions, we compute the ratio of non-bank financial institutions assets (NBFIA) to total financial assets (TFA), i.e., $\mathbf{NBFIA_t / TFA_t}$ as has been used by Kunt & Levine (1996). Non-banks complement commercial banks and more often perform as their substitutes. Larger the value of NBFIA / TFA, greater should be the specialization and broadening of the financial system.

iv). Widening of the financial sector and its competitive efficiency can be measured by the ratio of number of foreign banks (FB) to the total number of banks (TB). Denoted by **FB /TB**, higher values of the indicator should reflect greater financial development. To assay the performance of the Indian banks, we consider the ratio of number of Indian banks (IB) to the total number of banks (TB). Denoted by **IB/TB**, higher values of the indicator should also reflect greater financial development. However, due to high multicollineariry among these two variables, we are unable to take them in our analysis. Instead, we consider their ratio **IB/FB** which shows their comparative importance in developing the public sector.

v). Government subsidies play a vital role in financing the PSUs. Reforming the PSUs would mean greater dependence on market-based finance than on government subsidies. The ratio of the government subsidies (GOV) to TFA, denoted by **GOV/TFA**, is taken as an indicator to measure the role of dependence of the PSUs on the government. Lower values of GOV / TFA would generally mean greater market-based finance and hence broadening of the financial sector. We consider 'gross financial assistance for capital formation to non-departmental commercial undertakings (public undertakings operated by autonomous corporation and companies)' as GOV. This is done in order to judge how such corporations and companies have utilized the fund.

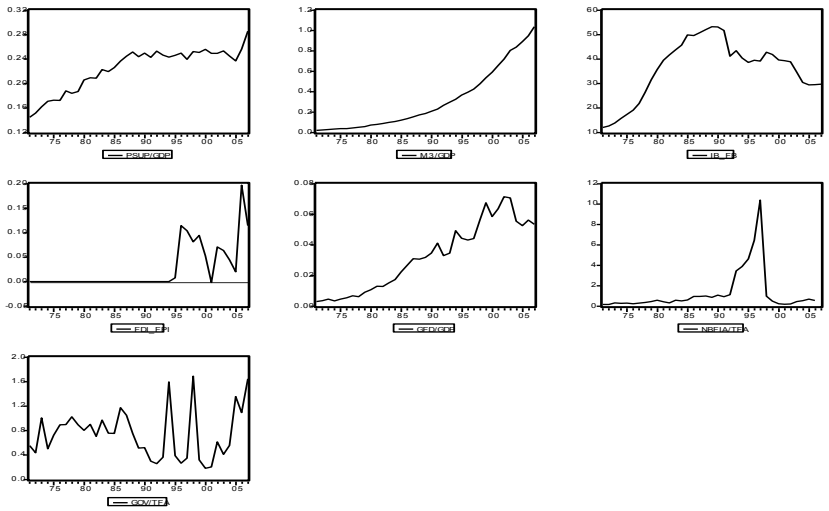
vi). The ability to attract sizeable foreign portfolio investment (FPI) also enhances the viability of privatization. The ratio of FPI to total public sector investment (INV), i.e., $\mathbf{FPI_t / INV_t}$ indicates the nature of financing for privatization through the stock market. The ratio of foreign direct investment (**FDI**) to INV also investigates the nature of its effect on the public sector. However, we have considered their ratio, i.e. **FDI / FPI** as an indicator of relative importance of direct and portfolio investments in the performance of the public sector in India.

Data and Nature of variables:

All the data has been collected from 'Hand Book of Statistics' Reserve Bank of India. The specification and notes on the data have been shown at the end of the tables. We have calculated the required ratios from the data as required. The data may be viewed in the *Data Appendix*[1] at the end of the thesis.[44]

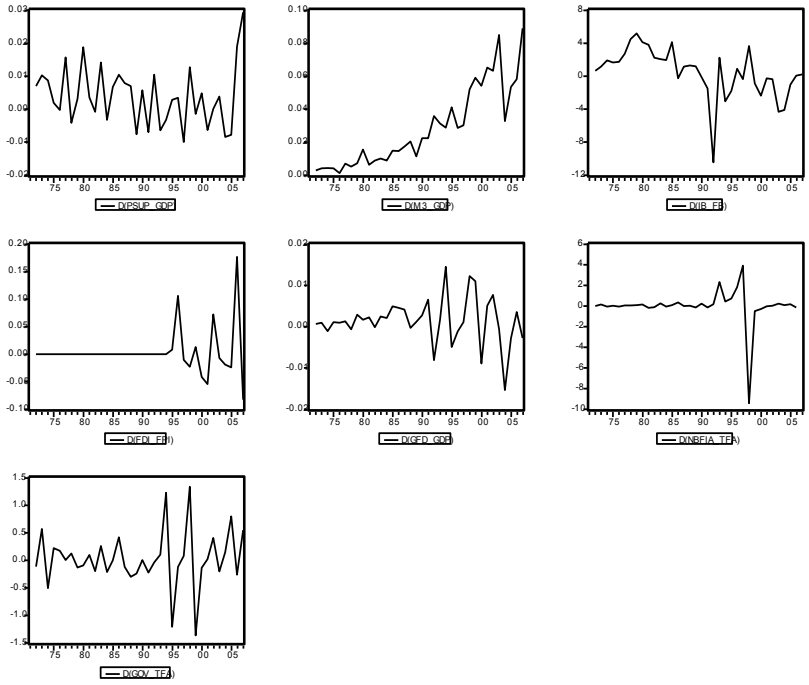
To know about the nature of the dependent and the independent variables, one might be interested at viewing their graphs. Moreover, due to the time series nature of the data, it becomes even more important to inspect them. We have shown the respective graphs in **Fig 4.1** as under. Inspection of the plots of most of the variables suggest linearly trended series, whether it is much less clear whether GOV/TFA is trended or not. Given that most variables appear to have non-constant means, it appears that they are non-stationary at levels. We are therefore to examine such variables at first differences. Plots of first differences, in contrast, show no evidence of changing means or changing variances. **Fig 4.2** depicts the plots of the variables at their first-differences. From these, we reach the tentative conclusion that most of the variables are integrated of order one i.e. I(1). Moreover, some of the variables appear to contain drift and time-trend components generating stochastic trends. However, the use of graphs is unreliable as they merely suggest the presence of unit roots. Hence, formal testing strategies of unit roots and co-integration are to be applied for the purpose of making meaningful inference.

Fig 1: INDICATORS: at levels



[44] Data Appendix: appendix displaying all data used in various analysis in this thesis.

Fig 4: INDICATORS: at 1st differences



Unit Root Testing

The above graphical analysis suggests that most of the variables might have unit roots and hence an Ordinary Least Square (OLS) regression may not yield meaningful results and a formal unit root testing procedure is to be applied. To test for unit roots we adopt two widely used tests – the Augmented Dickey-Fuller (ADF) test and the Phillips-Perron (PP) test. These tests have been discussed in detail in Statistical Appendix[2]. For space considerations, we only tabulate the results of the ADF and PP tests in Table 4.1 and Table 4.2 respectively. Both the tables show the various dependent and independent variables in column 1. The second column shows the state (whether at levels or in differenced form) a particular variable is taken for testing. The third and forth column show whether there is drift and trend in the data. Column 5 reveals the value of the estimated test statistic - ADF in case of Table 4.1 and PP in case of Table 4.2 along with the respective critical values in column 6. The seventh column of Table 4.1 shows the number of lags required to test the required equation suggested by Dickey & Fuller, whereas in case of Table 4.2, it is the truncation lag for PP statistic. On judging the null-hypothesis of

unit roots, the next column states whether there is unit roots in levels, 1st differences and 2nd differences. The inference of the tests is portrayed in the last column by stating the order of integration required to make the series stationary.

Table 1

Variable	at	drift	trend	ADF Test statistic	Critical value	lag	Unit Root?	Process
PSUP/GDP	Level	Yes	No	-3.341892	-3.6422	1	YES	I(1)
	1st difference	Yes	Yes	-8.647192	-3.5514	0	NO	
M3/GDP	Level	No	Yes	2.678522	-3.5386	0	YES	I(1)
	1st difference	Yes	Yes	-4.274087	-3.5426	0	NO	
NBFIA/TFA	Level	No	Yes	-3.500543	-3.5943	9	YES	I(1)
	1st difference	No	No	-6.983013	-1.9510	0	NO	
GOV/TFA	Level	Yes	No	-2.183249	-2.9446	0	YES	I(1)
	1st difference	Yes	No	-4.586057	-2.9446	0	NO	
IB/FB	Level	Yes	Yes	-1.160432	-3.5426	0	YES	I(1)
	1st difference	Yes	Yes	-3.600378	-3.5468	0	NO	
FDI/FPI	Level	Yes	No	-2.845628	-3.5426	1	YES	I(1)
	1st difference	No	No	-5.819748	-3.5468	1	NO	
GFD/GDP	Level	No	Yes	-2.366713	-3.5386	0	YES	I(1)
	1st difference	No	No	-5.574683	-1.9510	1	NO	

Table 2

Variable	at	drift	trend	PP Test statistic	Critical value	lag	Unit Root?	Process
PSUP/GDP	Level	Yes	No	-3.410923	-3.6353	3	YES	I(1)
	1st difference	Yes	Yes	-9.365115	-3.5514	3	NO	
M3/GDP	Level	No	Yes	2.857785	-3.5386	3	YES	I(1)
	1st difference	Yes	Yes	-4.206144	-3.5426	3	NO	
NBFIA/TFA	Level	No	Yes	-2.845768	-3.5426	3	YES	I(1)
	1st difference	No	No	-7.177137	-1.9510	3	NO	
GOV/TFA	Level	Yes	No	-2. 635891	-2.9446	3	YES	I(1)
	1st difference	Yes	No	-4.516244	-2.9446	3	NO	
IB/FB	Level	Yes	Yes	-0.884696	-3.5386	3	YES	I(1)
	1st difference	Yes	Yes	-5.031981	-3.5426	3	NO	
FDI/FPI	Level	Yes	No	-4035879	-3.5386	3	YES	I(1)
	1st difference	No	No	-8.718375	-1.9507	3	NO	
GFD/GDP	Level	No	Yes	-2.345677	-3.5386	3	YES	I(1)
	1st difference	No	No	-5.595489	-1.9507	3	NO	

Cointegration Analysis

Given a group of non-stationary series, we are interested in determining whether the series are cointegrated, and if they are, in identifying the cointegrating (long-run

equilibrium) relationships. We implement Vector Autoregression (VAR) - based cointegration tests using the methodology developed by Johansen (1991, 1995). Johansen's method is to test the restrictions imposed by cointegration on the unrestricted VAR involving the series.

The detailed procedure of testing and interpreting Johansen's test has been discussed in detail in *Statistical Appendix*[2].

We have applied the Johansen test on the aforementioned variables all of which are I(1). Considering sufficient lags, the Johansen's approach for rank determination comprising of the summary of all 'deterministic trend assumptions' was run in EViews (option 6 – summarize all 5 sets of assumptions). It was obtained that the Rank was lowest when the test assumes for no deterministic trend in data, no intercept or trend in cointegrating equation (CE) or test vector autoregression (VAR). Hence, we run the Johansen test again with option 1 in EViews regarding assumption of deterministic trend. This results in 5 cointegrating equations as indicated by the LR test at 5% level of significance. The results of the test with normalized cointegrating coefficients have been shown below. The numbers in parenthesis are the asymptotic standard errors (rounded off to three decimal places).

Cointegrating Equations (1 to 5)

$$CE(1): \quad \left(\frac{PSUP}{GDP}\right)_t - \underset{(0.032)}{0.029284}\left(\frac{NBFIA}{TFA}\right)_t - \underset{(0.076)}{0.319909}\left(\frac{GOV}{TFA}\right)_t$$

$$CE(2): \quad \left(\frac{M3}{GDP}\right)_t + \underset{(0.037)}{0.080238}\left(\frac{NBFIA}{TFA}\right)_t - \underset{(0.087)}{0.102229}\left(\frac{GOV}{TFA}\right)_t$$

$$CE(3): \quad \left(\frac{IB}{FB}\right)_t - \underset{(17.42)}{16.55383}\left(\frac{NBFIA}{TFA}\right)_t + \underset{(41.68)}{9.113617}\left(\frac{GOV}{TFA}\right)_t$$

$$CE(4): \quad \left(\frac{FDI}{FPI}\right)_t + \underset{(0.011)}{0.011863}\left(\frac{NBFIA}{TFA}\right)_t + \underset{(0.027)}{0.002221}\left(\frac{GOV}{TFA}\right)_t$$

$$CE(5): \quad \left(\frac{GFD}{GDP}\right)_t - \underset{(0.004)}{0.007941}\left(\frac{NBFIA}{TFA}\right)_t + \underset{(0.010)}{0.003858}\left(\frac{GOV}{TFA}\right)_t$$

Vector Error Correction

When it is obtained that the variables are cointegrated, and five such cointegrating equations are reported by the Johansen's test, a simple 1st difference or 2nd difference of the series that are I(0) are not sufficient for obtaining a long run relationship. Instead, we have to modify the difference equation with the error collection terms, i.e. we have to consider a VAR with

error correction terms. A vector error correction model as suggested by Engle-Granger (discussed in detail in the *Data Appendix*) has been performed whose specification is as follows:

$$\Delta\left(\frac{PSUP}{GDP}\right)_t = \alpha_1\left(\frac{PSUP}{GDP}\right)_{t-1} + \alpha_1\left(\frac{PSUP}{GDP}\right)_{t-2} + \alpha_3\left(\frac{M3}{GDP}\right)_{t-1} + \alpha_4\left(\frac{M3}{GDP}\right)_{t-2} + \alpha_3\left(\frac{IB}{FB}\right)_{t-1} + \alpha_4\left(\frac{IB}{FB}\right)_{t-2}$$
$$+ \alpha_3\left(\frac{FDI}{FPI}\right)_{t-1} + \alpha_4\left(\frac{FDI}{FPI}\right)_{t-2} + \alpha_3\left(\frac{GFD}{GDP}\right)_{t-1} + \alpha_4\left(\frac{GFD}{GDP}\right)_{t-2} + \alpha_3\left(\frac{NBFIA}{TFA}\right)_{t-1} + \alpha_4\left(\frac{NBFIA}{TFA}\right)_{t-2}$$
$$+ \alpha_3\left(\frac{GOV}{TFA}\right)_{t-1} + \alpha_4\left(\frac{GOV}{TFA}\right)_{t-2} + \sum_{i=1}^{5} \lambda_i CE_{t-1}(i)$$

The results of the estimation of this VEC model showing the short-run dynamics have been tabulated in **Table 4.3** shown below:

Table 3

Variable	Coefficients	Standard Errors	t - Statistic	Signi?
CE(1)	0.003750519	0.0283199	0.132434	
CE(2)	-0.05420202	0.0328089	-1.6520537	
CE(3)	0.000123725	0.0001471	0.8412758	
CE(4)	0.442211646	0.1476307	2.9953901	Yes
CE(5)	0.579432293	0.3855103	1.5030268	
$\left(PSUP/GDP\right)_{t-1}$	-0.58168886	0.281365	-2.0673821	Yes
$\left(PSUP/GDP\right)_{t-2}$	-0.34463152	0.2557255	-1.3476621	
$\left(M3/GDP\right)_{t-1}$	-0.10320303	0.2856436	-0.3613	
$\left(M3/GDP\right)_{t-2}$	-0.54478527	0.2675473	-2.0362201	Yes
$\left(IB/FB\right)_{t-1}$	0.000985014	0.0009181	1.0729035	
$\left(IB/FB\right)_{t-2}$	0.000797764	0.0006783	1.1761691	
$\left(FDI/FPI\right)_{t-1}$	-0.19117123	0.0982612	-1.9455408	Yes
$\left(FDI/FPI\right)_{t-2}$	-0.1628648	0.1012425	-1.6086602	
$\left(GFD/GDP\right)_{t-1}$	-0.9307103	0.39943	-2.3300958	Yes
$\left(GFD/GDP\right)_{t-2}$	-0.31539296	0.4192769	-0.7522306	
$\left(NBFIA/TFA\right)_{t-1}$	0.006615458	0.0018542	3.5678513	Yes
$\left(NBFIA/TFA\right)_{t-2}$	0.003335024	0.0015131	2.2041172	Yes

$\left(GOV/TFA\right)_{t-1}$	0.001337066	0.0093733	0.1426464	
$\left(GOV/TFA\right)_{t-2}$	0.01298934	0.0046276	2.8069378	Yes
DUMMY	0.015413779	0.0077922	1.9781079	Yes

R-squared	0.808846	Mean dependent var	0.003632
Adjusted R-squared	0.549423	S.D. dependent var	0.009158
S.E. of regression	0.006147	Akaike info criterion	-7.056538
Sum squared resid	0.000529	Schwarz criterion	-6.158679
Log likelihood	139.9611	F-statistic	3.117864
Durbin-Watson stat	1.992225	Prob(F-statistic)	0.017364

The order of the explanatory variables in the Johansen's cointegrating test has been changed each time so that we obtain cointegrating equations of the dependent variable **PSUP/GDP** with each of the independent variables. The following **Table 4.4** portrays the results of such estimation where the long-run relationship amongst such explanatory variables and the dependent variable '**PSUP/GDP'** is portrayed. It has been found that only the ratio of government subsidies to total financial assets is significant in the long-run as far as the Indian public sector units are concerned.

Table 4

Variable	Coefficients	Standard Errors	t - Statistic	Significant?
$\left(M3/GDP\right)_{t-1}$	5.788255	16.16044	0.3581743	
$\left(IB/FB\right)_{t-1}$	0.02982522	0.0666978	0.4471692	
$\left(FDI/FPI\right)_{t-1}$	-41.84719101	82.266461	-0.5086786	
$\left(GFD/GDP\right)_{t-1}$	-58.82753184	149.78664	-0.3927422	
$\left(NBFIA/TFA\right)_{t-1}$	0.02928418	0.0318783	0.918623	
$\left(GOV/TFA\right)_{t-1}$	0.31990931	0.0762329	4.1964717	Yes

Interpretation of Results:

Table 5 portrays the estimated coefficients of the respective variables along with their standard errors and t-statistics. Comparing the t-statistics with that of their critical values the null hypothesis of a zero coefficient was tested at 5% level of significance by a two-tail test and portrayed in the last column.

The Durbin-Watson statistic measuring the serial correlation in the residuals has been obtained to very close to 2.0. This suggests that there is no serial correlation. However, we also test for unit roots in the residuals and obtain that the PP Test

Statistic **-6.819** is less than its critical value **-1.952** at 5% level of significance. This confirms that there is no unit root or serial correlation in the residuals and the Vector Error Correction model can be used for predictive purposes.

The coefficient of M3/GDP has a negative but significant estimate. That is, the ratio of liquid liabilities of the financial sector to the GDP, measuring 'Financial Depth' indicates the degree to which the financial sector mobilizes domestic savings, so that larger depth should, in most cases, reflect greater financial development. Here such financial depth is found to erode the public sector profits in the short-run. It is also found financial depth and the banking sector cannot influence the growth of the real sector in the long-run as found from cointegrating equations.

Widening of the financial sector, its competitive efficiency and the its structural with respect to ratio of Indian banks to foreign banks, proxied by IB/TB, are found to have no effect either in the short-run or in the long-run. Hence, we can infer that the performance of the public sector units in India has nothing to do with the structure of the Indian financial system.

Privatization is said to be viable when it has the ability to attract sizeable foreign portfolio investment (FPI) also enhances the viability of. A rise in the ratio of foreign direct investment to foreign portfolio investment, i.e. FDI/FPI thus would reflect 'privatization strategy' adopted in 1991-92. The indicator FDI/FPI in our analysis was found to have a significantly negative coefficient. This means that privatization, as a part of Public Sector Reforms, has effectively improved the performance of the public sector in the short-run (see table 4.4). However, in the long-run (see table 4.5), such reforms fails to have any effect on the public sector profits.

We have obtained that the ratio of Gross Fiscal Deficit (GFD) to GDP which is a measure for how the public sector depends on the government, has a negative significant coefficient. Since better developed financial markets along with lower govt. control make it easier for units to raise capital, lower values of GFD/GDP should reflect greater market-based financial development. This result is in line with existing theories that claim that the govt. should not increase its fiscal deficits to finance the public sector units in India, and if it does, the public sector units will suffer instead.

Specialization and broadening of the financial system, captured by the ratio of non-bank financial institutions assets (NBFIA) to total financial assets (TFA), i.e., **$NBFIA_t$ / TFA_t** as has been used by Kunt & Levine (1996), has been found to be positive and significant. It follows that the Non-banks complement commercial banks and more often perform as their substitutes to help the public sector units to develop.

Government subsidies play a vital role in financing the PSUs in India. Reforming the PSUs would mean greater dependence on market-based finance than on government

subsidies. The ratio of the government subsidies (GOV) to TFA, denoted by **GOV/TFA**, is taken as an indicator to measure the role of dependence of the PSUs on the government was found to be significant with positive coefficient both in the short-run (see table 4.3) and in the long-run (see table 4.4). This shows that higher values of GOV/TFA, meaning less market-based finance and hence narrowing of the financial sector, helps grow the public sector in India. As we have considered 'gross financial assistance for capital formation to non-departmental commercial undertakings (public undertakings operated by autonomous corporation and companies)' as GOV, it follows that such corporations and companies have utilized the fund in a proper way. This also validates the corporatization policy as the autonomous corporation managing public undertakings succeed in improving the public sector.

The statistical significance of the dummy variable in our analysis proves the success of the financial sector reforms and the public sector reforms taken during 1991-92 in developing the public sector.

The R-squared (R^2) statistic, reported at the bottom of Table 4.3, was obtained to be **0.81**(approx). As R^2 is the fraction of the variance of the dependent variable explained by the independent variables and measures the success of the regression in predicting the values of the dependent variable within the sample, it can be stated that the financial variables considered in our analysis explains near about **81%** of the performance of the public sector in India. The adjusted R^2, was estimated to be **0.55**(approx) indicating penalization(as $< R^2$) of the R^2 for the addition of regressors which do not contribute to the explanatory power of the model. Taking into consideration all the regressors, **53%** is the goodness of fit.

Conclusion

This chapter attempts to investigate whether development of financial sector promote successful public sector reform in case of the Indian economy. However, it should be acknowledged that there is a causal relationship running both ways between financial development and public sector reform, and exogenous factors help determine the ultimate success of both public sector reform and financial reform. At first, this chapter presents a conceptual approach to the linkage between public sector reform and financial reform. The next section proposes an econometric model and identifies variables for a formal statistical support of such linkages. The data collected for this purpose are basically time-series data and therefore, as supposed, contained unit roots. Hence, a simple OLS regression could not be applied. Instead, a proper unit root testing, cointegration analysis, and vector error correcting model was used to establish a statistical relationship. When made free from serial autocorrelation, the model was used for predictive purposes. The results lend

considerable support to the model's theoretical predictions as it was obtained that for the entire period 1971-2007, the financial sector can explain the movement of the public sector in India and the latter also depends on the gross capital formation of the public sector itself.

This study suggests that the Banking Sector reforms amongst the other financial sector reforms could not provide a platform for public sector growth. Widening of the financial sector, its competitive efficiency and the its structural with respect to ratio of Indian banks to foreign banks show that the performance of the public sector units in India has nothing to do with the structure of the Indian financial system. However, Specialization and broadening of the financial system, captured by the ratio of non-bank financial institutions assets total financial assets often perform as their substitutes to help the public sector units to develop.

Public sector reforms by means of its 'privatization strategy' captured by the ratio of foreign direct investment to foreign portfolio investment was found to have a significant effect in improving the performance of the public sector in the short-run. However, in the long-run, such reform too fails to have any effect on the public sector profits. The ratio of Gross Fiscal Deficit to GDP, indicating how the public sector depends on the government, shows that in a situation of greater market-based financial development the govt. should not increase its fiscal deficits to finance the public sector units in India.

Government subsidies were found to play a vital role in financing the PSUs in India and such financing, meaning less market-based finance and hence narrowing of the financial sector, were found to help grow the public sector in India. It follows that corporations and companies, given financial assistance for capital formation by the govt., have successfully utilized the fund.

However, the statistical significance of the dummy variable in our analysis proves the success of the financial sector reforms and the public sector reforms taken together during 1991-92 in developing the public sector. This also shows that a blend of financial reforms and privatization with an essence of corporatisation helps grow the public sector in India.

We hereby state that privatization should not be the main issue of the public sector taken in isolation, and, financial environment shouldn't be blamed for the same. Instead, proper strategy blend is to be made considering and incorporating other issues like 'corporatization', 'debureaucratization' and 'true liberalization (rather than pursuing marketization its name)'.

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