RESERVE BANK OF INDIA

OCCASIONAL PAPERS

VOL. 16 NO. 3 SEPTEMBER 1995

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VOL. 16 NO. 3 SEPTEMBER 1995

Published by A. Vasudevan for the Reserve Bank of India and printed by him at Karnatak Orion Press, 17-18, Prospect Chambers Annexe, Dr. D.N. Road, Fort, Bombay - 400 001.

Reserve Bank of India Occasional Papers
Vol. 16, No. 3, September 1995

Volatility in Stock Market Returns

Rajan Goyal*

The large fluctuations in stock returns have important economic implications for overall investment and growth in the economy. This study examines the nature and trends in the stock return volatility and assesses the role of 'carry-forward system' in causing variations in the volatility levels. Analysis carried through vector autoregressive (VAR) model reveals significant influence of industrial output and money supply on stock returns and of changes in stock returns on industrial output.

Stock market volatility has received much attention over the last few years, especially since early 1992. It is widely accepted that large fluctuations in market returns carry important negative effects on risk averse investors. Besides, these have important economic implications, especially for the overall domestic investment, and for the flow of funds from abroad. Essentially for these reasons, the factors which play an important role in explaining the volatility in stock market need to be examined. These factors, range from technical or short term changes to fundamentals: they include, *interalia,* trading practices like the length of the settlement period, the clearing system, the facility of carry-forward, seasonal factors like announcements of annual and half yearly corporate results, measures announced in the Government budgets, the industrial production and the money supply and more importantly, the overall economic environment and the overall policy stance.

Stock market conditions in India exhibited considerable swings in recent years, especially since about early 1992. The upbeat market conditions towards the end of 1993, subsequently leading to the ban of 'badla' by the Securities and Exchange Board of India (SEBI), and the sharp increase in flows of foreign portfolio investment between November 1993 and October 1994, followed by sluggishness in such flows, have brought into sharp focus the concerns about the stock market volatility. In particular, questions are raised about the nature and the

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content of speculation and whether speculation or some other fundamental economic factors explain the volatility in the stock market. The present paper attempts to examine these concerns by focussing first on what constitutes the stock market volatility, and then on how the stock market volatility is related to the volatility in some of the macroeconomic indicators. First, we discuss the methodology employed to compute the volatility estimates: the period considered for the purpose differs depending on the time interval of the data. Volatility of stock returns have been estimated on daily basis from May 1993 to December 1994 and on monthly basis for a period of 8 years from 1986 to 1994. Two sets of estimates have been prepared based on BSE Sensitive (Sensex) and BSE National (Natex) indices. We then analyse the trends in daily and in monthly volatility estimates of stock market returns along with an analysis of stock returns volatility trends during the pre- and the post- carry-forward ban period. Subsequently, we assessed the relationship between stock returns volatility and macroeconomic activity. Besides, the impact of 'opening-up' of the capital market on stock return volatility has also been tested. The conclusions of the study are briefly presented at the end.

Measurement of Volatility

The most common estimator of the monthly volatility is the sum of the squared daily returns, net of average daily return in the month, i.e.

$$\sigma^2_t = \sum_{i=1}^{N} r^2_{it} \qquad \ldots\ldots\ldots (1)$$

where r_{it} denotes
daily return net of average daily return in the month t.

Macroeconomic activity in general is not measured on daily basis and as enough number of price quotations for a single trading day are not available as information set, it would not be possible to generate monthly/daily volatility estimates through computation of standard deviation. Moreover, it has been observed that the inherent uncertainty or the randomness associated with different forecast periods vary widely over time and also that "Large and small errors tend to cluster together (in contiguous time periods)" (Mandelbrot, 1967 and McNees, 1979). Engel suggests the use of Autoregressive Conditional Heteroskedasticity (ARCH) model for capturing these 'stylized facts', as variance estimates generated by ARCH are conditional upon past forecast errors. Besides, the condi-

tional volatility estimated by ARCH type model will permit us to have daily as well as monthly volatility estimates for variables measured on daily and monthly basis, respectively. Volatility estimates could be computed from daily and monthly data by methodology suggested by (G.W. Schwert, 1989 and Kim & Singal, 1993) which is similar to ARCH model of Engel. Accordingly, we estimated:

i) a 12th order autoregression for the returns[1], including dummy variable Djt to allow for different daily/monthly mean returns, using all data available for the series

$$R_t = \sum_{j=1}^{12} \alpha_j.D_{jt} + \sum_{i=1}^{12} \beta_i.R_{t-i} + e_t \qquad \ldots\ldots\ldots (2)$$

and ii) a 12th order autoregression for the absolute values of the errors from the above equation, including dummy variables to allow for different daily/monthly standard deviations.

$$|\hat{e}| = \sum_{j=1}^{12} \tau_j.D_{jt} + \sum_{i=1}^{12} \delta_i|\hat{e}_{t-i}| + u_t \qquad \ldots\ldots\ldots (3)$$

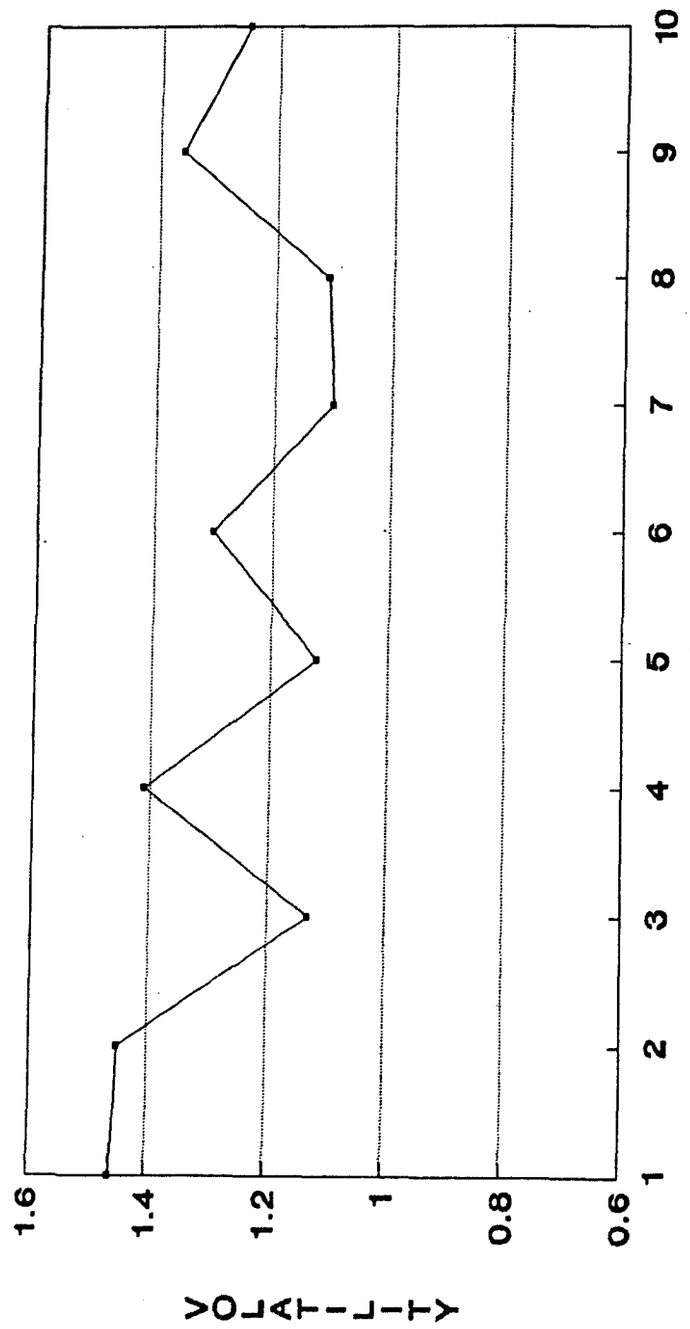
The fitted values from equation (3), $|\tilde{e}|$ are conditional volatility estimates for returns.

Volatility in stock market Returns on daily basis

Volatility in stock returns on daily basis was calculated for 373 trading days of 39 settlements during May 1993 to December 1994[2]. For daily volatility estimates, different dummies have been used to allow for mean returns (eq. 2) and mean standard deviation (eq. 3) for each trading day of the settlement. As this requires, uniform settlement period for all the scrips, daily volatility estimates have been computed for Sensex (Sensitive Index) of the Bombay Stock Exchange (BSE) only[3]. In majority of the settlement periods (16), the 9th trading day was the last day of the settlement. From daily volatility computed as per the above method, we arrived at average daily volatility for the period, day 1 to day 10 for 39 settlements[4], which are given in Table 1 and also in Graph 1.

Graph 1

AVERAGE DAILY VOLATILITY TRENDS



* 1 TO 10 on X axis are the days of the settlement period.

Table 1 : Average Daily Volatility of stock returns (May 1993 to December 1994)

Day of Settlement	Average Volatility
1	1.46
2	1.45
3	1.13
4	1.41
5	1.12
6	1.30
7	1.10
8	1.11
9	1.36
10	1.25

It may be observed that the average volatility level is the highest on the 1st/2nd day of the settlement; it then falls on the following days and moves up towards the end of the settlement. This reflects the buying pressure on the 1st and 2nd days and squaring off towards the end of the settlement. The traders who enter into deals at the beginning of the settlement period for speculative purposes square off either at the end of the same settlement or the subsequent settlements (in the case of 'A' group shares before the ban on carry-forward). Even the deals which are carried forward to the subsequent settlement, are more likely to be squared off towards the end of that settlement period, as it allows the operator additional time to play.

Volatility in monthly stock returns

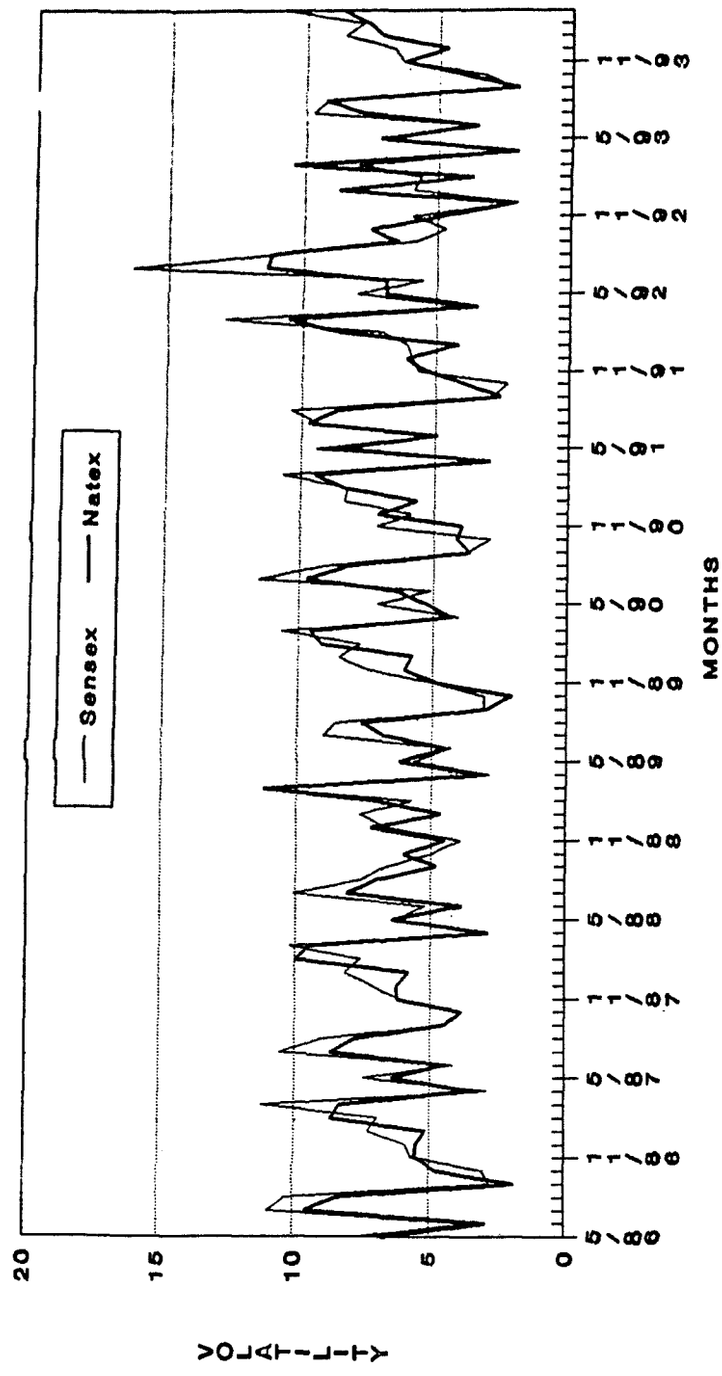
For estimating volatility on monthly data as per the method set out above (p. 177), fairly long set of observations is required. Accordingly, observations for 10 years from April 1984 to March 1994 have been used. Two sets of estimates (one each for Sensex and Natex) obtained from the stated methodology are plotted (Graph 2). A careful examination of the graph would indicate :

1) Stock returns based upon the BSE Sensitive Index are more volatile than that of the BSE National Index.

Graph 2

MONTHLY VOLATILITY TRENDS

(SENSEX AND NATEX)



 # Correlation coefficient of Sensex and and Natex volatility series is 0.85.

2) There is a definite pattern in the volatility trends. With the exception of 2 years (1990 and 1992), volatility peaks occur in the month of March, followed by July in each year.

Volatility trends exhibited by both the indices are more or less similar. This is reflected in the fact that the correlation between the Sensex and Natex volatility is as high as 0.85 (Graph 2) though there is a difference in amplitude. The average annual volatility (as per Sensex) over the years (1986-1994) fluctuated in a narrow range of 6 to 7 with a peak of 7.4 recorded in the year 1992. The mean volatility of the Sensex was 6.7 over the period of 8 years as compared to the mean volatility of 6.2 in the case of Natex. In terms of range, the Sensex recorded the highest monthly volatility level of 16.3 and the lowest of 2.1 over the period, while in the case of the Natex, the highest and the lowest monthly volatility levels were 11.3 and 1.9, respectively.

The composition of the two indices (the Sensex and Natex) is such that the Sensex more or less reflects the trends in 'A' or specified group shares - 29 out of 30 scrips belong to specified group - while nearly half of the Natex scrips belong to non-specified category. Since only the Group 'A' shares had major scope for speculation[5] the Sensex stood apart as more volatile.

However, 'A' and 'B' group shares are not strictly comparable. 'A' group shares are characterised by much higher trading activity than the 'B' group shares, and evidence in the literature suggests that a significant portion of the variance in group 'A' can be explained by their higher trading activity[6]. This does not, however, imply that a significant portion of variance in blue chips having higher trading activity does not reflect speculative activity. In fact, speculation seems to have been present as there had been a sharp decline in net turnover after the ban on 'badla' while the level of deliveries remained steady (Table 2). This observation about the impact of 'badla' or carry-forward on the volatility in the stock market, which is so contrary to the findings of Shah (1995), is on account of the choice of the sample, used for cross-section study by Shah, in favour of scrips ('A' group) with low turnover ratio[7].

Table 2: Monthly averages of Turnover and Deliveries in 'A' group shares

(Rs. crore)

Period	Average Net turnover of shares	Average value of shares delivered
Before announcement of Ban (June to December 1993)	5651.5	538.1
After imposition of Ban (June to December, 1994)	860.8	508.5

Impact of ban on 'Badla' or carry-forward on volatility

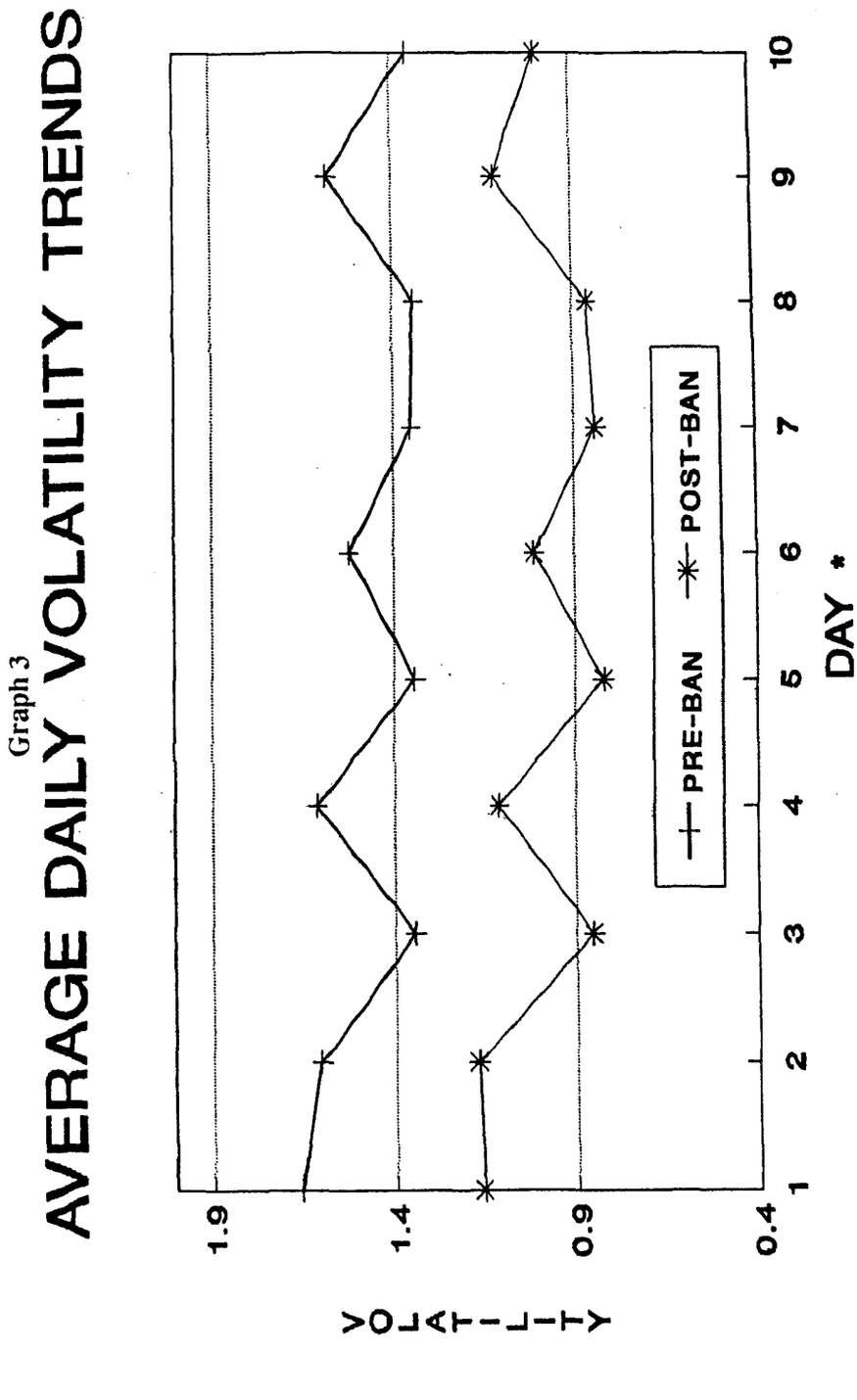
To bring out the impact of the 'Ban on carry-forward' on stock market volatility, the volatility series computed on daily basis was broken down into two periods: the pre-ban one (June to December 10, 1993) and the post- ban period (June to December 1994). The pre-ban period covers 13 settlements and the post-ban period covers 11 settlements. The average volatility for each day of the settlement (1 to 10) for both the periods is given in Table 3.

Table 3: Average Daily Volatility, Pre- and Post- ban

Day of Settlement	Pre-ban	Post-ban
1	1.66	1.16
2	1.60	1.17
3	1.34	0.85
4	1.61	1.11
5	1.34	0.82
6	1.52	1.01
7	1.35	0.84
8	1.34	0.86
9	1.58	1.12
10	1.36	1.00

Table 3 and Graph 3 show a significant downward shift in terms of amplitude of volatility across the entire settlement. The relative daily volatility on different days of the settlement period, however, remains

Graph 3



* 1 TO 10 on X axis are the days of the settlement period.

unaltered. The downward shift in the volatility during the post-ban period, is associated with a steep decline in net turnover (excluding jobbing) while the level of deliveries remains nearly steady (Table 2). Obviously there was a sharp decline in deals which were meant to be carried forward or which were entered into for speculative purposes. This gives an indication that 'badla' or carry-forward adds to volatility. However, to have a conclusive evidence, we need to segregate the impact of 'badla' from other economy-wide factors, which might have influenced the volatility level during the post-ban period.

We may compare the changes in the volatility level in the Sensex with that of the Natex during the post-ban period to segregate the impact of ban on badla. Since nothing changed for group 'B' shares with the ban on 'badla', the Natex series may act as the control sample in our exercise. As stated earlier, the Natex includes both group 'A' and group 'B' scrips while the Sensex represents more or less group 'A' scrips only; therefore, changes in the volatility level of the Natex would give us a bench mark estimate of the change in volatility that would have taken place 'in any case' on account of factors other than the 'badla'. Further, any change in the volatility level in the Sensex during the post-ban period has to be relatively sharper than that in the case of Natex, if 'badla' has any influence on the volatility in the stock market.

Table: 4 Monthly Average Volatility in Sensex and Natex

	Pre-ban	Post-ban
Sensex	5.9	5.4
Natex	5.6	5.3

Volatility in both the indices, has been lower during the post-ban period as compared with that in the pre-ban period (Table 4). It may be observed that the decline in the volatility level of the Sensex has been sharper than that of the Natex. Thus, we may infer that 'badla' or carry-forward does add to volatility in the stock market.

Seasonality influence on Volatility

In order to quantify the seasonality pattern, we ran the seasonality test for monthly volatility estimates of Sensex and Natex[8]. The average seasonal factors for the period 1986 to 1994 are given in the Table 5.

TABLE 5: Average Seasonal Factors for the period 1986-1994

MONTH	SENSEX	NATEX
APRIL	52.56	52.99
MAY	120.28	115.59
JUNE	64.26	80.77
JULY	162.14	141.62
AUGUST	134.90	125.53
SEPTEMBER	52.84	54.87
OCTOBER	54.21	70.73
NOVEMBER	92.21	85.39
DECEMBER	93.88	98.79
JANUARY	105.33	81.72
FEBRUARY	98.82	126.68
MARCH	168.56	165.92

Table 5 shows that average seasonal factors for the month of March are more than 3 times that of the average lowest level of the year in the case of both the indices. The July figure too is high; it is more than 3 times (in the case of the Sensex) and 2.7 times (in the case of the Natex) over the average lowest levels of the year. This indicates that seasonal factors do influence the stock prices during these months of each year.

Volatility peak in the month of March each year seems to suggest the impact of Union Budget which is presented generally in February of each year. The Budget announcements at February- end often lead to either bellying or further strengthening of expectations that get built-up during the months of January and February. The next peak during July seems to reflect the effect of declarations of results on closure of books of accounts by majority of the blue chip companies[9]. This results in extension of settlement period for these scrips as they come under non-delivery zone for about one month and more. This period also coincides with declarations of half-yearly results by FERA companies having their book closing in the month of December.

The seasonal pattern suggests that volatile conditions have to do with reasons other than the facility of carry-forward. If speculation is the only cause of volatility a definite seasonal pattern cannot exist. Carry-forward no doubt adds to volatility, but the point to note is that it serves more to accentuate the underlying trend triggered by factors other than speculation than be the only cause of volatility.

The Economic Fundamentals and Volatility

Stock returns should logically represent the earnings arising from the underlying economic activity. Therefore, the boom in industrial activity must raise the returns of industrial securities and vice-versa. While this represents the real side of the picture, there is yet another perception, viz., that a sharp increase in money supply could lead to higher demand for securities, resulting in a rise in stock prices. But the existing literature suggests that the very volatility in industrial output and in money supply may not be entirely independent of the stock returns volatility. Studies carried out on the basis of S&P and Dow-Jones composite portfolios, have found that money growth volatility helps to predict the volatility of stock returns and vice-versa (Schwert 1989). Similarly, there is evidence that stock return volatility predicts industrial output volatility.

A rise in security prices has a favourable effect on the primary market as the issuer hopes to get a better response in view of the upbeat secondary market. A boom in the primary market will in turn, enable a rise in investment and a consequent higher industrial output. Moreover, rising security prices induce the investing public to place larger amount of funds in the secondary market and also to subscribe for upcoming new issues. Such a behavioural response could generate added demand for bank credit. If credit against pledging of shares, credit to subscribe for new issues and loans and advances for acquiring shares and debentures in the secondary market rise, there could be a sharp rise in monetary impact.

There is also the recent development of large investments by Foreign Institutional Investors in the Indian stock markets having an impact on the liquidity position in the Indian economy. Besides, inflows by domestic companies raising foreign currency proceeds by issue of GDRs will significantly add to liquidity and thus to the volatility of stock markets. The opposite situation could arise when foreign funds flow out because of low rates of return and perceived low growth potential. The shocks to the market due to volatile change in fund flows, become more broad based affecting overall investment climate.

From the above discussion one could discern that there are many economic variables which relate to one another through direct transmission and feedback mechanisms. Single equation models can hardly capture the stock return behaviour. It is for this reason, we have preferred to use vector autoregressive (VAR) model.

A vector autoregressive process of order p for a system of M variables $Y_t = (y_{1t},.....,y_{Mt})$ may be defined as follows:

$$Y_t = V + \theta_1 Y_{t-1} + ... + \theta_p Y_{t-p} + U_t$$

$V = (v_1, ..., v_M)'$ is M dimensional vector

$$\theta_i = \begin{bmatrix} \theta_{11,i} & ..... & \theta_{1M,i} \\ \vdots & & \vdots \\ \theta_{M1,i} & ..... & \theta_{MM,i} \end{bmatrix} \quad M \times M$$

$U_t = (u_{1t}, ..., u_{Mt})'$ and

U_t has white noise properties. Before we estimate a VAR model, the stationarity of the series has to be ensured and order p must be specified. Criteria like Akaike information Criterion (AIC) or Schwarz Criterion (SC) may be used for determining the lag length. For VAR model AIC and SC may be computed as follows :

$$AIC(n) = \ln \det(\tilde{\Sigma}_n) + \frac{2M^2n}{T}$$

$$SC(n) = \ln \det(\tilde{\Sigma}_n) + \frac{M^2n\ln T}{T}$$

where M - number of variables
T - sample size

and $\tilde{\Sigma}_n$ - estimate of residual covariance matrix Σ_v

The order p is so chosen that the AIC or SC criterion is minimized. In order to keep the sample size T fixed, p observations for each variables are treated as pre-sample values. Thus, with a VAR one needs to specify the following things : 1) a set of endogenous and exogenous variables which are interdependent, 2) the series are stationary, and 3) the number of lags, since one needs to capture most of the impact that vari-

ables have on one another. Each variable regresses on its own lagged values and lags of all other endogenous variables and the exogenous variables included in the model.

We have included three endogenous and one exogenous variables in the VAR system specified for the present exercise. The endogenous variables are volatility estimates of security returns, industrial output and money supply. The exogenous variable is in the form of a dummy to capture the impact of globalisation of the Indian capital market (Dummy has been set at 1 from January 1993 to March 1994 and '0' for the preceding period). Stock returns are measured by the Sensex and Natex prepared by the Bombay Stock Exchange. For industrial output, Index of industrial production (IIP) released by the Central Statistical Organisation (CSO) and for money supply, M3 data of RBI have been used. All the variables are on monthly basis. Volatility estimates for each variable have been computed following the algorithm mentioned in the section on measurement of volatility in this paper. The first difference of each volatility series has been taken to make them stationary. To test for stationarity, the unit root test has been carried out for all the series. The test involves running of OLS regression of the form $\Delta Y_t = \alpha.Y_{t-1} + u_t$ where ΔY_t denotes the first difference of Y_t. The null hypothesis of a unit root, i.e. Ho : $\alpha = 0$ is tested against the stationarity alternative $\alpha < 0$, by using Dickey-Fuller statistics. The Null hypothesis has been rejected in all the cases at 1 per cent level[10]. The VAR was run for the 95 month period from May 1986 to March 1994. The model was tested for Akaike and Schwarz criterion for determining the lag length. The minimum values for AIC and SC were reached for the 6th lag for both the models fitted for the Sensex and Natex. Models have been used to test the statistical significance of the impact which different variables have on one another. Secondly, a variance decomposition analysis has been done to see the relative contribution of the volatility in money supply and industrial output on the stock returns volatility.

Matrices of F-statistics obtained from VAR models (one each for the Sensex and Natex) are given in Tables 6 & 7. The F-statistics have been calculated under the null hypothesis that changes in regressor do not cause movements in the regressand in the Granger sense[11]. The F-statistics in tables measure the significance of the lagged values of the row variable in predicting the respective column variables.

TABLE 6 : F-statistics calculated by 6th order VAR Model@ (1986 TO 1994)

	SENSEX	OUTPUT	MONEY
SENSEX	8.3**	1.9*	0.9
OUTPUT	9.2**	20.4**	1.3
MONEY	4.4**	3.0**	20.4**

* Indicate that F-statistics is significant at 5 per cent level.
** Indicate that F-statistics is significant at 1 per cent level.
@ F-statistics measure the significance of the lagged values of row variable in predicting the respective column variables.

TABLE 7 : F-statistics calculated by 6th order VAR Model@ (1986 to 1994)

	NATEX	OUTPUT	MONEY
NATEX	7.6**	2.7*	0.6
OUTPUT	9.4**	30.0**	1.4
MONEY	4.0**	3.0**	22.6**

* Indicate that F-statistics is significant at 5 per cent level.
** Indicate that F-statistics is significant at 1 per cent level.
@ F-statistics measure the significance of the lagged values of row variable in predicting the respective column variables.

The first column of the table reports that F-statistics for output and money supply are significant at 1 per cent level. So the alternative hypothesis is accepted in each case, i.e., volatility in output and money supply, in the Granger sense, cause a movement in stock return volatility. Similarly F-statistics for stock returns in column 2 is significant at 5 per cent level indicating that volatility in stock returns causes changes in industrial output volatility. The F-statistics in the first row of the third column is statistically insignificant and indicate that stock returns do not Granger cause any changes in money supply volatility. The insignificance of stock returns to Granger cause changes in money supply, however, would seem an expected result. Though theoretically it could be argued that changes in stock returns affect changes in money supply through credit expansion, the credit actually extended (on account of various safeguards[12]) for these purposes is very limited in the Indian case to be statistically significant. Thus it appears that changes in industrial output and

money supply cause movements in stock index on a long term basis and the stock volatility in turn helps in predicting output volatility, thus underscoring the importance of efficient capital market for rapid industrial expansion. The results of our exercise for the Natex are similar to those for the Sensex. The direction of causation is the same. The coefficient for the dummy is found to be insignificant in the case of both the Sensex and Natex. This disproves the general perception that globalisation of Indian capital market through FII investment and GDRs have added significantly to stock market volatility. This is also in tune with the findings with regard to other emerging markets (Kim and Singal 1993)[13]. These results regarding globalisation in the Indian case are not very surprising since the cumulative net investment by FIIs (Foreign Institutional Investors) has not been more than 1.4 per cent of the market capitalisation of scrips listed on BSE during any of the month of the study period, i.e., January 1993 to March 94. Similarly, the total capital issued through GDRs till March 94 forms just 1.5 per cent of the market capitalisation of the scrips listed on BSE.

While the causality tests indicate whether stock index, output and money supply have statistically significant effects on one another, they do not show the relative size of these effects. The latter can be obtained from the variance decomposition. The Forecast Error Variance decomposition yields components accounted for by innovations in the individual variables.

The moving average representation of forecast error variance matrix of an h-step forecast [$\Sigma(h)$] after orthogonalisation can be denoted as below[14]:

$$\pi_0\pi'_0 + \pi_1\pi'_1 + \ldots\ldots\ldots + \pi_{h-1}\pi'_{h-1}$$

The sum of the mth diagonal elements of $\pi_0\pi'_0$ $\pi_{h-1}\pi'_{h-1}$ is the forecast error variance of the h-step forecast of variance Y_m. The contribution of innovation in the jth variable to this is given by

$$\pi^2_{mj,0} + \pi^2_{mj,1} + \ldots\ldots\ldots + \pi^2_{mj,h-1}$$

Components thus obtained, will give the relative contribution of innovation in individual variable to the forecast error variance.

We decomposed the forecast error variance of the 10-step forecast of volatility series of the Sensex and Natex. The contribution of individual variables in each case are given in Table 8.

Table 8: Variance Decomposition of the Sensex and Natex

(In Per cent)

	SENSEX	NATEX	OUTPUT	MONEY
SENSEX	60.4	—	34.4	5.2
NATEX	—	66.0	26.7	7.3

A substantial proportion — 34.4 per cent — of the forecast error variance in the Sensex is caused by output shocks/innovations and only 5.2 per cent is accounted for by money supply. Similarly 26.7 per cent of the forecast error variance in the Natex is caused by output innovations and only 7.3 per cent is accounted for by money supply. Thus, the knowledge about industrial performance as compared to liquidity expansion in the economy gives more information about the future movements in the volatility in stock indices. However, a major portion of the forecast variance has been accounted for by the variables' own lagged values in each case.

Conclusions

From our analysis of the volatility in stock returns the following conclusions emerge:

1. Stock volatility levels are found to be sensitive to the day of the settlement period. The daily volatility estimates of stock returns show that volatility peaks at the beginning and at the end of the settlement period.

2. Union Government Budget and declarations of book closures by firms produce seasonality patterns in monthly volatility estimates of stock returns. Volatility in stock returns peaks every year in the month of March and next peak occurs in the month of July.

3. The erstwhile carry-forward system contributed to volatility in the market. A comparison of pre- and post- ban period clearly bring out this fact. However, the results suggest that speculation on account of the so called 'badla' system was not the sole and primary factor causing volatility.

4. The volatility in stock returns can be explained by macroeconomic activity. The volatility in industrial production and money supply have significant effects on the movements in stock returns. Industrial production has been found to be more significant than money supply.

5. VAR analysis also provided the evidence that industrial output is influenced by the changes in stock returns, thus underscoring the importance of the vibrant capital market for the industrial sector.

6. The hypothesis that changes in stock returns affect changes in money supply has been rejected. This supports the contention that enough bank credit for capital market activities was not made available.

7. The apprehension that globalisation of the Indian capital market has added to stock market volatility has not been substantiated. This is in line with the findings of Kim and Singal (1994) in regard to other emerging markets.

Notes

1. Return has been defined as
   $R_t = (I_t - I_{t-1})/I_{t-1}$ where
   R_t is the return for period t and
   I_t is the index for period t.

2. The period has been so selected that the date of ban on carry-forward falls almost in the middle of the selected period, thus enabling a comparison of volatility trends during pre-and post-ban periods.

3. Since the length of the settlement period is different for 'A' and 'B' group shares, the scrips in the index should either exclusively belong to Group 'A' shares or to group 'B' shares. The Sensex is a homogeneous group representing 'A' group shares only (barring one scrip), while Natex (National Index) is a mixed one including both 'A' and 'B' group shares.

4. Averages for days beyond the 10th has been ignored as there are not more than 1 or 2 observations in each case.

Number of Trading Days (for 'A' group shares)	No. of settlemnts
5	1
6	0
7	4

8	4
9	16
10	9
11	2
12	1
13	1
14	0
15	0
16	1

5. As per the trading practices in India, the scrips fall under either one of the two broad categories, i.e., specified and non-specified. The differentiation of these categories for the purpose of the present study may be understood as one of providing scope for carry-forward. Deals in scrips coming under specified category could be carried forward to the next settlement while deals relating to the second category (non-specified), also called 'B' group shares, were to be squared-off or were to result in delivery mandatorily by the end of the settlement period. Thus there was scope for speculative activity only in the case of specified or 'A' group shares.

6. Several studies [(Karpoff (1987), French and Roll (1986) and Schwert (1989)] have found a positive relation between stock volatility and the trading activity.

7. The findings of the cross-section study carried out by Shah, suggest a negative relationship between 'badla' and the stock market volatility. The sample selected by Shah for the stated study, includes all the 91 scrips belonging to group 'A'. The turnover ratio, which is also a measure of speculative activity (Nadkarni, 1994), is as low as 0.17 for the 61 non-sensex scrips included in the sample. The remaining 30 scrips belonging to sensex has a turnover ratio of 0.36. Since, a moderate level of speculation has a stabilising effect (Nadkarni, 1994), the choice of sample in favour of non-sensex scrips may lead to biased results.

8. X-11 method was used to compute seasonality pattern on the 96 observations of monthly volatility estimates relating to the period 1986 to 1994.

9. Companies which together account for 70 per cent of the total market capitalisation of the Sensex declare their book closures in the month of June and July.

10.

Variable	∅	Conclusion
BSE Sensex	-16.92	I (0)
BSE National	-16.93	I (0)
IIP	-26.46	I (0)
Money Supply	-13.23	I (0)

11. A variable Y_1 is said to be 'Granger-caused' by another variable Y_2, if the information in past Y_2 helps to improve the forecast of the Y_1 variable. Null hypothesis implying lack of causality can be tested using F-test. Significant F-statistics will imply the presence of causality in the Granger sense.

12. An RBI memorandum (issued on October 24, 1986) containting guidelines and safeguards to be followed by banks in the matter of granting of advances against

shares/debentures states : ".....They should while considering proposals for advances against shares/debentures, primarily take into account the nature, purpose and need for such advances ensuring that bank finance is not utilised for speculative purposes. Banks should be more concerned with what the advances are *for* rather than what the advances are *against*.....". It continued : "Care should be taken to ensure that a single borrower or a group of borrowers do not obtain large credit against shares/debentures from different banks.....".

13. Kim and Singal (1993) examined the impact of foreign portfolio investment on the volatility levels in the case of nine emerging markets belonging to Europe, Latin America, and Asia during January 1988 to September 1992. The results show that domestic stock market volatility does not increase after 'opening up'.

14. Forecast error variance or Mean square error (MSE) matrix of an h-step forecast [$\Sigma(h)$] can be denoted as :

$$\Sigma(h) = E[[Y_{T+h}-Y_T(h)]\ [Y_{T+h}-Y_T(h)]']$$

Similarly, MSE matrix of a VAR model of an order p can have the following form:

$$\Sigma(h) = \Sigma_v + M_1\Sigma_v M'_1 + \text{---------} + M_{h-1}\Sigma_v M'_{h-1}$$

where $M_o = I$ and $M_i = \sum_{j=1}^{\min(p,i)} \theta_j M_{i-j}$ $\quad i = 1,2$ ----------

It can be written in orthogonal form by means of non-singular matrix P such as $P\Sigma_v P' = I$

$$\Sigma(h) = P^{-1}\ P\Sigma_v P'(P^{-1})'\ M'_1 + \text{----------} + M_{h-1}\ P^{-1}\ P\Sigma_v P'\ (P^{-1})'\ M'_{h-1}$$

$$= \pi_o\pi'o + \pi_1\pi'_1 + \text{----------} + \pi_{h-1}\pi'_{h-1}$$

where $M_1P^{-1} = \pi_1$

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Reserve Bank of India Occasional Papers
Vol. 16, No. 3, September 1995

External Assistance : The Phenomenon of Unutilised Balance

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The paper addresses the subject of poor utilisation of aid by exploring the external and internal impediments to scheduled disbursements and capital formation. It is observed that the accumulation of aid in the pipeline reflects bottlenecks and inefficiencies deep-seated in the functioning of the economy. Empirical analysis is restricted to studying the relationship between aid utilisation and quantifiable determinants. Based on the results of this analysis, the stylised facts and an examination of sector specific situations, the paper offers suggestions regarding areas of action which would result in the speedier utilisation of external aid.

Introduction

The epicenter of the unprecedented external payments crisis which gripped the Indian economy during 1990-91 and 1991-92 was located in the capital account, manifested in a drying up of capital flows. The symptoms of the crisis were evident even during the Seventh Plan period, when a structural current account deficit of the order of 2.4 per cent of GDP required increased volumes of external financing. Sharp compositional changes in external financing accompanied the increasing financing need. Prominent amidst, and by itself exacerbating these disconcerting developments, was the declining role of external assistance in the financing of current account deficits.

Concessional flows have traditionally been the largest source of foreign capital for India. By the Seventh Plan period, the share of external assistance in the financing requirement had shrunk to 28 per cent from 35 per cent in the Sixth Plan period. Mainly as a result, the share

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The authors are grateful to Sarvashri S.V.S. Dixit and B.N. Ananthaswamy for their valuable comments. The authors also benefited from discussion with Sarvashri R.K. Pattanaik and M.S. Mohanty. The usual disclaimer applies.

of commercial flows such as commercial borrowings and non-resident deposits increased to equal that of external assistance in meeting the financing need for the quinquennium 1985-90.

There are, undoubtedly, several exogenous factors responsible for this decline in the share of external assistance in the financing of balance of payments. There are also a host of endogenous factors which together represent the limits on the country's ability to absorb foreign aid. The visible result of the interaction of these internal and external factors is the stock of unutilised aid held, as it were, in the pipeline. At the end of March 1994, the unutilised balance amounted to US $ 18.2 billion, an amount by crude reckoning, sufficient to meet the financing need for the entire Seventh Plan period.

The unutilised balance of external assistance forms the subject of this study[1]. The topic assumes crucial relevance in the emerging milieu wherein a thorough restructuring of Indian external debt is underway and where, over the medium term, current accounts in the balance of payments are sought to be financed by an increasing reliance on non-commercial and non-debt creating sources of finance. The need for analytical examination of the phenomenon also emerges from the fact that in recent years the stock of undisbursed aid has itself acted as a deterrent to donors from making fresh commitments of assistance to India.

The rest of the study is organised into four sections. The following section briefly surveys the literature in an attempt to assess the factors underlying underutilisation of aid from the divergent views on the role of foreign capital in economic development. Section III presents the stylised facts, i.e., the sectoral distribution of undisbursed commitments of external assistance, utilisation of these flows and unutilised balance of aid by source and by period. Section IV examines the causes underlying poor aid absorption in India. In Section V, an empirical analysis of the phenomenon of undisbursed aid and the determinants of the poor utilisation ratio is attempted. Section VI contains concluding remarks.

SECTION II

A rigorous investigation of the phenomenon of underutilisation of external aid has not drawn great interest among economists even in recent years. Country specific causes underlying the constraints upon aid absorption have prevented the development of an elaborate theoretical treatment. Nevertheless, useful insights into the subject can be gleaned from

the divergent views which are manifested in the literature regarding the role of foreign capital in the process of economic development.

A number of studies have shown that countries can attain a desirable growth path through supplementing domestic resources with foreign capital[2]. Foreign borrowing enhances growth by enabling an expansion in productive capacity beyond what could be undertaken solely with domestic savings. Foreign aid can facilitate economic and social transformation by overcoming temporary shortages in specific human and material resources, by promoting strategic activities, by inducing and facilitating critical governmental policies and providing certain amount of working capital for carrying out programs involving a shift in the structure of the economy (Mikesell, 1968). Time series analyses of several countries in Asia, including India, Pakistan, and the Republic of China, suggest that aid contributed to growth both in poor and middle income developing countries (Islam, 1972 and Krueger, 1978).

A study of the Indian experience concluded that the Indian investment programme and the corresponding development achieved by the Indian economy during 1950-60 received strong support from the investible resources provided by external assistance. Aid accounted for $1 of every $11 invested during the decade; without external assistance, then, total investment would have been 9 per cent short of the volume actually realised - a significant shortfall in so critical an element of Indian economic performance (Katz,1968).

The evaluation of multilateral agencies of the economic effects of their aid to projects reflects contrasting views. Assessment of World Bank projects completed in seventies (130 projects representing $ 10 billion of total investment) showed that 94 per cent of the projects achieved their major objectives, including the minimum required economic rate of return of 10 per cent. The 49 agricultural projects evaluated yielded an average economic rate of return of 19.5 per cent. Even for the soft loans of the IDA, 80 per cent of the projects achieved a rate of return of 10 per cent or more (Clausen,1981). On the other hand, however OECD's Development Advisory Committee (1985) concluded that aid funded projects were equiproportionally divided between the categories 'highly successful' and 'disappointing'. Of the last category, about 10 per cent of the total had to be regarded as "a total loss".

The views regarding the salutary effects of aid reflect the unguarded optimism of the 'fifties when the exponential growth in the need

for and demand for aid resulted in development assistance becoming an integral element of the relationship between rich and poor countries. Optimistic expectations of rapid growth in developing countries gained currency from a belief that the potential for growth could be unleashed simply by easing the financial constraint. The actual development experience of the 'sixties and 'seventies led to wide spread scepticism on both sides of aid flows. Dysfunctional possibilities of aid began to be emphasised in the face of the faltering growth performance of recipient countries and recurring balance of payments crises. It became necessary "to ask bluntly not only why advanced countries should give aid, but why, in fact, they do" (Ohlin,1966).

Empirical exercises establish the negative effects of aid on the developing countries. Weiskopf (1972) found that in the case of about 23 per cent of foreign aid inflows crowding out effects were evident in a decline in domestic savings. The school of dependency theories of underdevelopment highlight the conduit that external aid provides for advanced countries to exploit the advanced segment of the developing countries and to make the latter dependent within the inter-related world of economic structures. As a result, possibilities of economic growth in dependent countries would be extremely limited; any surplus generated by them would be expropriated in large part by foreign capital. Furthermore, not only would resources destined for investment thereby be drastically reduced, but so would be their multiplier effect, as capital goods imports purchased from abroad constitute leakages from the income-stream. This process would lead to economic stagnation and the way out would be to cut off links with donor countries.

The large element of self-interest in aid giving has damped the utilisation process. In particular, the practice of tying aid to purchases from the donor is seen as a vivid expression of the commercial motivation of donors in aid-giving and a distinct factor influencing poor utilisation of funds in a donee economies. The instrumentality of tying aid can take the form of formal restrictions, informal restrictions as in embodied aid and even indirect restrictions as when aid forms part of a 'package'.

The wedge created between the nominal value of aid flows and the real value to the recipient by the conditions attached to the disbursement of both loans and grants has drawn critical attention in the literature (Ul Haq, 1965, Singer, 1965, Bhagwati, 1967 and Eckaus, 1969). Although substantial relaxations have set in with regard to aid giving in

recent years - the incidence of fast disbursing balance of payments support aid and maintenance aid providing evidence thereof - the tying of aid continues to be viewed by increasingly cost conscious recipients as an impediment to the speedy utilisation of aid. Prices of aid - related purchases in the donor countries have been found to be substantially higher than world market prices. It is observed that the percentage of potential excess cost, measured as the ratio of the difference between 'high bids' and 'successful bids' to 'successful bids' was, on an average, 49.3 per cent and that over 31 per cent of the value of contracts awarded (amounting in total to $ 200.9 million) were characterized by potential excess cost of over 50 per cent, and 62.9 per cent of the value of contracts awarded were characterized by potential excess cost of over 30 per cent for the period 1960-66 (Bhagwati,1967). Ul Haq (ibid) found that tied aid projects in Pakistan were typically subjected to monopolistic pricing. The French supply quotations were 33 per cent to 47 per cent higher than the quotations received from Pakistani agents for various items. A Study by the Economic Commission for Asia and Far East (Brahmanand, 1968) brought out monopolistic implications of tied loans in a survey which examined the extent of cost inflation of tied loans with respect to Pakistan's development projects. It was found that the weighted average price for a sample of 20 developmental projects in Pakistan was higher by 51 per cent in the lowest quotations from the tied sources than in the lowest quotations obtainable through international bidding. In the case of non project assistance it was found that prices of supplies from the USA were 40 per cent above the international rate. Indeed, by taking into account these price differentials in evaluating the real worth of aid flows, nominal values of tied aid can shrink to as little as a half (Bhagwati, ibid and Pincus, 1963). These sentiments reflect a disenchantment with aid from the point of view of the recipients and have a direct bearing on the phenomenon of aid underutilisation.

It needs to be noted that the extenstion of aid has always occurred in the rainshadow of self-interest. In the present day, the principles of aid-giving are almost indistinguishable from those of foreign policy manoeuvres. The origins of development assistance programme have roots in decolonialisation. Aid became the conduit for former colonial powers to have a say in the development strategies of erstwhile colonies, particularly in shaping them to suit the economic and political objectives of the 'mother countries'. Countries like Germany, Japan and Italy became donors in the fifties with primarily a commercial motive i.e. to compete for new markets and export credits extended by them, which are typically confused with aid, was the major weapon. In the hands of the USA and

the erstwhile USSR, foreign aid became honed into an instrument of financial diplomacy, the emphasis being on military strategy, support to friendly governments and thwarting the other's advances during the cold war became paramount. Growing recognition of the lop-sided world wide development which such vested interests can create ultimately upon the ability to absorb aid by recipients has lent strength to the impassioned plea among economists for multilateralism in the distribution of aid.

The major disadvantage of bilateral aid is that it tends to be politically motivated and hence becomes less effective and morally objectionable. Misgivings have been expressed however as to whether a switch from bilateral to multilateral aid would in all circumstances mitigate these shortcomings with the amount of aid remaining same (Balogh, 1967). This is because the effective decision making in the international agencies is to *a very large extent concentrated among much the same nationals against* whom the protest against bilateral aid is, in fact, directed. Again, that these agencies would operate with wisdom and clarity is subject to question as they are in close contact with those government and semi-governmental organs like treasuries and central banks and rely on capital markets of donor countries which remain most closely under conservative banking dominance. There are a number of powerful arguments which suggests a reform of bilateral, rather than an unconditional switch towards multilateral aid.

Quite apart from the non-economic considerations[3] - charitable, strategic and nationalistic - which governed foreign aid policies among the donors, there has been consensus among economists as regards the intrinsic character of foreign aid which is its additionality. The purpose of provision of aid is to give to each recipient country a positive incentive to maximise its growth up to and only up to the point from where growth can be self-sustaining. The principal element in this transition must be the efforts that the citizens of the recipient countries themselves make to bring it about (Rosenstein Rodan, 1961). Foreign aid can only supplement and not supplant the indigenous impulse to grow.

Underlying this fundamental point is the ability to use foreign capital effectively. Absorptive capacity becomes thus the measure of allo*cation of aid between different countries (Ohlin, ibid).* While, in the broader sense absorptive capacity relates to the ability to use capital productively (Rosenstein Rodan, ibid). In a technical sense of the term, it involves assessment of a host of interrelated issues relating to the country's administrative and governmental organisation and its

state of technology with which it would convert the aid flow into increases in productive investment. Moreover, absorptive capacity may be limited at a low level of development so that enlargement of absorptive capacity becomes itself a goal for foreign aid. Towards this objective Rosenstein Rodan suggests a higher proportion of technical assistance must precede a capital inflow.

A critical issue in this regard is the measurement of absorptive capacity for if absorptive capacity cannot be measured it cannot serve as a criterion of aid allocation or need. An indirect measure of absorptive capacity is an assessment of the productivity of aid , i.e., how much will the flow of aid raise national income in future periods. It is clear that such a prognosis is complex and extremely difficult to judge, and steeped in subjectivity. Rosenstein Rodan suggests ascertaining by how much a country has succeeded in increasing her volume of investment during the past five years or more. Even if past performance can be used to plausibly project into the future, much wider considerations than the observed productivity of aid would enter. For instance, an increased efficiency in the use of resources independent of the injection of aid may obtain the desired results. Obviously, this measure relies on rule of thumb rather than on a serious objective assessment. Another criterion for the measurement of absorptive capacity is the marginal rate of savings. A country which has a marginal rate of savings higher than its average rate and succeeds in maintaining or widening the deviation between marginal and average rates would be able to utilise aid better. The case for the measure draws from the familiar multiplier effect which transforms additional savings into investment and thereby into increments of national income. This measure suffers from pitfalls in terms of arguments, let alone difficulties of measurement. Foreign aid is sought precisely because of a shortage of savings. Furthermore, it would not be unreasonable for a developing country to substitute aid for domestic savings in order to maintain or increase its average standard of living (Eckaus, ibid). Moreover, there is a consensus among economists that the marginal rate of savings is a less important variable (Little and Clifford, 1965). The multiplier is 1/(1-VS) where V is the output/capital ratio and S the marginal savings rate. Even assuming a V of 1/3 which is "optimistically high" and a S of 1/3, which is characteristic of a country "doing extremely well", the multiplier effect would be only 9/8[4]. Finally, the marginal rate of savings is certainly less important than the rate of population growth and is, in a sense, determined by the latter. Efficiency in the use of aid is another criterion for the allocation of aid and absorptive capacity and is measured by factor/output ratios particularly the capital-

output ratio.The measure is premised on the grounds that factor prices accurately reflect factor scarcities and do not reflect the distortions of monopolies and pressure groups. Shadow prices are often calculated to eliminate the distortive effects of imperfections, but they are at best rough approximations. Reliance on capital output ratios also has distortive possibilities since it would encourage recipients to utilise aid in area where the ratio can be kept high, as for instance, housing with rent control (Eckaus, ibid) and consequent poor housing. Finally, Rosenstein-Rodan proposes measuring absorptive capacity from a judgement on a country's overall administrative and developmental organisation which is, by its very nature, arbitrary.

In summary, the concept of absorptive capacity as a foreign aid rationale is more suited to aid-giving than in evaluating how a recipient utilises aid. Given the difficulties of measurement, it is at best a clouded one, articulated in many different ways within each donor and recipient country. It requires international comparisons and is subject to value judgements some of which can even be implicit.

The question remains as to what criteria to be used in allocation of aid. It is not unreasonable for the donor nations to apply value judgement on the efforts of the aid recipient or to expect them to use resources efficiently. As all that is available for decisions makers is a brief history of savings and investment rates, factor of production and foreign trade experience and no full detail regarding the alternative growth path open to each country. Inspite of the reservations such comparisons provides the major source of insights and background necessary for judging individual countries in the giving of aid. From the point of view of the recipient, however, different considerations apply in evaluating the need for aid and in its effective utilistion.

There are, thus differing views among different authors about the role of extemal assistance. As developing economies internationalise and integrate into world financial markets, the degrees of freedom lost in the dependence on foreign aid emerge starkly, especially when the development process is increasingly viewed as inextricable from the political economy. The higher costs of tied aid is now universally recognised. Moreover an inexorable process of immiserisation has become evident in a reverse transfer from donor to debtor then appears as merely the conduit of export advantage for aging economies. There are also, as mentioned earlier, endogenous constraints to the utilisation of aid which are usually unique to each recipient and are not subject to generalisation.

SECTION III

This section provides in one canvas, an overview of the quantitative dimension of the problem under study. By March 1994, commitments of external assistance had cumulated to a level of Rs.1,18,709 crore. By the same point of time utilisation of such assistance worked out to only 69 per cent of total commitments. In other words, foreign exchange worth of Rs. 51,093 crore (US$ 18.2 billion) that was offered to the country so far was not availed of (Chart 1).

Of the total undrawn balance of about Rs. 51,093 crore, as much as 54.3 per cent was accounted for assistance from the World Bank group followed by 20.9 per cent for Japan and 16.3 per cent for ADB (Chart 2). The purpose-wise distribution of aid undisbursed reveals that the energy sector accounts for the major share of the total aid unutilised (45.9 per cent) followed by 13 per cent for Infrastructure Sector (Chart 3). Ratio of undisbursed balance of aid as a proportion of aid authorised in the respective sector reveal that social sector followed by infrastucture sector and energy sector account for more than 50 per cent of aid authorised as undisbursed balance .In the energy sector, loans from IBRD account for 20.2 per cent and constitute the largest source in respect of which assistance remain undisbursed. In the infrastructural sector, a similar position is found in respect of the ADB (Chart 4).

In the first three decades of planning in India (1950-80) external assistance formed an important source of Plan financing. The share of external assistance in financing of successive plans rose from 10 per cent in the first plan to about 36 per cent in the Annual Plans before declining. Reflecting the dependence on external aid in the early years the undisbursed balance under external assistance was very low during the decades 1951-60, 1961-70 and 1971-80 forming 3 per cent of total. During 1981-90, however, a decade which witnessed a steady fiscal deterioration and the emergence of large persistent fiscal deficits, the record of aid utilisation suffered deterioration (Table 1).

Chart – 1
Trends in Cumulative Aid Authorised and Undisbursed

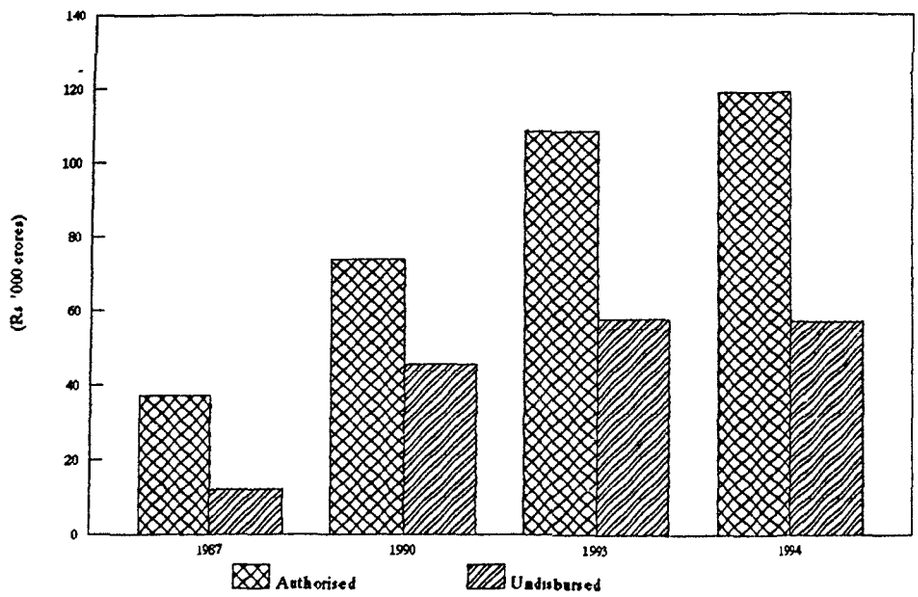


Chart – 2
Source – wise Undisbursed Aid as on 1994

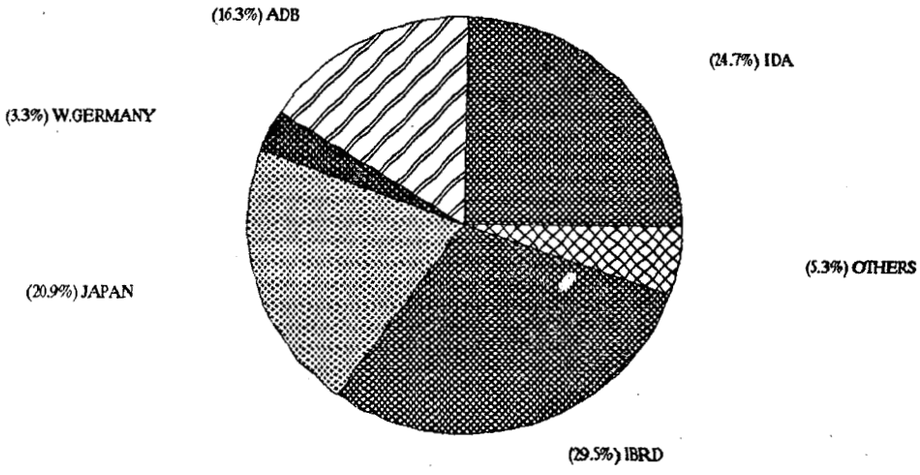
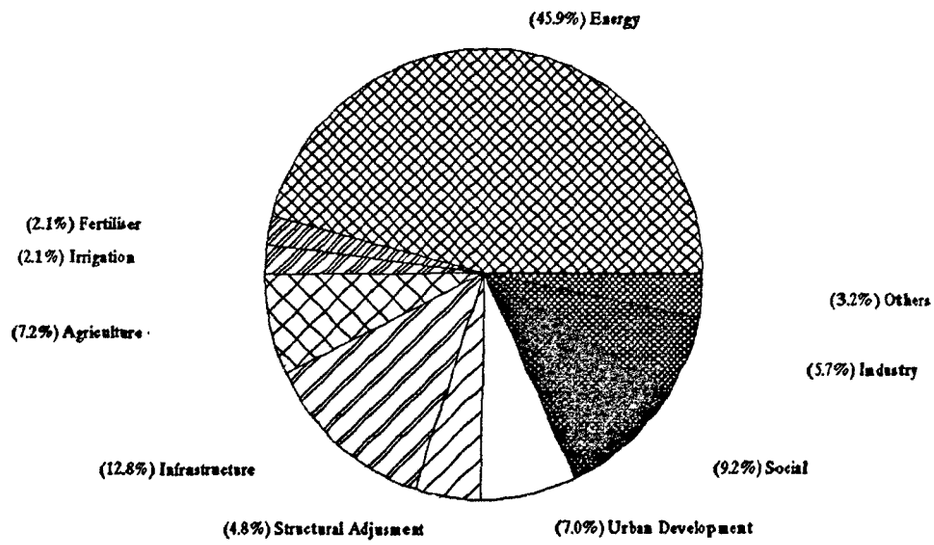


Chart – 3
Sector–wise Aid Undisbursed as on 1994



Chart–4

Source & Sector–wise Aid Undisbursed as on 1994

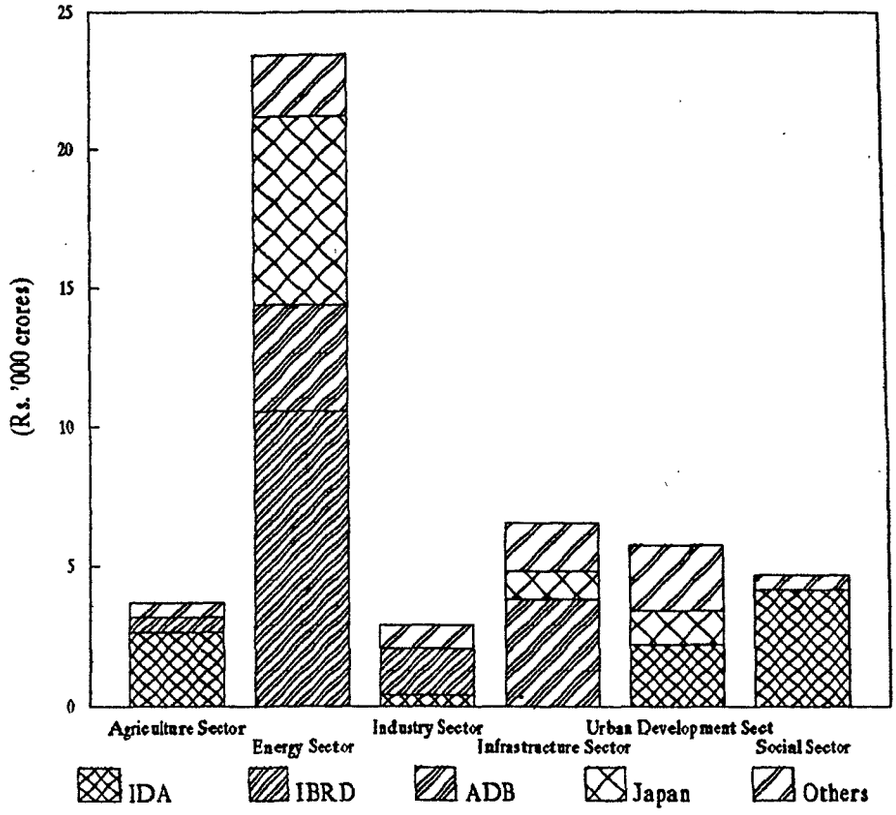


Table 1 : Classification of Undisbursed Balance of Aid

(Rs. Crore)

Sector/Period	1951-60	61-70	71-80	81-90	Total as on March 1994
Energy	0	0	781	20,168	23,447
Irrigation	0	0	21	2,684	1,095
Social	0	0	0	4,056	4,692
Urban Development	0	0	0	2,134	3,578
Industry	79	0	212	4,596	2,900
Structural Adjustment	0	0	0	0	2,454
Fertiliser	0	0	0	429	1,089
Agriculture	0	0	6	2,582	3,683
Infrastucture	0	0	0	4,506	6,545
Others	77	255	355	2,938	1,610
Grand Total	156	255	1,375	44,093	51,093

SECTION IV

The burgeoning stock of unutilised assistance, irrespective of academic positions and external impediments, reflects inefficiencies deep-seated in the receiving economy. These bottlenecks withstand the injection of external investment and perpetrate distortions in the allocative mechanism, in the cost structure, and upon overall productivity. These structural impediments which relegate increasing amounts of committed assistance to the pipeline are briefly addressed below.

Budget Constraint[5]

The budgetary constraints apply not only with regard to counterpart funds but also to the aided portion of the project cost. This is because of, first, the erstwhile irrational practice of the Central Government of retaining with itself a portion (30 per cent in most cases) while pass-

ing on the rupee equivalent of the project aid to the states. Hitherto, 100 per cent of central assistance is being passed on to states for all sectors as recommended by the National Development Council. The second is the liquidity problem brought about by the procedure of releasing even the truncated portion of external aid by way of reimbursement alone. The money finally reaches the project by a convoluted path via the central government. Cash trapped State Governments find it well nigh impossible to advance the funds needed for externally aided projects, leading to delay or non execution of the projects. The Lower Barbani hydro-electric power project in Assam is a typical example. The state electricity board was unable to raise counterpart funds, and when the last disbursement was made in 1986, 210 million yen (Rs.3.9 crore) of the 1,700 million yen loan remained unutilised.

Conditional aid

Normally, loans are tied either by source or project. The former type of conditionality considerably reduces the real value of aid flows by tying them to purchases in the donor country and by preventing the recipient country from using them for equipment, plant and services which could otherwise have been obtained at competitive world market prices. In addition, in a considerable number of cases the equipment and machinery of the donor country do not suit local needs; hence time is taken to identify the suitable equipment as per need. The project tied aid acts as a handicap in the utilisation of resource transfer since the project designing and preparation is obviously a time consuming process. The Principle for Effective Aid agreed on in 1992 by the Development Assistance Committee (DAC) of the OECD reaffirmed the superiority of untied aid and specified that, except for the least developed countries, tied aid would not be commercially viable if financed on market terms[6]. While most loans have conditions attached to them, those that come with World Bank and Asian Development Bank (ADB) funding usually are the most exhaustive. The conditionality ranges from tender specification to broad policy guidelines as regards rates of return and tariffs. This problem is usually with Power projects. For instance, in July 1991, the World Bank suspended a loan of US $ 350 million sanctioned to Uttar Pradesh State Electricity Board (UPSEB) by the IBRD three years earlier. The reason was that the UPSEB made no effort to meet the Bank's deadline of June 30, 1991 for achieving a 3 per cent rate of return.

Procedural Delays

On occasion, money is allocated to a project before mandatory clearance has been acquired. If the project is unable to get expeditious clearance, the aid payments also get delayed. Litigation over rehabilitation and resettlement, land acquisition, forest and environmental clearance and water rights can further delay matters. Faulty planning can also hold up deliveries of equipment and disputes with customs have occurred on several occasions. The Official Development Assistance (ODA) and other aid agencies never pay for duties and taxes; as a result, the National Hydro Electric Power Corporation (NHPC) found itself unable to pay the import duty on equipment imported from a British company.

Cost Escalation

The practice of providing tied aid has been responsible for cost escalation of development project as it results in high cost imports. Often the concessionality is absorbed by the Government and the project authorities are compelled to procure equipment at higher than market price simply because bilateral aid is available. In such a situation, to the extent concessionality is absorbed by the Government, the project authorities have little incentive to ensure quick absorption of bilateral aid. On the other hand, too many projects are taken up which makes it difficult for every project to receive, within the overall budget constraint, the critical minimum allocation required for completion on schedule, leading to time and cost overruns. In addition, commitment charges and cancellations are costs which a country has to bear for inefficient use of aid. The World Bank, ADB and OECF are the only agencies which are known to have cancelled loans. A special feature of power projects is the absence of a cost related tariff structure which has an adverse effect on the finances of State Electricity Board (SEBs). SEBs are thus unable to provide adequate funds for the power projects resulting in the delayed utilisation of external assistance.

SECTION V

In this section, an attempt is made to empirically analyse the endogenous factors which together represent the most feasible approximation of the country's absorptive capacity with respect to external assistance. While doing so, the effort is to move out of the confines of the measures suggested in literature given their perceived subjectivity, the lack of consensus among economists regarding the applicability of these mea-

sures and their poor information content. Instead an attempt is made to eclectically choose variables which most closely depict the country - specific constraints on the ability to absorb aid productively. Furthermore, the empirical exercise conducted in this section concentrates essentially on behavioural relationships, i.e. factors effecting the demand for aid and structural bottlenecks. The supply of aid or its responsiveness to the country's need can be taken to be very large given the large stock of commitments in relation to utilisation, and therefore does not require to be explicitly modelled. It needs to be recognised, however, that most of the factors impinging upon under - utilisation of aid are qualitative in nature and hence cannot be represented by specific variables. Consequently an estimation framework can be crafted only at the cost of a trade off.

Unutilised aid was measured by the ratio of cumulative utilisation to cumulative authorisation. This measurement was chosen since measuring the *underutilisation of aid in terms of differences of end year stocks* of undisbursed aid imposes variation of valuation which a flow measure averages out. Given the role of the federal Government as prime mover in the economy, the variable capital expenditure of the Central Government expressed as a ratio of total expenditure of the Central Government is taken as a broad measure of the allocation of funds for investment which include aid financed projects. Thus, for instance a rising trend in the ratio implies an increase, *inter alia*, in the provision of matching rupee resources for aid-funded projects and better utilisation of aid. The variable is expected to have a positive sign.

The federal Gross Fiscal Deficit (GFD)[7] scaled by total expenditure is a summary measure of the budget constraint, which can be determined independently of resource allocation decisions. In the Indian context the composition of the GFD shows that since 1990-91 an increasing proportion of the GFD is accounted for by the revenue deficit with a resultant decline in the share of capital outlay and net lending (Table 2).

Table 2 : Composition of Gross Fiscal Deficit

(In Per Cent)

Year	Revenue Deficit	Capital Outlay	Net Lending*
1980-90#	24.2	38.3	37.5
1990-91	41.6	27.2	31.2
1991-92	44.8	31.4	23.8
1992-93	46.2	33.9	19.9
1993-94	54.3	22.0	23.7
1994-95@	55.9	25.2	18.9

* Adjusted for Disinvestment
\# Average
@ Revised Estimates

A rising GFD measuring the increasing borrowing requirement of the Government implies as it were, a growing order of preemption of funds for current expenditure and therefore, higher debt service in future. Thus GFD measures the diminishing availibility of resources for externally aided projects. As in the case of capital expenditure, GFD employed with one - period lag was scaled by total expenditure of the Central Government. It is expected from the priors to have a negative sign. The simultaneous inclusion of GFD and capital outlay as explanatory variables raises the possibility of multicollinearity. However, the fact that capital outlay by Government generates strong externalities for the rest of the economy warrants its inclusion along with GFD as explanatory variables so that the output effects of Government expenditure and corresponding 'crowding in' effects for externally aided projects are effectively captured alongside the 'crowding out' effects of a rising GFD. Crucial importance is however, attached to signs of the respective coefficients, for a perverse sign would indicate the fact that collinearity was strong enough to overshadow the economic rationale for inclusion of these variables. It needs to be mentioned that several alternative formulations of the comparative static budget constraint, i.e., public sector deficit, combined gross fiscal deficit of Centre and State were tried. However, the GFD of the Central Government yielded the best results.

In view of the predominant share of the power sector in aid commitments, the efficiency of resource utilisation in the power sector was hypothesised to have a bearing upon the cumulative utilisation of

external assistance. The Plant Load Factor (PLF), i.e., generation of power to total installed capacity represents the range of factors which determine the allocative efficiency of resources devoted to the power sector. Low generation of power relative to capacity lowers the total revenue realisation, which reduces the yield on the amount already invested. In time this leads to funds shortages impeding investment in ongoing projects. Several efforts can be made at the margin towards increasing the PLF factor which emerges as the durable factor enabling quicker utilisation of aid.

Given these expected relationships, a behavioral function was postulated of the form

$$UAR = a_1 + a_2\ CETCE + a_3\ KLM + a_4\ GIR$$

Where

UAR = Ratio of cumulative utilisation to authorisation of aid.

CETCE = Capital expenditure to total Central Government expenditure

KLM = Ratio of gross fiscal deficit (Center) with a one-period lag to total expenditure

GIR = Ratio of generation of power to total installed Capacity

The power sector accounts for 49 per cent of aid commitments and 48 per cent of cumulative utilisation. As much as 42 per cent unutilised aid at the end of March 1994 was related to the power sector. Consequently, a comprehensive analysis of the poor utilisation of aid in the aggregative would be fortified by an empirical analysis of factors underlying poor utilisation of aid in the power sector alone. As in the economy-wide single equation model, the dependent variable in the functional form for the power sector was taken as the ratio of cumulative utilisations to cumulative authorisation of aid.

In the case of sectoral sub-model, however, the budget constraint embodied in the provision of matching rupee resources for aid funded projects has to be designed to be sector specific. Budgetary allocation of funds for the power sector (i.e., POSEC) by the Central Government was taken as the relevant variable. A rise in the power sector's allocation would, ceteris peribus, result in an increase in aid utilisation. The coefficient of the resource allocation variable was expected to have a positive sign.

Unduly long gestation lags is a feature of projects in the power sector. When gestation lags spill over project deadlines, cost overruns can impose procedural hurdles on the release of aid and thus damp the utilisation of aid. The GDP deflator was taken as a summary measure of cost conditions in the economy. Its coefficient was expected to have a negative sign since rising costs act as a deterrent to fresh aid utilisation.

The plant load factor used in the aggregative equation was also used in the power sector function which was then specified as

$$UARP = b_1 + b_2\ GIR + b_3\ GDPD(-1) + b_4\ POSEC(-1)$$

Where GDP = Implicit Gross Domestic Product Deflator
POSEC = Investment in the power sector

The equations were estimated by means of ordinary least squares for the period 1972 to 1990 for which a consistent data series on undisbursed aid is available (Table 3).

Table: 3 Empirical Results

Sr. No.	Estimated Equation	$\bar{R}^2$	SEE	D.W.	F
1.	**Economy-Wide Function**				
	UAR = -0.53 - 1.77 KLM (0.09) (2.90)*	0.747	0.06	1.89	18.68
	+0.57 CETCE + 0.02 GIR (1.98)** (2.03)**				
2.	***Power Sector Function***				
	UARP = 77.27 +2.81 GIR (0.18) (2.58)**	1.87	8.67	1.94	27.43
	-0.71 GDPD (-1) (5.09)* + 0.01 POSEC (-1) (3.68)*				

Figures in paranthesis are t-statistics
* denotes significant at 1% level
** denotes significant at 5% level

The estimates of the equations satisfied standard statistical criteria. The explanatory power of the equation is reasonable when it is recognised that there are several unquantifiable factors which cannot be captured. All the variables had expected signs and were significant at the coventional 5 per cent level. In the economy-wide function the variable KLM had, by far, the most important influence indicating the subservience of decisions relating to aid utilisation to the overall fiscal position. Large revenue deficits of the center have been reducing the allocation of resources for investment in infrastructural development which ultimately affects the capacity to absorb aid. This is reinforced by the significant positive sign of the variable CETEC showing thereby that aid utilisation would improve with larger budgetary allocation for investment in core sectors. The influence of capacity utilisation in the power sector was found to be weak though significant, presumably due to aggregation bias in the specification. In the power sector function, the influence of the capacity utilisation was predominant underscoring the need to address issues relating to efficient capacity utilisation, post-generation administration and better management. Furthermore, the factors of delays in project implementation and resultant cost escalation are seen to exert a dampening influence upon aid utilisation, again highlighting an area of policy action.

SECTION VI

The stock of unutilised aid has assumed proportions which are disquieting. It is seen as a reflection of the country's poor ability to absorb foreign capital and utilise it efficiently, given the internal and external constraints. Such an image may adversely affect the size of annual fresh commitments. Recent compositional shifts in the capital flows have exhibited that the absorptive capacity of the country for foreign capitial is high, particularly those coming in the form of commercial borrowing , foreign direct investment and through floation of foreign currency bonds and Global Depository Receipts (GDRs) by corporate houses. Hence, improved resource allocation and efficiency in resource use along with various measures to improve aid delivery can significantlly improve the absorption of external asistances.

In the recent period, the Report of the High Level Committee on the Balance of Payments has underscored the need to initiate urgent action to reduce the overhang of unutilised aid within the overall policy consideration attached to the composition of capital flows. Some of these recommendations have already been implemented viz., the passing on of 100 per cent of external assistance to states for all sectors, as recom-

mended by the National Development Council. Other recommendations such as additional central assistance within a limit in terms of the accepted reimbursement during a year, priority to externally-aided projects while making plan allocation and budgetary provisions, streamlining of contracting procedures and decentralisation, would all, when implemented result in substantially reducing the piling up of undisbursed aid[8].

It is important to undertake the review of projects so as to identify loans which can be cancelled forthwith and renegotiated for fast track projects instead of incurring commitment charges thereon. It is also useful to consider the complete elimination of the role of the central government in the disbursement of aid, except in the social sectors by instituting alternative aid delivery and monitoring systems. Even in social sectors, non-Government Organisations may be allowed a role along with the Government in the utilisation of foreign aid. Bureaucratic hurdles have often been cited as the most stringent deterrent to the rapid utilisation of aid.

Analytical examination shows that of all the relevant factors, budget constraint of the center, low capacity utilisation in the power sector had a significant influence on the utilisation of aid. The study reveals that a large portion of unutilised aid is in the power Sector. In the areas of power and infrastructure dealing with departmental undertakings such as the Public Works Department are seen to be the most difficult and the single largest contributor to delays in power projects. Dealing with dual ownership of state and center is another area of difficulty. In this context, direct lending to project themselves may be considered with an efficient system of monitoring set up by the Government. For aid which needs to pass through budgets, one step could be to create revolving funds at the Center from which funds can be advanced to the State Government on a tranche basis depending upon utilisation of the previous tranche . As an alternative privatisation of power projects also may improve the utilisation pattern of aid. In addition, generation, transmission and distribution of electric power, could be separated as done in several developing countries like Argentine, Philippines, Chile, Mexico, Jamaica and Hungary. In such a scheme of privatisation the ownership of public sector may remain confined to the amount of aid and actual investment already done. Given the 'externalities' of the utilities generated by such projects, a minimum return on the investment coming from the private sector may be guaranteed by the government.

Finally, due attention needs to go to evaluation criteria followed in respect of externally aided projects. In this sphere, the onus lies upon donors to streamline procedures and evolve more effective design and implementation of projects.These issues can be imposed on borrowers and made conditions of the authorisation of aid. Improvement in the utilisation of external assistance depends, in the final analysis, upon the efficiency of the economy in terms of resource allocation. This would hinge upon the process of structural reform which is presently underway. Ultimately, the areas where external aid can flow have to be properly identified and funds channeled thereto. This would follow from the broader issue of role identification for the public sector and the private sector in the new dispensation. It may be necessary to withdraw external assistance from sectors such as power and industry for which other flows such as foreign investment has a greater affinity and expand assistance to area such as renewable energy, energy conservation and environmental infrastructure.

Notes

1. Unutilised or undisbursed balance under external assistance is defined as authorisation of aid less utilisation thereof.

2. Mc Donald(1982), provide an enumerative overview.

3. This is not to dilute the significance of the fact that even today the bulk of external aid is tied and serves objectives more complex than developmental.

4. The numerical example is taken from Little and Clifford(1965).

5. Budget constraint in this context refers to the Budgetary support embodied in the release of rupee resources for externally funded projects.

6. World Development Report, 1994.

7. The Budget constraint in a comparative static sense can be defined as
   1 - R/T
   Where R = Revenue Deficits
   T = Total Expenditure
   Thus, GFD/TE = (T - R)/T = (1 - R)/T. For a comprehensive examination of the conceptual and definitional issues involved, see Rangarajan et al, 1989.

8. This study assumes as a starting point, the excellent treatment of its theme by the Report of the High Level Committee on Balance of Payments. Therefore, the reasons for underutilisation of aid and recommendations made by the High Level Committee are not set out in detail here.

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Reserve Bank of India Occasional Papers
Vol. 16, No. 3, September 1995

NOTE

Financial Performance of Leasing Companies During the Quinquennium Ending 1989-90

Seema Saggar*

This note presents an analysis of the combined performance of a sample of 10 large leasing companies and its comparison with the performance of the samples of competing financial companies, viz. Hire Purchase Finance Companies (HPFCs) and Investment Companies (ICs) by employing Analysis of Variance (ANOVA) to selected significant financial ratios duing the quinquennium ending 1989-90. The analysis throws up a number of interesting findings which demonstrate that while performance of the sample leasing companies has been impressive, it compares well with HPFCs and somewhat less favourably with ICs. Interest burden is found to be higher in case of Leasing and HPFCs while the debt-equity ratio is observed to be rising rapidly in case of the former. Leasing companies, as also HPFCs, face some liquidity constraint and are seen to have relatively adverse capital structure and low returns on assets compared to ICs. Significantly, bank financing to these three types of NBFCs, viz., Leasing, HPFCs and ICs is found to be neutral in that the ratio of bank borrowings to total borrowings is not significantly different in the three activities represented by the financial companies under view of this study.

During the last few years, the financial service sector in the country has developed considerably, catering to the needs of the corporate sector and consumers. Leasing, hire purchase, consumer durables financing, real estate financing, stock broking, factoring, merchant banking and portfolio management are some of the important components of the sector. The equipment leasing industry has been among the most rapidly expanding areas of commercial activity in the past decade[1].

This note presents the findings of the study analysing the performance of leasing companies in India during quinquennium ending 1989-90 and its comparison with that of HPFCs and ICs. The choice of the period has been made taking into account the availability of sample data. The five year period representing the latter half of eighties could be taken to broadly reflect the phase in which leasing business expanded in India so

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as to acquire a distinct industry status. The study does not cover the entire spectrum of NBFCs and therefore, any inference drawn from this study should not be generalized to all NBFCs. The study covers only those NBFCs whose paid-up capital exceeds Rs. 1 crore. As such, the analysis is not truly representative of industry average. Nevertheless, it is reasonable to expect that financial companies with paid-up capital exceeding Rs. 1 crore form the dominant segment of the industry.

The data used in this study has been compiled from the annual accounts of the sample companies. Certain limitations inherent in this data need mention. Firstly, many of the companies under study are diversified companies and they are classified in the sample on the consideration of their main business activity. Secondly, the companies under consideration do not have a uniform accounting year[2]. To the extent possible, the book entries in company accounts have been suitably adjusted to arrive at near-correct picture in respect of the accounting year referred to in this study. Thirdly, similar adjustments have been made to overcome the problem arising from re-valuation of assets by the companies. While limitations of the nature enumerated above are common to most firm-level studies, effort has been made in the present study to minimize the limitations associated with company accounts by carrying out suitable adjustments in the data.

I. FINANCIAL PERFORMANCE OF LEASING COMPANIES IN INDIA

Though it is still early to assess the financial performance of leasing companies on a long term basis, available indicators show a good level of profit and a reasonably sound capital structure in the early years of their operations. This is brought out by the analysis of financial performance of the sample leasing companies presented below for the quinquennium ending 1989-90. The main income of these companies (ie. the lease rentals) though had grown steadily during the sample period recording an annual average compound growth rate of 33.6 per cent, showed a perceptible deceleration in its growth on a year to year basis (Table 1). Concomitantly, the share of lease income in total income also declined. The rapid proliferation of leasing companies and their income upto 1986-87 was supported by the increasing recognition of leasing as an effective source of financing, the tax advantages offered to leasing companies and strict measures for enlistment of investment companies on stock exchanges which left leasing with less of competition at the initial stage (Kumar, 1987). In the subsequent years many of these advantages were wiped out. Consequently, there was an oversupply of lessors leading

to a cut-throat competition which not only resulted in great shakeout that saw the exit of many fly-by-night operators, but also resulted in squeezing of the margins[3]. The entry of the Government-owned financial institutions and banks in the field of leasing also enhanced competition and further eroded the incomes of private sector leasing companies[4]. The fortunes of leasing companies were to a large extent linked to the tax regime in vogue. Following the change in tax practice in 1987, profit after tax declined by 35 per cent over the next two years[5]. Working results were distinctly better in the following year but business sentiment suffered somewhat on account of introduction of exposure draft on accounting services and guidance note of accounting by Institute of Chartered Accountants of India (ICAI) which sought to change the accounting norms to put a stop to the cosmetic presentation of accounts. This resulted in additional tax burden on these companies. Furthermore, many States redefined "sale" to include a "transfer of right to use goods for any purpose", effectively roping in the financial lease transactions into the sales tax net. Some of these developments, though adverse for leasing industry, set up a more level playing field for NBFCs and had a moderating influence on growth of leasing companies. It may be observed from Table 1 that the leasing companies maintained the dividend pay out, even when profits after tax declined in 1987-88 and 1988-89, broadly in line with the earlier years. This reflects the stable dividend policies adopted by leasing companies, reflecting that they had survived the great shakeout.

The Return on Asset (ROA) ratio calculated as profit after tax as a proportion of total assets has been rather low and has declined from 6.4 per cent in 1985-86 to 2.6 per cent in 1989-90 which shows the decline on return on lease assets. This could be due to several reasons such as greater competition, high tax rates, adverse composition of assets, etc. Return on shareholder's equity measured as a proportion of profits after tax to net-worth has shown a similar trend as that of ROA, declining over the years from 20.4 per cent in 1985-86 to 10 per cent in 1988-89 (indicating indirectly that the utilization of the assets which are partly financed by the net-worth have declined) and then improving significantly to 14.4 per cent in 1989-90.

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Table 1: Income and Selected Profitability Ratios of Leasing Companies@

(Rs. Crore)

Years	Total Income	Main Income	Profit Before Tax (pbt)	Profit After Tax (pat)	Dividends	Gross Profit Margin (%)	Net Profit Margin (%)	pat as % of total assets	pat as % of net worth	Dividends as % of pat	Main income as % of Total income
1	2	3	4	5	6	7	8	9	10	11	12
1985-86	26.82	20.86	8.12	7.92	3.20	57.6	29.5	6.4	20.4	40.2	77.8
1986-87	42.92 (60.0)	35.47 (70.0)	11.34 (39.7)	11.27 (42.3)	4.87 (52.2)	58.4	26.3	5.4	19.7	43.2	82.6
1987-88	59.64 (39.0)	49.08 (38.4)	12.27 (8.2)	10.33 (-8.3)	6.39 (31.2)	56.9	17.3	3.8	15.7	61.9	82.3
1988-89	75.62 (26.8)	58.07 (18.3)	9.32 (-24.0)	7.31 (-29.2)	6.91 (8.1)	52.0	9.7	2.1	10.0	94.5	76.8
1989-90	96.38 (27.5)	66.52 (14.6)	14.12 (51.5)	11.80 (61.4)	6.58 (-4.8)	52.2	12.2	2.6	14.4	55.8	69.0
CARG(%)	37.7	33.6	14.8	10.5	19.9	—	—	—	—	—	—

CARG: Compound (Annual) Average Rate of Growth.
@ Combined income of 10 leasing companies.
Figures in brackets denote percentage change over preceding year.

Table 2 : Reserves Transfers of Leasing Companies

Years	Profit Retained (Rs. crore)	Profit After Tax (Rs. crore)	(2) as % of (3)	Total Reserves (Rs. crore)	Paid-up Capital (Rs. crore)
1	2	3	4	5	6
1985-86	4.70	7.92	59.30	28.55	21.76
1986-87	6.37	11.27	56.50	44.82	29.92
1987-88	3.92	10.33	37.90	53.03	33.57
1988-89	0.40	7.31	5.50	56.62	38.65
1989-90	5.13	11.80	43.50	71.43	40.28
CARG(%)	2.2	10.5	—	—	16.6

Table 2 shows that the leasing companies, with the exception of 1988-89, have demonstrated an encouraging propensity to transfer retained earnings to reserves. The selected leasing companies have already transferred 20 per cent of their net profits to reserves and are still building up the reserves (This development was favoured by the Working Group on Financial Companies chaired by Shri A.C.Shah in 1992).

An analysis of the capital structure through leverage ratios show some disconcerting trends for the creditors of the leasing companies. Over the years, their long-term debt has grown at a rate considerably faster than their net worth. As a result, the debt- equity ratio defined as a proportion of long-term debt to net worth has risen from 1:1 In 1985-86 to 2.1:1 by the end of the eighties. Furthermore, the ratio of total borrowings to equity has jumped from 1.6:1 to 3.5:1 over the quinquennium under review.

Table 3 : Debt-Equity Ratios for Leasing Companies

Years	Net worth (Rs. crore)	Long-term Debt (Rs. crore)	Long-term Debt/Equity Ratio	Total Borrowings (T-Borr) (Rs. crore)	T-Borr/ Equity Ratio	Bank Borrowings (Rs. crore)	Bank-Borr. to Total Borrowings (per cent)	Net Owned Funds (NOF) (Rs. crore)	T-Borr-NOF Ratio
1	2	3	4	5	6	7	8	9	10
1985-86	38.75	39.77	1.03	61.65	1.59	18.65	30.25	33.33	1.85
1986-87	57.33	93.75	1.64	114.30	1.99	21.03	18.40	47.35	2.41
1987-88	65.57	115.38	1.76	158.76	2.42	43.45	27.37	54.64	2.91
1988-89	72.79	122.61	1.68	211.77	2.91	79.00	37.30	63.12	3.36
1989-90	81.87	169.93	2.08	287.50	3.51	95.66	33.27	70.12	4.10
CARG(%)	20.6	43.8	–	47.0	–	50.5	–	20.4	–

The eligibility criteria for leasing companies to raise finance from banks is reasonably restrictive so as to ensure safeguards for the creditor banks. Bank credit to leasing companies is linked to their Net Owned Funds (as approximated by paid-up capital plus free reserves)(NOF) and such credits are not to exceed three times of their NOF, within the prescribed overall ceiling of ten times of NOF for their total external borrowings, including public deposits, debentures/bonds and borrowings from banks and financial institutions. The ratio of total borrowings to NOF was 4.1:1 in 1989-90. Nevertheless, it is important to strictly monitor and ensure compliance on the ceilings prescribed for the borrowings in terms of NOF as part of the prudential exposure norms. Table 3 shows that the bank borrowings has increased at an average of 50 per cent per annum over the 5 year period and they now account for a third of the total debt of the leasing companies.

It is significant to note that inspite of comfortable total debt to NOF ratio, leasing companies underwent a sustained erosion in each of the five years in net worth as a proportion of their total assets from 31.1 per cent in 1985-86 to 17.8 per cent in 1989-90. This is again a disconcerting trend in that extension of Basle Committee norms to NBFCs would imply that the leasing companies should maintain capital at 8 per cent of the risk-weighted assets and off-balance sheet items on the lines similar to the norms for commercial banks.

Table 4 : Some Leverage Ratios for Leasing companies

Years	Net Worth (Rs. crore)	Total Assets (Rs.c rore)	Capital Adequacy (2) as % of (3)	Interest Payments (Rs. crore)	Gross Profits (Rs. crore)	Interest Coverage Ratio
1	2	3	4	5	6	7
1985-86	38.75	124.63	31.09	7.10	15.45	2.18
1986-87	57.33	209.27	27.40	13.25	25.05	1.89
1987-88	65.57	271.80	24.12	21.45	33.92	1.58
1988-89	72.79	347.88	20.92	27.50	39.31	1.43
1989-90	81.87	460.29	17.79	38.06	50.32	1.32
CARG(%)	20.6	38.6	–	52.2	34.3	–

The heavy reliance of leasing companies on borrowings has increased the interest burden leading to a continuous fall in interest coverage ratio (ie. gross profit/interest) over the period (Table 4). Interest payments now account for three quarters of the gross profits.

Table 5 shows that the current ratio has fluctuated between 0.93 and 1.36 for leasing companies under study and the quinquennium period has ended with a ratio of 1.35:1. The rise in current ratio has been brought about by the rising current assets as reflected from the rise in the ratio of current assets to gross profits vis-a-vis the ratio of current liabilities

Table 5 : Liquidity Ratios of Leasing companies

Years	Total Assets (Rs.crore)	Current Assets (Rs.crore)	Quick Assets (Rs.crore)	Current Liabilities (Rs.crore)	Current Ratio	Quick Ratio	Loans & adv. as a % of (3)
1	2	3	4	5	6	7	8
1985-86	124.63	41.78	20.62	45.16	0.93	0.46	46.41
1986-87	209.27	79.45	32.62	58.21	1.36	0.56	55.42
1987-88	271.80	112.67	27.94	90.83	1.24	0.31	73.28
1988-89	347.88	170.66	31.95	149.52	1.14	0.21	79.08
1989-90	460.29	269.11	50.21	199.31	1.35	0.25	76.61
CARG(%)	38.6	59.3	24.9	44.9	--	--	--

to the gross profits. Since in general, a current ratio of 2:1 is considered as a safe margin of solvency for any industry in ensuring financial soundness, there is scope for leasing companies for improving their liquidity position. Cash and bank balances of these companies have shown a sizable reduction from 20.4 per cent of current assets in 1985-86 to only 3.9 per cent in 1989-90 indicating sizable deployment of funds in lease assets by the companies.

II. INTER-INDUSTRY COMPARISON THROUGH ANOVA

In this section the combined performance of ten leasing companies is compared with two sets of similar samples of competing NBFCs viz. the Hire Purchase Finance Companies (HPFCs) and the Investment Companies (ICs). The comparison was undertaken by employing Analysis of Variance (ANOVA) to selected financial ratios.

ANOVA is a commonly employed tool in statistical analysis, particularly in the field of design of experiments (Bereson, et.al.,1988). It may also be fruitfully employed for comparing financial ratios. While the conventional tests for statistical inference may be appropriately used if differences between means of two groups are to be studied, it involves serious computational difficulties if comparison of means for several groups or

more than one attribute is to be made. ANOVA can be purposefully employed in such cases. In this study, one-way ANOVA has been used as the objective is limited to studying the differences between the means of financial ratios for leasing, HPFC and IC companies. The null and alternative hypothesis is as follows :

H_o : $\mu_I = \mu_{II} = \mu_{III}$
H_1 : Not all the sets have equal means

the subscripts I, II, & III denote three sets of financial companies, viz leasing, HPFCs and ICs and μ denote their respective means. The analysis of variance has three major underlying assumptions viz, (i) values in each group are normally distributed, (ii) variance within each population should be equal for all populations and (iii) errors should be independent of each other. It may be stated here that the application of ANOVA in this study is not adversely affected by any of these underlying assumptions. Firstly, as in the case of t-test, ANOVA is 'robust' against departures from the normal distribution; ie. as long as the distributions are not extremely different from the normal distribution, the level of significance of the ANOVA test is not greatly affected by lack of normality. Secondly, in case of equal sample sizes in each group, inferences based upon the F distribution may not be seriously affected by unequal variances as long as samples are equal in size. Thirdly, it is also reasonable to assume that differences of each value from its own group mean is independent for each value. Therefore, comparison through ANOVA is statistically valid.

The inter-industry differences brought out by ANOVA are discussed below. Table 6 gives the ANOVA results for the turnover ratio which captures total income as a proportion of total assets.

Table 6 : ANOVA for Turnover Ratio

Source of Variation	Sum of Square	Degree of Freedom	Mean Square Error	F value
Industry	70.32	2	35.16	56.71
Residual	7.45	12	0.62	
Total	77.76	14	$F_{0.05}$ (2,12) = 3.89	

The calculated F exceeds the tabulated F(2,12) at 5 per cent level of significance; the tabulated value being 3.89. Therefore, the null hypothesis of no difference between means of three industries stands rejected. The mean ratios of leasing, HPFCs and ICs companies were 21.33, 17.07 and 14.15 respectively. For contrasts in these three mean ratios, the test was conducted using the Scheffe' procedure[6]. It was found that the differences were significant for any pair of means, viz leasing contrasted with HPFCs or leasing contrasted with ICs or HPFCs contrasted with ICs. It is apparent that leasing industry has a higher turnover in terms of income as a proportion of total assets, compared to HPFCs and investment companies.

Analysis along similar lines has been undertaken to compare the profitability ratios, leverage ratios and liquidity ratios in the three industries. The results of comparative mean profitability ratios are summarized in Table 7. It may be seen that while differences in gross profits plus depreciation are not significant, the gross profit margin is significantly different for leasing (55.4 per cent) and HPFCs (66.3 per cent).

Table 7 : ANOVA for Profitability Ratios

(Per Cent)

Ratios	Industry Averages			F value	Contrasts		
	Leasing	Hire Purchase	Investment		Leasing vs. Hire Purchase	Hire Purchase vs. Invest.	Investment vs. Leasing
(GP + Depreciation)/T-inc	87.95	83.99	76.28	11.12*	–	*	*
Gross profit margin	55.41	66.31	72.74	18.73*	*	*	*
Net profit margin	19.00	15.89	39.73	10.75*	–	*	*
Profits after tax/Net-worth	16.06	21.68	10.12	13.32*	*	*	*
Profits after tax/T-assets	4.04	2.70	6.48	10.77*	–	*	*
Dividend/Profits after tax	59.10	34.43	36.98	4.98*	*	–	*
Interest/Gross Profits	61.54	73.98	29.07	45.88*	*	*	*
Tax/Profits before Tax	11.46	13.39	28.44	6.23*	–	*	*
Profits Retained/PAT	40.55	65.18	64.99	5.23*	*	–	*

* indicates significance at 5 per cent.
GP = Gross Profits ; T-inc = Total Income ; T-assets = Total assets.

It may be due to differences in depreciation provided by different types of companies. In the case of leasing companies the depreciation benefit can be claimed by lessor but in the case of HPFCs the benefits cannot be claimed by the HPFCs but can be done so only by the hiring company.

Table 7 also demonstrates that profit margins are the highest at 39.7 per cent for investment companies among the three types of financial companies under study. Among leasing and HPFCs, while the gross-profit margin is significantly higher in HPFCs, the net profit margin measured as a ratio of profit after tax to total income in leasing industry at 19.0 per cent is not significantly different from 15.9 per cent of HPFCs. Although there is higher gross profit margin in HPFCs compared to leasing companies, net profit margin is almost the same due to the high interest payments made by hire-purchase companies.

The tax incidence measured as tax provision as a percentage of profits before tax is not significantly different for leasing and HPFCs but it is significantly higher at 28.4 per cent for ICs. The ICs however have the advantage of significantly lower interest burden as a proportion of gross profits compared to the other two industry groups. Differences in the Return on Assets (ROA) ratio worked out to be small, with the highest ROA at 6.48 for ICs (Table 7). Return on shareholders' equity measured as profits after tax as a proportion of net-worth at 16.1 per cent for the leasing companies, is significantly lower than 21.7 per cent in case of HPFCs but higher than 10.1 per cent for ICs. Dividend payout ratio measured as ratio of dividend to profits after tax at 59.1 per cent stands significantly higher for leasing companies compared to HPFCs (34.4 per cent) and ICs (37.0 per cent). This also explains the lower ratio of retained profits to PAT for leasing industry compared to HPFCs and ICs.

Studying the capital structure or the leverage ratios, the debt-equity ratio measured as the ratio of long-term debt to paid-up capital stand significantly higher in HPFCs compared with other two industries (Table 8). More appropriately, measuring the ratio as a proportion of net worth, it was found that it is different for all three industries, the highest ratio being 3.24 in the case of HPFCs and the lowest 0.21 in case of ICs.

The low ratio for investment companies may be attributed to the nature of their business. Since these companies deal with investment holding, long term funds may not have significant importance in their capital structure. In the case of ICs, the debt is also significantly lower as a proportion of total assets. The trend remains the same if total borrowings or bank borrowings instead of debt are considered in relation to total assets. Clearly, ICs have a lower debt, lower total borrowings and lower bank borrowings. However, there is no industry difference if the proportion of bank borrowings in total borrowings is considered. This suggests

Table 8 : ANOVA for Leverage Ratios

Ratios	Industry Averages			F value	Contrasts		
	Leasing	Hire Purchase	Investment		Leasing vs. Hire Purchase	Hire Purchase vs. Invest.	Investment vs. Leasing
Debt/PUC	3.16	8.47	0.47	15.36*	*	*	*
Debt/Net-worth	1.64	3.24	0.21	31.72*	*	*	*
Debt/Total Assets (%)	38.26	40.90	13.59	19.37*	–	*	*
Borr/Total Assets (%)	57.17	62.39	29.15	68.26*	–	*	*
Bank-Borr/Total Assets (%)	16.92	12.70	5.89	12.40*	–	*	*
Bank-Borr/Borr (%)	29.32	20.33	21.77	1.50	–	–	–
Net-worth/Total Assets (%)	24.26	13.05	64.21	212.83*	*	*	*

* indicates significance at 5 per cent.

to neutrality of the banking sector in their lending activities for this segment of competing NBFCs. On the issue of capital adequacy measured as a ratio of net worth to total assets, it may be seen that it differed significantly as between the three types of industries with the ratio being the highest at 64.2 for ICs and the lowest at 13.1 for HPFCs.

The liquidity ratio measured as a ratio of current assets to current liabilities is also found to be statistically different for the three industries. It is obvious from the table that ICs are placed comfortably in terms of liquidity position. Therefore, leasing industry appears to have been less comfortably placed with regard to liquidity since most of the assets of leasing companies are in the form of fixed assets.

Table 9 : ANOVA for Liquidity Ratios

Ratios	Industry Averages			F value	Contrasts		
	Leasing	Hire Purchase	Investment		Leasing vs. Hire Purchase	Hire Purchase vs. Invest.	Investment vs. Leasing
Current Ratio	1.20	1.54	3.34	41.15*	*	*	*
Quick Ratio	0.36	0.24	2.38	175.08*	*	*	*

* indicates significance at 5 per cent.

III. CONCLUSIONS

Among the many points that emerge from the analysis, the main ones are worth noting. The note clearly shows that the leasing industry in In-

dia possesses enormous potential. The average income growth of leasing companies in the period under consideration, viz, 1985-86 to 1989-90 has been reasonably good yet the profits of the leasing industry have come under strain following the extension of sales tax to leasing activities and introduction of the revised accounting norms to their balance sheets in 1988-89. These changes have nevertheless ensured a level playing field among NBFCs and brought transparency in their activities. Leasing companies have also demonstrated an impressive propensity to transfer retained earnings to reserves and are building up reserves over and above the level of paid-up capital, a development which has been favourably viewed by Shah Working Group.

The return on assets (ROA) in the leasing industry at 4.0 per cent however is low among the non-banking financial companies requiring a need for improvement in their operations. Besides interest-burden is high in case of leasing companies and HPFCs. Furthermore, the debt-equity ratio is high in case of HPFCs and is rising rapidly in case of leasing companies as well, reflecting a high gearing ratio.

Bank financing to the three types of NBFCs, viz, leasing, HPFCs and ICs was found to be neutral in that the ratio of bank borrowings to total borrowings is not significantly different as between the three segments. The liquidity position of leasing companies and HPFCs compared less favourably with ICs, and often came under some liquidity problems as indicated by their low current and quick ratios. The capital structure of leasing and HPFCs requires to be further strengthened as the ratio of net worth to total assets is low in the case of both leasing and HPFCs as compared with ICs.

The findings in this study reinforce the case for speedy implementation of norms on capital adequacy for existing companies and entry norms for new companies. The study also shows that by and large, the large leasing companies are in a position to meet these norms. The study also demonstrated that while general norms for NBFCs may be met by the leasing companies, the leasing and HPFC companies compare less favourably to ICs in terms of profitability margin, capital adequacy and its structure, as also in terms of liquidity. This underscores the need for close monitoring of the performance of leasing industry through stricter financial norms, especially because the industry has a great potential for growth, as equipment leasing offers an effective alternative to more conventional financing in meeting both medium and long term financing needs of the firms (Karuppiah, 1988; Swamy, 1992).

Notes

1. Leasing is an alternative to borrowing as a method of financing the acquisition of machinery and equipment. A financial lease as defined in the System of National Accounts, 1993, is a contract between a lessor and a lessee whereby the lessor purchases machinery or equipment that is put at the disposal of the lessee and the lessee contracts to pay rentals which enables the lessor, over the period of the contract, to recover all, or virtually all, of his costs including interest. The lessor is treated as making a loan to the lessee which enables the latter to finance the acquisition of the equipment. The rentals are then treated as covering repayments of the loan and interest payments. It is this segregation in the use of an asset from its ownership that provides the impetus to modern equipment leasing.

2. While following the Direct Tax Laws (Amendment) Act, 1987, most of the companies have changed their accounting year to financial year in recent period, the problem of uniformity in accounting year remain for a large period under consideration.

3. Gross profit margin (gross profits as percentage of total income) of the sample companies has, however, remained in the range of 50 to 60 per cent over the years. Unlike manufacturing companies, leasing companies have no manufacturing expense, hence there are few deductions from the income and profits are high. The leasing company can claim depreciation on items it has leased out and this depreciation can be set off against income from other sources. The high gross profit margins are largely a reflection of this industry characteristic.

4. The Banking Regulations Amendment Act 1983 permitted the commercial banks to form subsidiaries for the purpose of carrying on the business of leasing or to invest in a limited way in other leasing companies. Also RBI permitted the leasing companies to accept deposits.

5. Leasing business expanded rapidly till 1987 as the lessor was able to claim twin benefits viz, the investment tax credit, which is realized when the asset is placed into service and the tax shield afforded by the deduction of depreciation over the depreciable life of the asset. However, their profitability dipped with the imposition of 30 per cent tax on book profits (section 115J of Income-Tax Act) levied by the government in 1987 as they could no longer claim large benefits of depreciation (Pandey, 1987).

6. An F test can be used to test whether each contrast (viz. $\mu_I=\mu_{II}$ or $\mu_I=\mu_{III}$ or $\mu_{II}=\mu_{III}$) is zero. The between sum of squares for testing a contrast is

$$S_{CAN} = \frac{(\Sigma C_j X_j)^2}{\Sigma(C_j^2)/n_j}$$

where C_j is the contrast coefficient for industry j, n_j is the number of observations in group j and X_j is the mean for the industry j.. The critical value F_s for the Scheffe procedure is the product of the between-industry degrees of freedom from the ANOVA, (c-1), and the critical value from the one-way ANOVA:

$F_s = (c-1)F_{(c-1),(n-c)}$ (where c is number of companies in the industry and n is total no. of companies)

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Reserve Bank of India Occasional Papers
Vol. 16, No. 3 September, 1995

BOOK REVIEWS

Frameworks for Monetary Stability : Policy Issues and Country Experiences, Papers presented at the Sixth Seminar on Central Banking, Washington D.C., March 1-10, 1994, Editors Tomas J.T. Balino and Carlo Cottarelli, International Monetary Fund, 1994, Pp. xi + 755, Price US $35

The theoretical frameworks for monetary stability available in the literature are neither 'neat' nor 'elegant'. They are at best unsettled. When theoretical support is at cross road, monetary authorities relied on 'state-of-the art' technique in formulating policy for monetary stability under diverse economic environment. The resultant multiplicity of approaches to achieve monetary stability was, in fact, the theme picked up for the Sixth Seminar on Central Banking organised by IMF. The volume under review is the collection of papers presented in the above mentioned seminar. The volume contains twenty four articles in addition to an introduction by the editors. The papers are generally non-technical in character but, the issues have been discussed at a very high level of professional competence with due cognisance of the debate available in the existing literature. This review intends to capture the flavour of each article in brief with some of our own observations.

The volume begins with two overview papers on the choice of monetary regimes. Discussing about the controversy relating to rules versus discretion, Manuel Guitian regards the dichotomy between rules and discretion to be artificial. In his view, the choice is not between rules and discretion but between rules-cum-discretion or discretion-cum-rules. According to him, price stability cannot be sustained with an unrealistic exchange rate and similarly exchange rate stability cannot prevail for long without domestic price stability. The challenge before a monetary authority would therefore be to strike an appropriate balance between rules and discretion so as to resolve temporary conflicts that may arise. The root cause of the conflict in attaining stability between the external and internal values of money lies in the stickiness of wages and prices. Moreover, due to financial widening and deepening, the boundaries between banking and other financial activities have been breached. Recent developments such as, gradual deregulation of the financial sector, increasing

globalisation, capital movement and flexible exchange rates have thrown new challenges before the monetary authorities to reconcile the conflict. Under such a milieu, Guitian's preference to move more towards rule-based regime to regain credibility and predictability of monetary policy rather than adding to prevailing uncertainties sounds extremely practical.

The second paper by Robert P. Flood and Michael Mussa makes a distinction between regimes such as the gold standard targetting price level and the paper standard targetting the inflation level. As the general price level has been moving on an upward course in the post-Second-World-War period, there is a shift towards the second type of regimes. The authors examined four nominal anchors namely targetting (1) money supply, (2) level of nominal income, (3) level of nominal income plus inflation rate, and (4) nominal exchange rate. The simulated results of four regimes in regard to price stability reveal that rules targetting nominal income outperform rules targetting the money supply or exchange rate, a conclusion that may not necessarily be valid universally.

The next two papers discuss the features of monetary policy frameworks in Japan and the USA under flexible exchange rate system. While the Japanese experience has been, by and large, discretionary in nature, that of the USA aimed at nominal anchor, at least for some time, in formulating the monetary policy. The Japanese experience by Kuniho Sawamoto and Nobuyuki Ichikawa emphasised that the Bank of Japan sought to achieve the ultimate objective of price stability through a policy that is based on 'eclectic judgement', taking into account several factors rather than adopting a nominal anchor based on rules. It is important to note that while consumer price inflation in Japan was low in the late 'eighties, the asset price inflation was unsustainably high due to aggressive bank lending to real estate projects. Although Bank of Japan undertook monetary control mainly through a combination of lending and market operations, changes in official discount rate and changes in reserve ratios, the emphasis has been since more towards interest rate mechanism following financial deregulation. This is despite the fact that Japan's financial deregulation has been gradual irrespective of a strong trade balance.

The USA's monetary policy in the late 1970s and the 1980s according to Brian F. Madigan was influenced by Humphrey-Hawkings Act of 1978 and relied on intermediate monetary targets based on simple and transparent rules. Madigan examined advantages and disadvantages of a group of variables which could be considered as 'potential targets, indica-

tors or information variables for monetary policy' such as financial aggregates, interest rates and financial asset price, real economic variables, and inflation measures. As the author correctly pointed out each of these variables has limitations in serving as intermediate target or indicator. The attempt of the Federal Reserve System to influence the interest rate together with targetting of monetary aggregates was met with inherent inconsistency, particularly in the late seventies when the inflation rate was high. As is well known the basic underlying assumptions of monetary targetting are : (1) the existence of a stable demand for money, and (2) a predictable relationship between targets and the ultimate objective. Due to financial innovations, money demand function was found unstable and simultaneously the link between intermediate target and final objective was weakened. Consequently, there is a good deal of skepticism about monetary targetting. But then it begs the question as to what really should be the measure of money supply that one should look at, in case monetary targetting should at all be undertaken.

The next four papers deal with exchange rate as nominal anchor. Mark E. L. Griffiths and Donogh C. McDonald review the working of the EMS, and show that the major building block of the EMS, viz., the Exchange Rate Mechanism (ERM) among the member countries with an ultimate objective of European Monetary Union - a single currency and a European Central Bank, has had a mixed experience. The most tranquil period in the ERM history was from 1987 to 1992 as inflation rate in the member countries declined with fair degree of exchange rate alignment. The turmoil in 1992-93 was a major setback to European Union. Co-ordination of macro-economic policies and bringing about a uniform cost-price structure, have been major problems. Although, some countries have returned to a narrow band around Deutsche Mark in 1994, ERM has lost some of its appeal. The article by Griffiths and McDonald could be studied along with the article by Jose Vinals who examined issues associated with the European integration.

Miguel A. Kiguel and Nissan Liviatan in their article 'Exchange Rate-Based Stabilisations in Argentina and Chile : A Fresh Look' argue that exchange rate stabilisation is generally more effective than traditional money-based adjustment programme. However, the major shortcoming of exchange rate as a nominal anchor is the eventual real appreciation which may be large and unsustainable. Since the economy would have both tradable and non-tradable sectors, the exchange rate can at best anchor only one subset i.e., tradable sector. In view of this, the authors suggested a broad-based stabilisation programme including a realistic ex-

change rate policy. This suggestion is valid not only for Argentina and Chile which adopted several measures, but also for other developing countries.

Going a step further, Adam G.G. Bennett in his paper on 'Currency Boards: Issues and Experiences' advocated for a binding form of exchange rate pegging under currency board arrangement. Discussing about the advantages and disadvantages of the currency board system in Argentina, Hong Kong and Estonia, the author opined that the mechanism of base money expansion based on foreign exchange holdings has been generally satisfactory. Currency board discipline, in Bennett's view, may be needed to curb price expectations and strengthen policy credibility under conditions of high or chronic inflation or when the central bank is inexperienced. In a diversified financial system with financial controls and repressions, currency board system may not be successful. It may not also work when Government's direct recourse to central bank credit is not prohibited.

Warren Coats examines the commodity standard issue which requires pegging of the external value of domestic currency to a certain commodity whose relative price remains stable rather than to a foreign currency or a basket of currencies. In this context, Coats recalls that gold served a useful role under gold standard, but argues correctly that it is no more suitable for this purpose. Coats, therefore, explored the possibility of pegging the value of money to a basket of commodities. As it is extremely difficult to devise a stable multi commodity standard, the author argues in favour of using Special Drawing Rights (SDRs) of the IMF or even the European Currency Units (ECU) as a suitable surrogate of commodity standard for the unit of account. This point, however, has lost its importance in view of the fact that SDR's own role is not very certain, given its limited use.

On autonomy and independence of central banks, there are three papers. Robert C. Effros' article 'The Maastricht Treaty, Independence of the Central Bank and Implementing Legislation' gives a detailed account of Delors Report and various stages of the implementation of Maastricht Treaty, with focus on the central bank independence through several measures like prohibition of central bank credit to Government, fixed terms of the office of central bank Governors, appointment/dismissal of central bank managers etc. Carl-Johan Lindgren and Daniel E. Duenas in their article discussed the issue of central bank independence with respect to Argentina, Chile and Venezuela. Although, there is clear mandate

for the independence of these central banks, the degree of independence is different in these countries. While, in Argentina, the exchange rate is fixed by the Congress, in Chile, the central bank enjoys the independence to formulate both monetary and exchange rate policies. In Venezuela, the arrangement is to coordinate the policies of central bank and the Government without formal procedure to resolve the conflicts between the two policy makers. Carlo Cottarelli in his paper 'Should an "Independent" Central Bank Control Foreign Exchange Policy?' argues that the dual arrangement of Governments being responsible for exchange rate policy and central banks in price stability, substantially limits central bank independence because monetary and exchange rate policies are inextricably linked to each other, particularly in the regime of unrestricted capital movement. In the dual arrangements, conflicts may arise and eventually one policy maker has to give up its independence. In the process, there may be undue delay in the policy implementation which according to the author, could be avoided by 'overriding clause' in special cases in which Government overrules central bank decisions as in New Zealand. How far this is practical is an empirical question. Often the central banks would stand to lose in the event of a conflict of view point.

Susan Schadler's paper 'Capital Movements and Surveillance' examines the experiences of six countries namely, Chile, Colombia, Egypt, Mexico, Spain and Thailand which witnessed large capital inflows during the recent years. She makes a distinction between foreign and domestic causes for capital inflows. If the surge in capital is caused by domestic policy changes, such as, structural adjustment, reduction of public sector deficits etc., which ensures macro-economic stability, the economy is likely to reap maximum benefit with limited risk of reversal of capital flows. On the contrary, if the inflow is on account of tight domestic credit policy, high administered interest rate structure without corresponding fiscal tightening, the risk of reversal is high. Barring inter-country differences, all these countries responded to large scale capital inflows by adopting a combination of measures such as partial sterilisation, exchange rate adjustment and fiscal tightening. Each of these policy responses has its own limitations; sterilisation could at best be a temporary policy initiative involving quasi-fiscal loss, while frequent exchange rate changes stokes speculation. Fiscal tightening often falls on development expenditure thereby slowing down the economy unless offset by private investment. Schadler, further underscores the need to improve the capacity of capital absorption through the policy of financial sector reforms, trade liberalisation besides fiscal retrenchment.

Although most of the developed countries have already adopted capital account convertibility, the progress is much less for the developing countries. But as Peter J. Quirk in his paper points out, that capital account convertibility generally comes towards the end of any liberalisation programme. This point is generally well taken but the question still remains about the pace of movement toward such a convertibility.

There are four articles on techniques of monetary control. William E. Alexander and F. Caramazza hold the view that economic fluctuations are caused by credit cycles. The extent to which there is a link between credit and real variables, it can serve as an alternate channel for monetary transmission. However, there is a need for empirical exercise as to whether credit should be an intermediate target or just an indicator. The authors conclude that in the whole strategy for monetary stability, credit view should supplement the money view, the combination of which can provide a richer analysis of transmission process. Quite a number of economists those who believe in real business cycle theory, however, argue that it is change in the production function rather than credit cycle which is responsible for economic fluctuations.

Commenting on the Hungarian experience of transition to market economy, Peter Bod argued that the Central Bank has to rely on multiple intermediate targets particularly when there is change in the transmission mechanism. The author emphasised the need to strengthen three 'Cs' i.e., consistency, credibility and clarity of the policy action for which policy co-ordination between monetary and fiscal authorities is of prime importance. Robert G. Carling analyses the experiences of Indonesia, Malaysia, the Philippines and Thailand in developing the indirect instruments of monetary control in the process of financial sector reforms. Although, the developments of indirect monetary instruments should ideally keep pace with financial market deregulation, the former lagged behind the latter in all the Southeast Asian Countries reviewed by the author. As a result, either there was considerable attenuation of monetary control or the authorities had to use second-best monetary instruments. Discussing the Canadian experience, Charles Freedman delves into the details of transmission mechanism in his paper. The Bank of Canada has been using several instruments, of which short-term interest rate was the dominating operational target of monetary policy actions for many years. In the flexible exchange rate regime, however, the monetary policy operates through two channels namely, interest rate and exchange rate. The Bank of Canada has recently switched over to Monetary Conditions Index (MCI) which combines both interest rate and exchange rate. Used with care, the

MCI can serve as a useful operational target and 'help the policy makers to steer through the uncertain world' concludes Freedman. In most of the developing countries, where interest rates and exchange rates are rarely at the market clearing levels and do not reflect market conditions, such an index may not be applicable.

Two papers on public debt management relate to the experiences of Brazil and India. Carlos Augusto Dias de Carvalho analyses the initial difficulties in developing a secondary market under conditions of high inflation and large fiscal deficit in Brazil. Although central banking functions were split between a Government-owned commercial bank and the Central Bank of Brazil, the latter was granted vast powers to introduce new instruments and develop market. The Central Bank of Brazil introduced a number of innovations in public debt management which include, among others, monetary indexing, open market operations, repurchase agreements and same-day clearings etc. The extent to which market could not absorb the federal debt, they devolved on the Central bank and were offset by the sale of central bank bills and central bank bonds.

A comprehensive account of India's transition from a tightly regulated financial system to a deregulated one is found in C. Rangarajan's article 'Developing the Money and Securities markets in India'. Although, liberalisation programme started since 1985, a comprehensive stabilisation-cum-reform measures gathered momentum since 1991. As a late starter, India was benefited from the experiences of the other countries and adopted a set of measures like fiscal consolidation, revamping of Government financing and financial sector reform in a gradual manner. Among the financial sector reforms, the notable developments include, *inter alia*, reduction of preemption through Statutory Liquidity Ratio (SLR) and Cash Reserve Ratio (CRR), gradual deregulation of interest rate structure, introduction of auction system of selling Government papers, repos auction, adherence to prudential regulations. Moreover, the phasing out of automatic monetisation of debt together with activating internal debt management strategy provide more freedom to the central bank in managing liquidity. Rangarajan also emphasised the need for further fiscal consolidation, deregulation of administer structure of interest rates, complete withdrawal of underwriting facility to the Government borrowing and appointment of primary dealers system. Among the institutional developments, other than Discount and Finance Houses of India, Securities Trading Corporation of India and National Stock Exchange are responsible for widening the secondary market in Government papers so that open market operation could emerge as an important tool of monetary control. The

author does not consider the selling of central bank's own papers which were tried by several other countries mainly because of legal restraints on such a course of action and of the inadvisability of having a central bank paper rated by the market dealers.

The last part of the book has four miscellaneous articles broadly dealing with monetary policy and financial structure including the post-script by Manuel Guitian. Tommaso Padoa-Schioppa in his article 'Adapting Central Banking to a Changing Environment' analyses the four major areas of challenges a modern central bank is confronted with. They are: (1) preventing the pressure of labour and Government for money creation in order to maintain price stability, (2) revising the regulatory structure to ensure financial stability in the face of increasingly complex contracts and markets,(3) reshaping the payment system as a safety measure against systemic risk, and (4) extending the three basic central banking functions to the international economy to keep pace with growing globalisation. According to the author, while considerable progress has been seen in respect of the first three challenges, globalisation poses a difficult problem which is more of a political nature. Should monetary sovereignty, evolve in close association with political sovereignty, and help setting up of a supranational central bank in Europe would not be a surprise to the author.

Discussing Israel's experience, David Klein observes that the process of financial deregulation in Israel started three years after a strong anti-inflationary programme was pursued in 1985. The package of financial sector reforms during 1988-91 included, among others, abolition of credit ceilings, gradual lowering of reserve requirements, phasing out of Government directed credit, deregulation of interest rates and liberalisation of exchange control. These measures succeeded in reducing interest rate spreads; both domestic and international. Monetary and fiscal discipline was considered important in the process of financial deregulation which is more or less a universal truth.

Growth of derivatives during the recent years has thrown new challenges to the policy makers. Devid Folkerts-Landau analysed various issues associated with the explosive growth in the volume and variety of derivatives. The authorities should strengthen their regulatory and supervising practices and also institutional set up so that derivatives instead of emerging as a source of systemic risk could be useful instrument of hedging risk, diversification and profit maximisation.

Payment system plays a crucial role in the conduct of monetary policy. It has assumed renewed significance in the case of economies under transition from central planning to the market economies. Discussing about the payment system of the former Soviet Union and the Baltic countries, V. Sundararajan and Gabriel Sensenbrenner pointed out the difficulties faced by these countries in ensuring the security and reliability of payments system. There were large and variable floats leading to the holding of volatile excess reserves by commercial banking which in fact made the implementation of monetary policy difficult. According to the authors, there is a need to integrate the payment system reforms with the reforms of monetary instruments. Countries with underdeveloped communication technology face a genuine problem to improve their payments system.

The background papers relating to bank supervision, open market operations and central bank losses are also useful. The important issue of Government versus Central bank securities in developing Open Market Operations was discussed by several authors on different occasions in the volume which is useful.

On the whole, the volume is a useful guide to the policy makers as well as researchers. The beauty of the volume lies in country-specific empirical verification of the ideas in the context of achieving monetary stability. We will highly recommend this book for any serious student of Economics.

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Reserve Bank of India Occasional Papers
Vol. 16, No. 3 September, 1995

The Measurement of Productive Efficiency — Techniques and Applications, Edited by Harold O. Fried, C.A. Knox Lovell and Shelton S. Schmidt, Oxford University Press, New York, 1993, Pp. 426

This book could have been of not much relevance if all firms operated under conditions of perfect competition, without any informational or institutional barriers. In that case, inefficiency is ruled out; instead, productivity changes would be reflected in technical changes (a shift in production possibility frontier).

The book under review has two parts - techniques and applications. The techniques part consists of four independent articles: the first one gives a conceptual basis of production frontier and productive efficiency, the second and the third give the econometric and programming approach to the analysis of efficiency respectively, while the fourth mostly analyses the relationship between efficiency and productivity in a production frontier framework. The applications part consists of three sets of studies, *viz.*, econometric efficiency studies, programming efficiency studies and productivity studies.

The introductory article by C.A. Knox Lovell is extraordinary in that it captures the essence of the literature that has developed since 1960s on production frontiers and productive efficiency. The article brings into open two kinds of inefficiency - technological and allocative - the former arising from sub-optimal processes and the latter from inappropriate scale. It shows that a mathematical programming approach for estimation of production possibility frontier (PPF) could be preferred when there is reason to believe that the sample chosen is relatively unbiased. Such an approach would be flexible enough to incorporate different constraints such as returns to scale, non-convexity, non-disposability as well as to introduce a slack to accommodate the definition of inefficiency as outlined by Koopman.

When, however, there is reason to believe that the efficiency measure is affected by some random factor, the econometric approach would be more preferable to estimate a production function at the first stage. As the error term of the equation contains inefficiency (the distance

from the estimated PPF) as well as the unexplained random part, the problem in the second stage would be to bifurcate the error term into two, one of which would show the one sided distribution of technical inefficiency term while the other would show the two- sided random error. All the conventional methods of intercept adjustment (corrected OLS, modified OLS etc.) to arrive at PPF from estimated production function by shifting the intercept term iteratively until the residual terms become non-negative, are, as argued by the author, too deterministic. Lovell, therefore, prefers the subjectivity involved in assuming certain specific distribution to the efficiency term conditioned by the overall residual term. The segregation problem may partly be solved by pooling the panel data under the assumption that technological inefficiency is time invariant.

Apart from technical inefficiency, the allocative inefficiency arising from inappropriate scale would also need to be measured. Cost of production or other similar formulation is often used to measure allocative inefficiency, as reflected in the estimated input cost as per cent of total cost. In order to distinguish the allocative inefficiency from the technical inefficiency, a hypothetical input demand function could be used by applying Shephard's Lemma on optimized cost equation in price output spaces. This exercise is based on the premise that there exists some input price at which the present scale of operation is allocatively efficient.

The next two articles excellently sum up the econometric and mathematical programming approaches to efficiency. William Greene shows that it is possible to have a hybrid of these two approaches through the deterministic frontier models, although they may not give best estimators. Even if one were to have a properly specified, internally consistent econometric model, one could still face the problem of estimating allocative inefficiency. Much research needs to be done to integrate demand equations with production frontier or cost equations. Agha Iqbal Ali and Lawrence Seiford in their elucidation of the mathematical programme approach to efficiency measurement which has come to be known as data envelopment analysis (DEA), classify different models with respect to the type of envelopment surface, efficiency measurement and the effect of scale variations. DEA's empirical orientation and absence of *a priori* assumptions, as the authors have rightly pointed out, have given rise to a number of studies involving efficient frontier estimations in both regulated and private sectors. DEA and traditional econometric approaches would need to be drawn together closely by theoretical research in the years to come.

The next article by Grosskopf provides a brief and sharp overview of the existing approaches to productivity measurement, which explicitly account for inefficiency. Here one could have frontier and non-frontier approaches, and within each of these, parametric (stochastic and deterministic) models, and non-parametric (programming) models would abound. The author seems to prefer non-parametric frontier models for various reasons - minimal specification errors, best applicability to discrete data, less demanding computations, and provision of enormous disaggregated information.

The rest of the book contains applications. Some of them are extremely interesting. One has to be selective in the review for brevity and purposiveness.

The first study by Janet C. Hunt-McCool and Ronald S. Warren, Jr. adopts an econometric approach to provide the extent to which inefficiency in the process of transforming human capital into the earned income exists in the labour market. Here, Maximum Likelihood Estimate (MLE) with a gama distribution of the inefficiency term clearly gives a better estimation than the adjusted Ordinary Least Squares (OLS) as the former contains some prior information in a deterministic framework. If stochastic approach is adopted under a half-normal distribution, the efficiency gain in the labour market would be around 21 percent which shows that ignoring randomness would typically overestimate inefficiency

In order to examine the allocative efficiency B. Kelly Eakin tried to find out whether physicians minimize cost in terms of employing optimal number of assistants. The divergence of the estimated shadow price to market price indicates that physicians underemployed assistants, resulting in allocative inefficiency. Evidence of strong scale elasticity further implies that merger of physicians may reduce cost to a considerable extent. But such an approach would be naive in that it would not only underspecify the physician's utility function (like no leisure profit tradeoff or no disutility out of supervising the assistant), but also assume that different physicians procure inputs at the same price.

The time invariant nature of the technical efficiency assumption in panel date situation was analyzed by Young Hoon Lee and Peter Schmidt. Assuming that variation in the technical efficiency trend would consist of two parts - one time invariant but variant with unit, and the other is time variant but not unit variant - the complex estimation technique adopted in the article seeks to estimate whether the coefficient

of time is different from one. It was found out to be significantly different from one, individually as well as jointly which implies that the temporal pattern of efficiency varies over time.

The study by Lee and Somwaru sought to measure efficiency in U.S. agriculture under share tenancy. It found the existence of severe incentive distortion in terms of less than optimal input use intensity . While share tenants were mostly technically efficient, they proved to be mostly inefficient in the overall, due to huge allocative inefficiency that offset technical efficiency.

In order to work out the change in TFP with its break up in technical change and efficiency, Finn R. Forsund uses three different versions of Malmquist input based productivity index in respect of Norwegian ferries. This study shows that the choice of base technology has little impact on productivity changes. The overall impression is one of declining productivity and the decline is mainly attributed to a gradual fall in efficiency which may be attributable to a conscious decision of increased capacity utilisation by each sail while reducing the total sailed distance.

Fecher and Pesticau tried to measure temporal efficiency of OECD financial services with the help of multifactor productivity (MFP) growth which is defined as the growth of output not explained by input growth which is exactly equal to the sum of technical progress and efficiency. The technical efficiency term is expressed here as a quadratic function of time. Using output as value-added at constant price in dollar terms and input as number of employees and gross fixed capital formation and assuming a homogeneous production set across the country, they found 5 out of 11 countries, showed negative MFP growth in spite of low but positive technological progress, which can be imputed to poor management.

The concluding article by Bauer, Berger and Humphrey adopted an unusual approach to tackling the segregation problem of inefficiency and random error, namely the stochastic thick frontier approach to the US banking. The variation of cost within each group of banks was considered as random error. Cost equations were estimated for the highest and the lowest quartiles and the difference in the predicted cost was again bifurcated into explained and unexplained parts. The unexplained part reflected the inefficiency aspect. Technical progress as a whole is obtained by proportional fall in predicted average cost in current period over the

previous period. TFP is obtained by adding scale economic effect on costs associated with variation in output over time on account of technical progress. Because the scale economic estimates are close to constant average cost, the TFP estimate almost exclusively reflects technical changes.

A dispassionate reading of the book would strike the readers that it concentrates on the aspect of measuring efficiency without addressing in depth the factors that lead to it. For example, if demand recession is rampant, the possibility of low capacity utilisation would have to be considered rather than the overall capital stock or labour force. One wonders whether it would be reasonable to consider the flow of capital service (a proxy variable when capital stock is not fully utilised) or effective employment (in case of labour hoarding) as the important indicators of the system.

Another area of concern is the way the book deals with the scale factor in impacting on efficiency. There is no effort to measure efficiency across the different sizes of firms.

Further, market structure and the mode of Government intervention also affect efficiency. Moreover, the absence of any exclusive treatment of in-house R&D effectiveness in the production frontier approach where efficiency vis-a-vis productivity measure is expected to have widespread diffusion of technology and innovation impulses are not adequately considered in the book.

Notwithstanding these critical observations, the book is vigorous and versatile and helps research workers to measure the productive efficiency in a logical and incisive manner.

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Reserve Bank of India Occasional Papers
Vol. 16, No. 3 September, 1995

Structure and Administration of Sales Taxation in India : An Economic Analysis, by Mahesh C. Purohit, Gayatri Publications, Delhi, 1995, Pp. xii + 299, Rs. 450

In the Indian context, the sales tax plays a prominent role in providing fiscal autonomy to the State Government. Over time, however, the sales tax system turned out to be structurally complex and administratively unwieldy, reflecting the result of the State Governments' extensive and intensive use of sales tax for meeting their growing revenue requirements. While micro level studies in sales tax are immense and growing, a systematic and comprehensive study on the sales tax system at macro level is conspicuous by its absence. This gap, to a great extent, has been filled by Professor Purohit through the book under review. This work, however, is a revised version of the author's original book on the topic published in 1988.

The introductory chapter depicts the evolution and the statutory basis of sales tax system in India. In chapter two, the author dwells in detail on the fiscal role of the sales tax. Despite the fact that the tax structure of individual States encompasses a plethora of taxes (such as land revenue and agricultural income tax, stamp duty, registration fee and urban immovable property tax, state excise duties, motor vehicle tax, passenger and goods tax, entertainment tax and electricity duty), it is the sales tax which has been the bedrock of the State finances as it contributes more than 59 per cent (1991-92) of the revenue receipts of the State Governments, irrespective of the level of economic development. This is attributed to the inherent character of high income responsiveness of the sales tax and the State Governments' larger recourse to this tax for additional resources mobilization. The buoyancy of sales tax worked out for the period 1970-71 to 1990-91 varied between 1.67 per cent for Manipur and 2.66 per cent for Himachal Pradesh, while the States' average stood at 1.53 per cent. Taking into account the tax potential (capacity) factors like the per capita income, the proportion of income from industrial and commercial sectors to State Domestic Product, the proportion of income from agriculture to the SDP and the degree of urbanization, the relative tax efforts were estimated by applying the conventional multiple regression technique. The inference drawn from the results is that States like Andhra Pradesh, Assam, Karnataka, Kerala, Madhya Pradesh, Punjab and Tamil Nadu have made higher tax effort, with Kerala showing the maximum tax effort and West Bengal and Jammu and Kashmir demonstrating the minimum tax effort.

The overwhelming dependency of the State Governments on sales tax has made the tax structure highly complex and unwieldy. Chapter three illustrates the structural character of the sales tax system. The basic structural weakness lies in the multiplicity of sales tax rates and wide inter-State variations in the rates. There are as many as 12 rates in most States and some of them have even 17 rate structure. The multiplicity of rates emanates for different reasons (a) the gradation of commodities into necessities, comforts and luxuries; (b) the identification of goods as inputs; and (c) concessionality in rates by some State Governments. Regarding taxation of inputs, the Indian sales tax system essentially followed the 'physical ingredient rule' under which tax exemption is allowed if a commodity becomes part of a physical ingredient or component of other goods which are processed and sold. There are besides the imposition of surcharges and additional sales tax by many State Governments, leading to 'cascading tax' and 'pyramidal effects'. The tax rate is in the range of 5 to 7 per cent in States having multi-point tax, 8 plus 4 per cent in States which have adopted a double point tax and 4 to 12 per cent in States following single point system.

In the next chapter, the author examines the extent of the progressivity of sales tax by measuring the incidence of tax. The existing official estimates with reference to consumer expenditure observed that sales tax in India is progressive through rate variation, exemptions and adoption of physical ingredient rule. However, the incidence of sales tax through a case study in Jaipur city of Rajasthan shows regressivity of sales tax upto the monthly income group of Rs.301-500, and progressivity in respect of income above this income group. Sales tax on cereals and pulses work more regressive whereas tax on consumer durables helps to achieve progressivity. The study, therefore, suggest full exemption of sales tax on cereals and pulses as a policy measure.

The author goes on to discuss the rationalization of sales tax, and suggests some short-run and medium-run reform measures in this regard. The short-run measures encompass uniformity in sales tax rates, adoption of a system of 'floor rate' for all States in the same pattern as followed by the European Union, adoption of a three rate schedule, application of tax for all commodities with only few exemptions and, above all, adoption of a mix of first point tax for the majority of the commodities and Value Added Tax (VAT) for select commodities. As a short-run measure, VAT is suggested for those select commodities that have no fixed trade channels but involve a significant amount of tax evasion and have large amount of value added after the first point of transactions.

The medium-run reform measures suggested, *inter alia*, include a complete switch over to VAT; rationalization of input taxation as well as incentives and tax concessions; and broadening the tax base. As regards taxation of inputs, the suggestion is either a complete elimination of tax or manufacturers should be allowed full set-off of the tax paid. Regarding revenue implication, a case study undertaken on Tamil Nadu indicated that in the short run there would be an immediate revenue shortfall, but the impact would be inconsequential in the long run. In the case of tax concessions and incentives, the existing schemes such as concessional or tax free purchases of raw materials as well as finished goods, and tax deferment or interest free loans to manufacturers have not only wider revenue implications (as tax base is eroded approximately 20 per cent), but have also led to diversion of investments and inter-State disparity. The suggestion, therefore, is that tax concessions should be strictly reserved for industries established in backward areas.

Broadening the tax base by bringing services under the tax net is another major medium-run measure. The economic rationale of taxation of services is that it would reduce the regressivity of commodity taxes, as well as make them more elastic, improve allocative efficiency and bring about substantial increase in revenue. In this regard, the author draws upon the experiences of those countries having tax on services. In the taxation of services, basically two approaches are adopted *viz.*, integrated approach and selective approach; under the former, all the services are taxed except those specifically exempted, while in the second approach some stipulated services are singled out. The countries which adopted integrated approach had a turnover tax prior to the introduction of VAT whereas the selective approach is prevalent in those countries that have adopted VAT from a manufacturer's form of sales tax. In the case of Indian States, a few select services are already being taxed such as the tax on electricity, transportation, entertainment, professions and hotel services. This apart, a few more areas identified by the author are transport services, private nursing homes, computer maintenance and consultancy services and automobile repair and services, as these are fast growing sectors but remained unexploited in the matter of taxation.

The reforms in the tax system confining to the intra-State general sales tax alone would be incomplete unless inter-State disparity in the tax structure is eliminated. In chapter six, the author discusses the significance of tax harmonization to remove inter-State disparity in sales tax as well as attaining the goal of a common market within the national boundary. The discussions here mainly centered around the major inter-

State trade taxes such as Central Sales Tax (CST), Consignment Tax and Additional Excise Duties in lieu of Sales Tax (AEDLIST).

Towards achieving inter-State parity in sales tax, a widely held view is to replace sales tax with Additional Duties of Excise in lieu of Sales Tax (AEDILST) which is a tax rental arrangement between the Centre and the States. The AEDILST is levied by the Centre under the Additional Duties of Excise (Goods of Special Importance) Act, 1957 in lieu of the sales tax levied formally by the States but the entire net proceeds are assigned to the States. The case for replacement of sales tax with AEDILST is made out of administrative convenience, establishing uniformity in inter-State rate structure and reducing tax evasion. Criticizing these arguments as baseless on the grounds that excise duty is no way better than sales tax in the matter of tax evasion and many of the commodities covered under AEDILST are essentially agricultural produce and cannot be brought under excise, the author scuttled the proposition of replacement of sales tax as it would act against the interest of State Governments both in respect of revenue generation and fiscal autonomy. Instead, the strengthening up of the existing Zonal Councils would be an effective step toward reducing the inter-State disparity in the rate structure through coordination of various sales tax units of different States.

In the last three chapters of the book, the author brings to the fore the basic flaws in the organizational and operational aspects of the sales tax system and also provides remedial measures. The basic contention is that sales tax in India is not properly administered and, as such, efficiency is at a very low ebb and tax evasion is rampant. The measures advocated, *inter alia*, include improvement of organizational leadership, reorganization of enforcement wing, abolition of superfluous internal check posts, strengthening of registration procedures with proper scrutiny prior to the registration of dealers to avoid bogus dealers, raising exemption limit with uniform rates for all the States and introduction of self-assessment system for small dealers. Added to these reforms measures is the establishment of an integrated management information system (MIS) for all the segments of tax management, *viz.*, registration, tax payment, processing of returns, identification of stop filers and selection of dealers for audit.

The book by Professor Mahesh C. Purohit is a highly stimulating research work on the economics of sales tax system in India. The policy prescriptions are borne out of the empirical findings, although the methodological approach and analytical contents are not devoid of limitations.

Regarding methodological limitation, the author holds the view that measurement of the incidence of sales tax basing disposable income would provide more analytically sound results than that based on expenditure approach adopted by official agencies which found that sales taxes are progressive. However, the measurement of incidence of tax basing disposable income as attempted by the author has also its limitation due to the problem in measuring income. This is due to the fact that using income at a point in time (monthly/annually) as a measure of the position of a household in the income distribution ignores that there is significant mobility across the income distribution through life cycle of a household; that is, a given household would show up in different income classes at different times (Russell Krelove, 'General Equilibrium Incidence of Taxes', in *Tax Policy - Hand Book* (Ed) Parthasarathi Shome, IMF 1995).

The estimation of relative tax efforts by individual States based on the capacity factors like the per capita income is incomplete as effective tax has a larger bearing on the revenue raising potential of a State. For instance, the study has found that the State of Kerala has exploited the maximum tax potential. But in reality the tax rates in Kerala are one of the highest among the Indian States; this has more of a cascading effect. The author has advocated for both short-run and medium-run reform measures, like the State level Value Added Tax (VAT) and broad banding the tax base by taxing the service sectors. These suggestions have gained wide currency ever since the Tax Reforms Committee headed by Prof. Raja J. Chelliah constituted by the Government of India submitted its report in 1992. However, the VAT at State level, which would help to eliminate the cascading and pyramidal effects would succeed, depending on the level of voluntary compliance as well as on enforcement, for which, as observed by Burgess and Stern, congenial economic, social and cultural factors are equally important (Burgess and Stern : Taxation and Development, *Journal of Economic Literature*, June 1993, Vol. XXXI, No.2). While discussing the inter-State tax disparity and the importance of harmonization of tax, the author argues that the imposition of consignment tax alongside the Central Sales Tax is a retrograde step as the benefits would largely accrue to the developed States, going by the existing distribution criteria. These perceptions need reconsideration in view of the recommendation of the Tenth Finance Commission which suggested an alternative devolution scheme in which the States' share in gross receipts of Central taxes shall be 26 per cent after including some taxes under article 269 besides the existing taxes under divisible pool (Report of the Tenth Finance Commission, Government of India, December 1994).

Some of the reforms measures advocated in the book have already found acceptance at policy level. For instance, recently a consensus has been arrived at among State Governments to introduce a 'uniform floor rate' for sales tax towards achieving inter-State uniformity in tax structure. The introduction of floor rate on the lines introduced in the European Union is one among the suggestions in the book to achieve inter-State uniformity in sales tax. The book under review stands out as a good reference for any serious research student on federal finances. Besides providing enough scope for formulating future research agenda, Professor Purohit's work has enough policy implications in the area of State finances and in particular State taxation.

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