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Exchange Rate Expectations and Export Performance

Himanshu Joshi*

Programmes aiming at external account stabilisation and employing exchange rate adjustments need to be buttressed with stability in domestic prices. Employing an empirical expectations and risk generating mechanism for the nominal exchange rate, this study adduces evidence that conditional expectations about exchange rate cause exports. However, since this evidence is true only for the case when domestic prices are also taken into account, it suggests that it is not only nominal depreciation that causes exports but that the evolving domestic price situation is of equal critical import.

Introduction:

Essentially as a response to the critical developments on the external payments front and the long overdue need for structural reforms, a good number of changes have been initiated in the trade sector of the Indian economy. A crucial change was introduced in the exchange regime in March 1992 when the managed exchange rate regime gave way to the liberalised dual rate regime popularly known as the liberalised exchange rate management system [LERMS]. In this system, there existed two distinct rates - an official rate meant for essential imports and a market rate for the rest of the transactions on the trade account. A year later, from March 01, 1993, the rupee was fully floated on the trade account whereby all exchange transactions were allowed to be put through at market rates. In introducing full convertibility on the trade account, the disincentives to exporters that existed in the LERMS were eliminated. At the heart of these salient changes also lay the basic presumption that exchange rate adjustments could play a crucial role in providing incentives to exporters. Keeping the real exchange rate at realistic levels could allow exports to be more profitable than domestic sales and thereby lead to an accelerated inflow of investible resources into the export sector and consequently increased export growth. While this reasoning may seem plausible, there are other problems to contend with. It is well known that favorable exchange rate adjustments alone may not be sufficient to ensure

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a steady growth in exports. One has not only to ensure satisfaction of the classical elasticities problem that is enshrined in the traditional Marshall-Lerner condition but also carry out critical amends in the domestic stance in respect of the prices and wages policy. There are also problems associated with the distortionary effects of discretionary tariffs and subsidies that might attenuate adjustments undertaken in the exchange regime. The policy maker may also have to watch out for situations where major competitors could upstage exchange rate adjustments with rounds of price cuttings and competitive devaluations. Finally, not the least, even if depreciation improves the external current account, it leads to increased flow of national income and expenditure through the 'foreign trade multiplier' which could lead to price increases in a state of depressed economy or through higher wage demands that follow such price increases. In this condition depreciation will be quickly followed by price inflation. Some experts also argue that a depreciation, either managed or that under a flex rate system, is inherently troublesome from the point of view of income-distribution. This is because a stable equilibrium in the foreign exchange market could hardly be found leading to the proverbial chasing of the will-o'the-wisp [Pattnaik,1991]. Subject to these caveats, the beneficial role that depreciation plays in improving the BOP can not be denied. In view of the above it seems opportune to study the empirical relationship between depreciation and export performance by employing econometric techniques on the available data.

India has followed over the years a policy of steady depreciation of the rupee, marked especially after 1985 ["....(eg.,) an estimate of 30 percent real depreciation vi-a-vis the G-5 currencies over the period 1980 to 1989 seems to be popularly accepted" {Rajaraman.I,1991}]. Nominally the rupee has continuously depreciated against the US dollar, a major invoicing currency. The rupee was devalued twice in July 1991 in response to the precarious foreign exchange situation existing then. Consequently, after 1991 the nominal rupee-dollar rate has depreciated faster within a relatively shorter period of time. After the introduction of full float (and ,therefore, the abandonment of the 'adjustable peg') on trade account in 1993 as mentioned earlier, it is expected that the volatility of the nominal exchange rate would increase over time in accord with the changing fundamentals of the economy. It is this expectation about increased variability or risk that would concern the policy maker and exporter alike. In this paper we address the problem of risk and expectations associated with exchange rate and their effects upon the economic decisions undertaken by exporters. It is expected that the analysis which takes explicitly into account risk and expectations associated with the exchange rate may help in shedding some light on the behaviour of exporters.

Econometric literature is replete with analyses that treat risk as an important factor in decision making. Risk analysis has found application in several areas of interest after the publication of Engle's seminal paper in 1982. Engle's method, popularly termed the ARCH [autoregressive conditional heteroscedasticity], apart from its useful applications in macro-economics and financial markets, has also found ample use in studies of markets for individual products wherein producers were expected to react to conditional expectations and risk associated with sale price.

In this paper which is organised in three parts, Section II discusses properties of an ARCH model and efficient estimation procedure. Section III contains a description of data used and the empirical results. Finally, Section IV provides conclusions as implied by the empirical results.

SECTION II

The Rationale for ARCH Models

With the advent of rational expectations revolution, attention has turned to methods of identifying information sets employed by agents to form expectations. Over the past few years attempts have been made to model expectations using relevant information sets in keeping with the rational expectation hypothesis. However, a more than overbearing attention was focussed on expected mean as a result of which scant effort was devoted to formulating strategies for operationalising conditional variance of risky variables that could be fruitfully used in decision making.

The concept inherent in the ARCH models of today was summed up succinctly by Mandelbrot(1967) way back in the late sixties that variances of economic and financial variables change over time and generally large (small) changes tend to be followed by large(small) changes of either sign. In other words there exists a temporal persistence of information arrival (Clark,1973) that perturbs or influences certain series over certain episodes so that volatile periods are followed by relatively tranquil periods. An ARCH model is defined precisely to mimic these occurrences so that this 'temporal clustering of outliers can be used to predict their occurrence and minimize their effects' (Engle,1982). Owing to this unique structure, ARCH regression models are useful alternatives to more 'complex regressions which have non-ARCH disturbances and might be expected to pick up effects of variables omitted from the estimated model' (Engle,1982).

ARCH modelling has been put to a vast range of applications in empirical research. The survey paper of Bera and Higgins [1993] gives a bird's eye view.

"The ARCH model is useful not only because it captures some stylized facts, but also because it has applications to numerous and diverse areas. For example, it has been used in asset pricing to test the CAAPM, the I-CAPM, the CCAPM and the APT; to develop volatility tests for market efficiency and to estimate the time varying systematic risk in the context of the market model". The paper goes on to say : "It has been used to measure the term structure of interest rates, to develop optimal dynamic hedging strategies, to examine how information flows across countries, markets and assets, to price options and to model risk premia". Besides as the paper argues, "in macroeconomics, it has been successfully used to construct debt portfolios of developing countries, to measure inflationary uncertainty, to examine the relationship between exchange rate uncertainty and trade, to study the effects of central bank interventions, and to characterise the relationship between the macroeconomy and the stock market".

Estimation and Inference - ARCH Models

In setting up the ARCH model one normally deploys, for the chosen risky variable, an autoregressive set [assuming lagged values of the dependent risky variable as the composite information set] as a 'catchall' for all rational information for setting up the structure for temporal expectations in the form of a main dynamic linear regression equation, stochastic errors of which are ensconced systematically into the auxiliary ARCH conditional variance specification. Therefore, the conditional variance is implicitly also a function of the past realisations of the risky variable in question.

There is ample rationale for using the ARCH model in the present case as shown for example by Nachane and Ray (1993). Using frequency domain techniques, Nachane and Ray show that there is a convincing evidence that nominal exchange rates of ten different currencies follow neither Gaussianity nor linearity. ARCH and GARCH models comprising multiplicative non-linearity, therefore, have more impressive forecasting performance when compared to simple regression models, ARMA time series or simple random walk models of exchange rate.

For purposes of illustration, as in technical details given in Engle(1982), assume a simple autoregressive model for a risky variable, say, current nominal exchange rate (NER)

$$NER = f\ (B(L)\ NER_t\ ,\ \beta) + e_t \qquad \text{.....I}$$

where B(L) is a polynomial lag operator, β is the vector of parameters and e_t is a stochastic discrete error term with a normal conditional distribution represented as

$$e \mid \varnothing \ \approx\ N\ (0,\ h_t\ )$$

where h_t is time varying conditional variance of e_t and $\varnothing$ is an information set that includes past values of NER.

It is evident from the given model structure that the conditional expectation of NER can be generated from the informed autoregression defined in I. Engle's ARCH then assumes that time varying conditional forecast variance h_t of NER can be structured of order q as

$$h_t = a_0 + \sum_{i=1}^{q} a_i \quad e^2_{t-i} \qquad \text{.....II}$$

which allows the forecast variance h_t to vary systematically over time. Equation II formally defines an ARCH process wherein a systematic structure is imposed on the process governing conditional variance.

Estimation of ARCH model is based upon a log likelihood function derived from the distributional properties assumed for e_t. Since all observations in I and II are conditionally normally distributed, the joint density pertaining to vector e_t is the product of all conditional densities and therefore the log likelihood is the sum of the conditional normal log likelihoods corresponding to I and II. If l is the average log likelihood of the i^{th} observation and T the sample size then

$$L = 1/T \ \sum l_t \qquad \text{.....III}$$

$$l_t = -1/2 \log h_t - 1/2\ e_t^2/\ h_t \qquad \text{.....IV}$$

without the usual constants. Log likelihood function III can be maximised with respect to unknown parameters β's and a's appearing in I and II, respectively.

Maximisation could be carried out employing one of the several numerical optimization routines available in the menu. Such maximum likelihood (ML) estimation of unknown parameters bestows quantifiable gains in efficiency. An interesting feature of the ARCH model is that it could be used to generate time varying instrument for risk (volatility) for any risky variable (here NER) which could thence be employed for purposes of decision making.

Estimation of the ARCH model is valid under certain regularity conditions. The first of these states that the estimates of coefficients in the conditional variance function be non-negative. The second condition states that in order for the ARCH process to be stationary, the following constraint for the existence of even moments ought to be satisfied.

$$a_1^r \prod_{j=1}^{r} (2j - 1) < 1 \qquad \text{.....V}$$

where 2r is the order of the even moment. Subject to the satisfaction of these conditions, an ARCH model is a superior modelling procedure for stochastic processes that have time dependent variance in comparison with other robust procedures designed to handle large errors or outliers. Once estimated and regularity conditions are satisfied, the empirical estimates of unknown parameters can be plugged back into equations I and II to generate empirical instruments for conditional expectations and risk. It may be noted that this approach towards generating risk instruments appears to be empirically more suitable than usual methods (such as generating risk instruments by employing recursive estimates of the variance over time, using a moving average scheme on standard deviation of arbitrary orders of past growth rates or employing lagged values of squared innovations) owing to improvements achieved in the efficiency of estimates.

SECTION III

Data and Model Specification

ARCH model of an appropriate order was estimated using the nominal exchange rate series. The data employed in the study are as follows: 1) nominal Re/US $ rate, 2) thirty six country export weighted nominal effective exchange rate index [NEER] published by the Reserve Bank of India, 3) exports in US dollar terms, and 5) WPI or wholesale price index of all commodities with base 1981-82. The empirical exercise is based on monthly data obtained from RBI Bulletins over the sample period which spans a period of March 1988 to April 1994. While no mechanistic deseasonalising procedures are used, a dummy to control for inordinately large depreciations was employed in the autoregression (Equation 1)[1]. One could have used Nominal Effective Exchange Rate {NEER} instead of nominal exchange rate in the first case but preliminary investigations showed that correlation between NEER and the simple nominal Re/US $ rate was of the order of -0.96, and significant at 1 percent. The rupee dollar rate is, therefore, a consistently good proxy for the NEER as also a directly observable 'incentive indicator' from the point of view of the exporter.

An investigation of the descriptive statistics of the nominal exchange rate series shows that the while the sample mean is Rs 22.76, the standard deviation is 6.88. Also, while the unconditional sample skewness is just about zero, the sample kurtosis(-1.74) is less than its normal value of 3. A Jarque-Bera(JB) test for joint normal kurtosis and skewness gives a value of 68.65 and rejects the normality hypothesis. The Box-Ljung portmanteau statistic at calculated at 24 lags also rejects the hypothesis of strict white noise for the nominal exchange rate data. This empirical evidence implies that the data series show both excess kurtosis and possess non-linear dependency among observations. These attributes of the data allow one to justifiably employ an empirical ARCH model for further investigation and inference.

Empirical results

The estimated ARCH model for nominal exchange rate is presented in Table 1. While the choice of order of autoregression in the mean equation in the model was based upon Akaike Information Criterion (AIC), the selection of lag in the conditional variance function was based upon the locally most powerful(Engle 1982) Lagrange Multiplier Test

(LM) with a significant t-value of 2.45 for the first lag. Since the lags in both the mean and variance equations have been chosen systematically using appropriate hypothesis tests, the likelihood function was optimised without specific constraints. It is well known that arbitrary weighting procedures for lags could imply imposing undue restrictions upon data which may be unreasonable.

Table I
A Model of Nominal Exchange Rate of the Indian Rupee under ARCH expectations

March 1988 to April 1994

(A). Nominal Re / US $ Exchange Rate :

$$(1 - 0.990\ L^{1})\ NER_t = \underset{(241.47)}{0.402} + \underset{(23.75)}{2.698}\ Dummy + \underset{(28.31)}{e_t}$$

(B). Conditional Variance Function :

$$h_t = \underset{(21.05)}{0.000326} + \underset{(13.52)}{0.608}\ e^2_{t-1}$$

Log-Likelihood = -535.04 R-square=0.99

Convergence in 19 iterations.

Notes to Table I

a) Figures in parentheses are respective t-statistics.

b) NER is nominal Re / US $ rate.

c) The choice of the lag on the exchange rate autoregression was based upon Akaike and Schwarz information criteria with a minimum value of 0.6619 and 0.7063, respectively for the first lag. For specifying the order of the conditional variance function, an LM test was used which gave highly significant value of 2.45 at the first lag and which itself had a significant presence.

d) System (A) and (B) were jointly estimated using a maximum likelihood method. Optimization of the log-likelihood was carried out with a direct search method due to Berndt, Hall, Hall and Hausman(BHHH, 1974).

e) R-square reported is a simple square of the correlation coefficient between the actual and ARCH model predicted nominal exchange rate series over the sample.

Before discussing the results presented in Table I, some characteristics of standardised residuals obtained from the model may be mentioned. With a Box-Ljung statistic of 12.34, the residuals are found to be serially uncorrelated. Furthermore, the distributional assumption for the error component specified in equation I implies that standardised residuals $[e_t/\sqrt{h_t}]$ should follow a normal distribution, for an ARCH model to adequately account for the existence of leptokurtic unconditional distribution of the error term. However, the estimated skewness and kurtosis coefficients for standardised residuals were such that they reject the null hypothesis of joint normal (or zero excess) skewness and kurtosis. The ARCH model, therefore, accounts for some but not all leptokurtosis in the exchange rate data[2].

A graph of actual versus expected exchange rate realisations from the ARCH model is presented at the end of the paper.

Complementing the empirical results obtained in respect of the ARCH characterisation in Table I, is a test of cointegration conducted on the basis of the method suggested by Johansen and Juselius(1990)[3]. A three variable vector autoregression was set up with first difference of natural logarithms of exports, conditional expectations of the exchange rate and the wholesale price index. Trace and Maximum-eigen value statistics for this system (Table II) suggest that these variables are cointegrated. On the contrary, if the price variable is dropped, the property of cointegration is immediately destroyed (Table III). This evidence suggests that exports are determined not only by agents expectations of exchange rate but also by the evolving domestic price situation. Finally, empirical evidence based upon a Granger's test(F-stat 0.90) also indicates that risk associated with exchange rate does not cause exports significantly.

Table II
Test of Cointegration

Exports, Expected exchange rate and WPI

Hyp	Trace	Trace (0.95)	Max-E	Max-E (0.95)
r < = 2	7.877	9.094	7.877	9.094
r < = 1	19.024	20.168	11.146	15.752
r = 0	44.922	35.068	25.898	21.894

The 95.0 percent quantiles are taken from Table A3, Johansen and Juselius (1990). The trace test is for a hypothesis of a general alternative to a particular number of cointegrating relationships while the maximum eigenvalue test is a test of the hypothesis for various values of r versus r+1 relationships. All variables are in first difference of their natural logarithms, respectively. Variables included are I(1) by ADF test.

Table III
Test of Cointegration

Exports and Expected exchange rate

Hyp	Trace	Trace (0.95)	Max-E	Max-E (0.95)
r < = 1	4.703	9.094	4.703	9.094
r = 0	17.880	20.168	12.453	15.752

Explanation is the same as in Table II.

SECTION III

In the modest results presented in this study it is empirically demonstrated that future conditional expectation of nominal exchange rate in association with domestic prices does have a role in influencing the path of export earnings. Volatility of nominal exchange rate as captured by its conditional variance, however, does not have a significant impact upon export performance. The evidence available in research, especially, the one obtained by de Grauwe(1988) shows that the dominance of income effects over substitution effects can lead to a positive relationship between trade and volatility. Froot and Klemperer (1989), in a different context, show that exchange rate uncertainty can affect price and quantity of trade, either positively or negatively, when market shares matter under an

oligopolistic market set-up, regardless of tastes for risk. Yet Kroner and Lastrapes (1993) show, for a chosen set of developed countries, that volatility has permanent effects on trade variables for some countries but not for others. For the Indian economy, however, the failure of causality between exports and conditional variance (or time variant risk) appears to be a result of the authorities commitment to limiting harmful volatility in the exchange rate for reasons widely held. During the period of managed float uptil 1992-93, the rate of exchange was systematically depreciated and expected losses could be considered as negligible. More recently during the LERMS and thereafter, the exchange rate has been stabilised by the RBI by either announcing a reference rate or buying excess supply of dollars in the market. Moreover, it is also well nigh possible that exporters have been able to assimilate volatility in view of the existence of a number of other sops available for export promotion. Volatility has, therefore, so far not been a dominant factor influencing the behavior of exporters.

The empirical evidence pertaining to the relationship between exports, conditional expectation of the exchange rate in association with domestic prices conforms to the crux of the prevalent policy argument that exchange rate expectation could work as a potential factor in determining the performance on the export front. From empirical tests of cointegration reported earlier, it is obvious that export performance would not only hinge upon conditional nominal exchange rate expectations but also critically on the evolving domestic price situation which would need to be monitored closely.

Notes

1. A single intercept dummy was employed in preference to separate dummies for changes in exchange regimes such as the LERMS and unified rate system for the reason that time series data on nominal exchange rate does not show a definite break as between the LERMS and the unified system. Over the sample period there are two distinct jumps which can be reasonably captured by a dummy that adjusts the intercept appropriately.

2. Lastrapes(1989), for example, found like results with exchange rate data while Cochran and Mansur (1993) found similar evidence with excess returns data from equity markets.

3. Engle and Granger(1987) have suggested a more comprehensive test of causality which allows for a causal linkage between variables stemming from a common trend. In other words, so long as a set of variables contain a common trend,

causality must exist in at least one direction. The evidence of no causality in either direction is ruled out when the variables share a common trend. The method proposed by Johansen and Juselius(1990) tests for commonality of trends or cointegration and suggests that in this event a system of variables remain in equilibrium in the long run.

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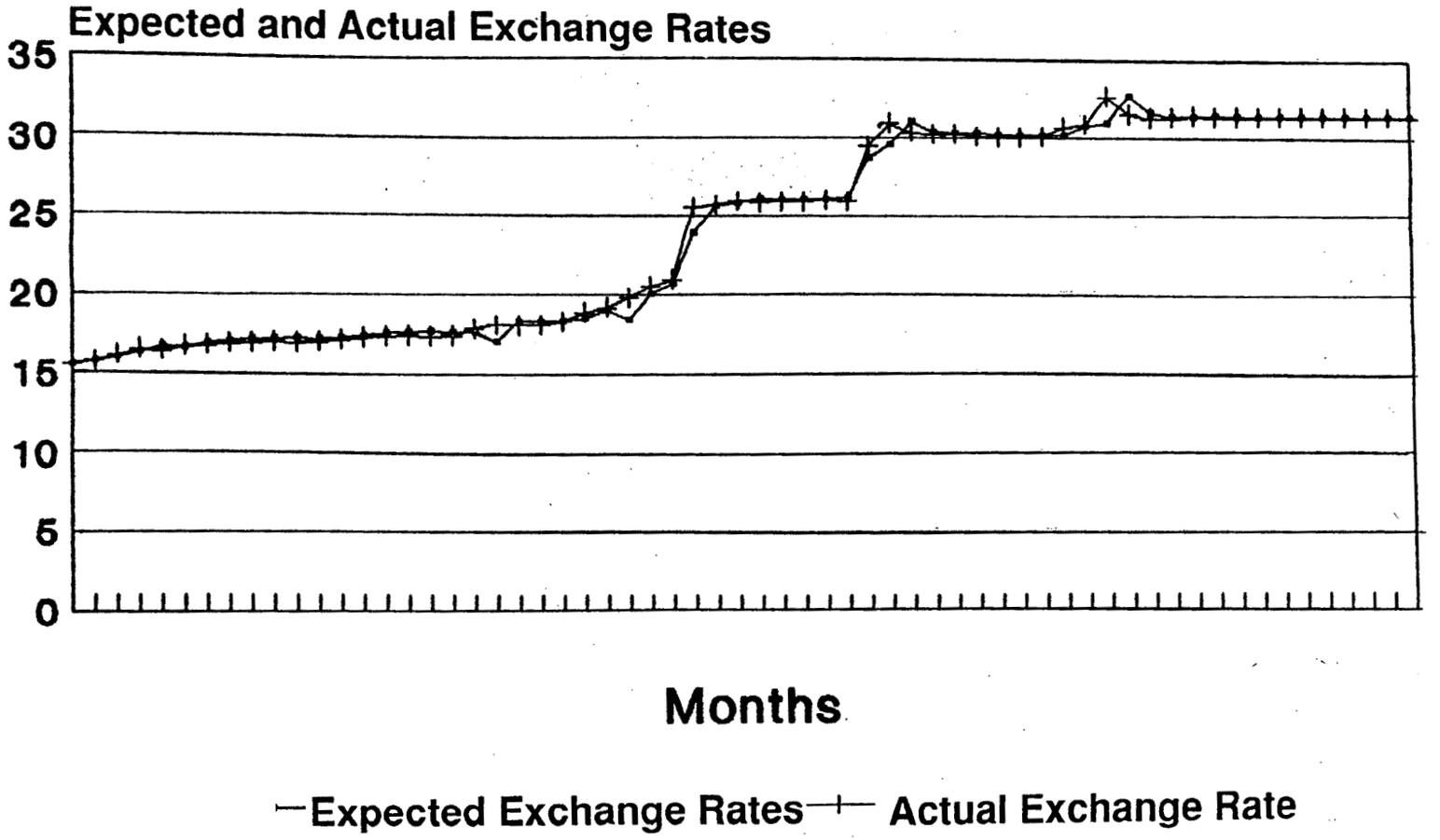
Expected & Actual Exchange Rates

March 1989 to April 1994



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External Debt of Developing Countries Review of Literature

A. Prasad*

An analytical survey of the literature that emerged during the last three decades on the issues in external debt gives a clear perception of the theoretical underpinnings to the events that occurred and the strategies that were evolved to solve the problem. The fact that there was no generalised repudiation of debt or debt servicing during the 'eighties brings to fore the debtors' perceptions regarding the negative externalities of default. The short-term strategy of India during 1991-92 including the decision to sell gold with a buy-back option and imposition of severe import compression measures is a classic instance of a country not wanting to repudiate its loans. In particular, the findings of the various studies investigating into the causes of debt accumulation point to the need for appropriate policy responses to insulate economies from external shocks as also the importance of exercising fiscal restraint in a stable macroeconomic framework which ensures a stable and realistic exchange rate supportive of export efforts - issues which hardly need overemphasis in the Indian context.

There has been a continuous outpouring of writings on the role of external debt in the development process and the problems associated with it in the last thirty years or so. The outbreak of the international debt crisis in August 1982 and the concerted efforts to cope with it, in particular contributed to enhanced interest in the subject. The main objective of this paper is to understand, through an analytical survey of the theoretical literature, the various theoretical issues in external debt and its servicing, in order to gain better insights into the events that occurred and the strategies that were evolved to solve the problem.

A thematic rather than a chronological presentation would enable a more coherent exposition of the issues involved. The literature has, accordingly, been classified under the following heads:

1. **Two-Gap Theories** - Studies which analyse the effects of foreign aid on domestic savings.

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2. **Optimum Levels of Debt** - Studies which stipulate an optimum or sustainable level of debt for a country.

3. **Creditworthiness** - Studies which identify the circumstances under which a number of countries experienced debt servicing difficulties.

4. **Repudiation Risk and Borrowing** - Studies which analyse the theory behind cost of defaults, and incentives for additional borrowings.

5. **Debt Overhang and Relief** - Studies which discuss policy issues relating to debt overhang.

6. **Causes of External Debt Accumulation** - Studies which diagnose the causes for the debt explosion of developing countries, and in particular the accumulation of external debt in India.

1. The Two-Gap Models

The macroeconomic effects of foreign aid on the development of less developed countries (LDCs) have largely been analysed in terms of the Harrod-Domar growth model which postulated that the rate of growth of output (g) is a function of the savings rate (s) and the incremental capital output ratio (v). In a functional form, the model argued that g would be equal to s/v. The dual-gap analysis which was in vogue in the 'fifties and 'sixties (Chenery and Strout 1966) argued that foreign aid acted as a supplement to domestic savings and hence raised the growth rate to (s+a)/v, where a is the foreign aid (expressed as a percentage of recipient GNP). The increase in the growth rate would raise income and since it was believed that the marginal propensity to save was greater than the average propensity to save in LDCs, the savings rate would increase and the higher growth rate would become self-sustaining without the need for further injections of foreign aid. Thus, according to this view, inflows of foreign aid would have the effect of raising the savings rate in subsequent periods.

Although there was skepticism about the role of foreign aid in promoting economic growth (e.g., Bardhan (1967)), it has had little impact upon conventional thinking until the publication of two papers by Griffin and Enos (1970) and Griffin (1970) in which the benefits of aid were challenged. It was argued in these papers that capital imports, rather than accelerating development, had in some cases retarded it.

Kennedy and Thirwall (1971) argued that Griffin rejected too hastily the explanation that countries received aid because they saved a lower proportion of their national income. However, the negative correlation which Griffin found between domestic savings and foreign aid was confirmed by Papanek (1973) from his cross-section study covering data from the 'fifties and 'sixties, the same period covered by Chenery and Strout.

Similar studies conducted by Anisur-Rahman (1968), Areskoug (1969) and Weisskopf (1972) concluded that only a fraction of foreign resource inflows had been additive to domestic savings while a large share was used to increase consumption. Mosley (1980) concluded from his cross-section data covering the 'seventies that the negative correlation between aid and savings of which Griffin and others spoke of, was still strong and significant.

A voluminous amount of cross-country and time series statistical analysis has been addressed to this issue, essentially regressing domestic saving (as the dependent variable) on income, foreign capital inflow, and at times, supplementary independent variables such as primary exports, private investment, other exports and population growth. The results of several regression studies are summarised in Table 1.

2. Theoretical Approaches To Optimum Levels Of Debt

At the theoretical level, a number of approaches attempted to arrive at an optimum level of external debt. These can be grouped into two distinct categories :

(i) Models incorporating 'optimising behaviour', and
(ii) Non-optimising models.

One approach in the latter category to determine an 'appropriate' level of external debt for a developing country has been to identify the amount of debt (or borrowing) which will enable a balance of payments position to be sustainable. A number of non-optimising growth models exist wherein the emphasis has been primarily on analysing debt dynamics in conditions that do not give rise to explosive debt situations. Katz (1982) constructed a one-sector model with capital goods imports to examine the changes in the economy and in particular, response to changes in terms of trade. Fischer and Frenkel (1972; 1974) used a two-sector framework to analyse debt dynamics.

Identifying the desirable level of debt is, however, the objective of most of the optimising debt models. Glick and Kharas (1986) used a social welfare function to examine intertemporal allocation and depicted economies as progressing towards a stable equilibrium characterised by equality between the marginal productivity of capital, the social discount rate and the marginal cost of funds.

Table 1: Results of Major Analysis Regressing Saving on Foreign Capital Flows

Author	Nature of Series	Number of Countries	Effect of Foreign Inflow on Savings
1	2	3	4
Griffen and	C	32	-0.73
Enos (April 1970)	C	13	-0.82
Griffin (May 1970)	T	13	-0.84
Rahman (Feb 1968)	C	31	-0.2473
Weisskopf (Feb 1972)	T,C	17	-0.227
Papanek (1973)	C	85	-0.64
Clark (1967)	C,T	33	-0.58

Source : Bhagwati, Jagdish N., "Substitution Between Foreign Capital and Domestic Saving," in Grossman, Gene (Ed.) Dependence and Interdependence, Essays in Development Economics, Vol.2, Delhi, Oxford University Press, 1985.

C : Cross Country T : Time Series

Bardhan (1967) and Bade (1972) are typical examples of an intertemporal optimisation problem. Bardhan's model postulates that borrowing from abroad, if left to borrowers, tend to be excessive. 'Atomistic' private borrowers will fail to take account of the fact that an increase in the extent of (per capita) external borrowing for the country as a whole raises the total cost of borrowing against it and they are most likely to ignore the increase in disutility for the nation as a whole from extra borrowing. They would go on borrowing until the marginal product of capital at home is equal to the rate of interest (average cost

of borrowing) in the international capital market, which is an inefficient solution for the borrowing country. In his model, the optimal path for the economy is derived for a specific supply function of external finance. In the steady state, as along the optimal path, the marginal cost of foreign borrowing will be equated to the marginal product of capital. This condition, given the supply function of external finance, fixes the optimal quantity of debt at each point of time.

Mc Cabe and Sibley (1976) introduced export revenue uncertainty in a model similar to Bardhan's and Bade's to show a negative relationship between domestic savings and external finance. According to the study, when there is a shortfall in export revenue, savings decline and foreign borrowing increases and the converse is true when export revenues rise. One of the properties of this model is that it establishes an inverse relationship between domestic saving and foreign borrowing. Although Rahman (1968), Weisskopf (1970), and Griffin and Enos (1970) had all argued that the negative association between the two variables reflected optimising behaviour on the part of developing countries, none of them provided an optimising model which yielded such a negative relationship.

Another simple macroeconomic model of optimal borrowing proposed by Gemmel (1988) found optimal borrowing to be particularly sensitive to interest rate, capital productivity and the extent of foreign flows invested. This model assumed the indifference of consumers between foreign and domestic sources of consumer goods. However, in practice, a proportion of most countries' output is non-traded and it is often alleged that some consumers in developing countries reveal a preference for foreign sources of some domestically available consumer goods. The results of optimal borrowing models which include a non-traded sector (Dornbusch 1983) suggested that where non-traded sectors formed a significant proportion of output, additional variables such as exchange rate may be important for the optimal borrowing decision.

Most of these models' two-period nature captures the notion that a country which is a net debtor in one period must be a net creditor for the subsequent period. However, as country experiences suggest, borrowers could continue to be net debtors for several years and the demand for borrowing arising out of deficit in the current account could itself be a reflection of structural problems in the domestic economy.

Furthermore, what is viewed as sustainable by the borrowers may not be viewed in the same manner by lenders. There is also the additional

risk of repudiation by borrowers. Where the risk of default is serious, lenders may react in a number of ways which prevent borrowers from achieving (*ex ante*) 'optimal debt' levels. As some debt models have shown (for example, Eaton and Gersovitz (1981) and Cohen and Sachs (1985) which are discussed in greater detail in the following paragraphs), the resulting interactions between borrowers and lenders can produce different 'optimal' debt levels compared to the situation where borrowing is unconstrained.

3. Econometric Studies Of Debt-Servicing Capacity Of Developing Countries

Considerable interest has been generated in identifying the circumstances under which a number of countries experienced debt servicing difficulties. At the international level, much discussion has focussed on determining the economic variables which should be considered in projecting the performance of borrowing countries. Some of the earlier studies by Alter (1961) and Gulhati (1967) provided only stylistic arguments for considering one variable or another. The empirical literature on creditworthiness does suggest the presence of some systematic relationship between macroeconomic variables and the occurrence of debt crisis.

Discriminant analysis of reschedulings by Frank and Cline (1971) and Sargen (1977), and logit analysis by Feder and Just (1977), Mayo and Barrett (1977), Feder, Just and Ross (1981) and Cline (1983) identified a number of macroeconomic correlates of debt crisis. A summary of their results is given in Table 2.

Frank and Cline (1971) in their pioneering work, investigated into the quantitative aspects of default probability using discriminant analysis. The ability of eight indicators to identify debt servicing difficulties were tested. These were : i) Debt-service ratio, ii) Index of export fluctuations, iii) Compressibility of imports, iv) Imports/GNP ratio, v) Imports/reserves ratio, vi) Amortisation/debt ratio, vii) Per capita GNP, and viii) Growth of exports.

Covering the period 1960-68, their data sample contained 145 observations in 26 countries, of which 13 were rescheduling cases in eight countries. Their results indicated that the debt service ratio, debt-amortisation ratio and the ratio of imports to reserves were important correlates of the debt crisis.

Dhonte (1975) used the principal component analysis to investigate the relationship between several economic variables relevant to debt-servicing capacity. Dhonte used ten indicators of which four were found to be most significant for the first principal component which explained about 35 per cent of the variation in the sample data. In addition, two more variables - debt-service payments as a per cent of external debt and debt-service payments as a per cent of debt disbursements were found to be significant for the second principal component.

Feder and Just (1977) used logit analysis to reinvigorate the significance of the indicators previously examined by Frank and Cline and others. The sample covered the period 1965-72 and contained 238 observations in 30 countries which included 21 rescheduling cases in 11 countries. The results of the study suggested that in addition to the variables indicated by Frank and Cline, export growth rate, per capita income and capital inflows/debt service payments ratio appeared to be significant indicators of debt-servicing capacity.

Feder, Just and Ross (1981) improved upon their earlier results by using more refined data in a logit model. The variables that emerged significant in the study were debt-service ratio, foreign exchange reserves to import ratio, and the ratio of foreign exchange inflows to debt-service payments, the export to GNP ratio and the real per capita GNP to US per capita GNP ratio.

Mc Fadden and others (1985) found that demand for new loans increased strongly with a rise in debt-service ratio and imports GDP ratio and decreased in relation to rising real GNP per capita. Supply of new loans decreased when there were part repayment problems and increased with rise in debt-export ratio. The results of the study suggested that lenders were reluctant to roll over the principal due, thereby creating considerable pressure on liquidity when principal payments were high.

Vasudevan and Prasad (1991) used the probit approach to analyse India's external debt repayment problem. Similar to Mc Fadden and others (1985), the study regarded the dependent variable (debt-service ratio) as a dummy variable assuming value one wherever debt-service was 20 per cent or above of exports and value zero otherwise. The authors' exploratory efforts suggested that for India, money supply, terms of trade and trade deficit were variables on which the policy maker would have to keep a watch so that appropriate actions could be undertaken to bring about a reduction in the probable occurrence of external debt repayment problem.

Table 2: Significant Macroeconomic Correlates of Repayment Crisis in Developing Countries

Variable	(a) Studies by					
	Frank-Cline (1971)	Grinols (1976)	Feder-Just-Ross (1981)	Sargen (1977)	Saini-Bates (1978)	Cline (1983)
1	2	3	4	5	6	7
Debt-Service/Exports	+		+	+		+
Principal Service/Debt	-					-
Imports/Reserves	+		+			+
Debt/GDP		+				
Debt/Exports		+	+			+
Debt-Service/Reserves		+				
			(b)			
GNP Per Capita			-			
Foreign Exchange Inflows/ Debt Service			-			
						(c)
Current Account/Exports						-
Exports/GNP			-			
Rate of Domestic Inflation			+			
Growth Rate of Money Supply					+	
						(d)
Growth Rate of Reserves					-	-
Growth Rate of GNP Per Capita						-
Total Borrowing/Total Imports						-

Source : McFadden, Daniel and others, "Is There Life After Debt ? An Econometric Analysis of Creditworthiness of Developing Countries", in Smith, Gordon and Cuddington, John T., (Eds.) International Debt and Developing Countries, The World Bank, Washington DC, 1985.

(a) Variables with significant effects are indicated by sign of effect. Note that these studies differ in countries and time periods considered and in details in definitions of both dependent and imdependent variables.

(b) Defined relatives to us GNP per capita

(c) This variable is multiplied by the sign of the current account surplus.

(d) Cline reports significant positive and negative signs on this variable.

4. Repudiation Risk and Borrowing

A borrowing country is assumed to contemplate not paying its international debt when it is : (a) **Illiquid**, i.e., it does not have cash on hand at the moment; (b) **Insolvent**, i.e., incapable of servicing debt in the long run; and (c) **Insouciant**, i.e., conscious of the fact that there are economic gains to be made by repudiating outstanding financial liabilities.

The standard theory of debt contracts does not allow for debt repudiation and renegotiation. The theory assumes that contracts are carried out as written (Townsend (1978), Diamond (1984), and Gale and Hellwig (1989)). In practice, however, renegotiation of debt contracts is not uncommon. The evolution of literature on international debt brings out clearly that renegotiation and the threat of repudiation play an important role in the evolution of sovereign debt. A significant literature has evolved in recent years which studies the unique characteristics of international country risk. Important contributions have emanated from (Eaton and Gersovitz (1981 a, 1981 b), Sachs (1985), Cohen and Sachs (1984), Cooper and Sachs (1985), Dornbusch (1985), Krugman (1985), Smith and Cuddington (1985), Sebastian (1985), Bulow and Rogoff (1986), Aizenman and Borensztein (1988) and Borensztein and Ghosh (1989)).

The lack of simple enforcement mechanisms for international debt repayment results in a situation where the volume of international credit is limited by the effective penalties associated with defaults. While there are many reasons why a country chooses to honour its external obligations, economic analysis has generally assumed that debtors compare the cost of penalties that might be imposed by creditors with the benefits of suspending debt-service payments (Dooley and Svensson 1990).

One particular attribute of borrowers is that they are inherently dishonest and will default if it is to their benefit (Eaton and Gersovitz 1981). Thus, for example, in case of default, creditors could cut off debtors' future access to credit. They could also block the debtor country from receiving trade credit and cause it to lose some of its gains from trade. In practice, creditor countries may not actually carry out these threats because logically, trade restrictions would injure the interests of both debtor and creditor countries. Further, influential interest groups could persuade creditor countries against imposing trade sanctions. It is, therefore, the opportunity cost of default that necessitates providing countries with an incentive to repay that makes international lending possible (Krugman 1985).

A number of models have taken seriously the possibility of debt repudiation by the developing country governments and have shown that such a risk radically alters the behaviour of borrowers and lenders. The presence of sovereign risk can help to explain credit rationing, debt rescheduling, conditionality and the maturity structure of international obligations (Sachs and Cohen (1982) and Sachs (1984)).

Bulow and Rogoff (1986) constructed a model in which renegotiation was an essential part of the borrowing and lending process. Renegotiation was represented as a bargaining game in which each party's ability to punish the other by delaying agreement was a crucial factor in determining how much was repaid. Bulow and Rogoff (1988) developed a formal bargaining theoretical model that took into account multilateral dimensions of developing country debt reschedulings.

Gale and Hellwig (1989) postulated the lender's ability to punish as a crucial determinant of the extent of repayment under a situation of incomplete information thus making the lender uncertain about the value of exercising the punishment strategy. Naturally, the larger the penalty, the less likely would the borrower default. In practice, however, penalties do not appear to be very big and default is not unheard of (Eichengreen and Portes (1986).

Cooper and Sachs (1985), Krugman (1985) and Gersovitz (1985) stressed the importance of creditors' confidence in preventing liquidity crisis. There are, they claimed, two possible equilibrium conditions in the credit market; a low level equilibrium when lenders lose confidence and pull out causing a liquidity crisis for the debtor country and a high level equilibrium when confidence is maintained so that developing countries could roll-over their short-term debt without difficulty. Krugman (1985) stressed a point made earlier by Cline (1983), that for creditors who already have loans outstanding in debtor countries, continued lending has a 'public good' aspect.

However, this literature has little to say about the possibility that debt relief could improve the welfare of both lenders and borrowers. This view is covered by Corden (1988 a), (1988 b), Sachs (1988), Helpman (1988), (1989), Froot (1989), and Krugman (1988), (1989).

5. Debt Overhang Hypothesis and Debt Reduction

Whereas the literature on the risk of debt repudiation provided clues regarding country risk, it raised important policy questions about what could be done in a situation characterised by debt overhang. A country has a debt overhang problem when the expected present value of potential future resources transfers is less than its debt. It is argued that a high debt burden would reduce the incentive to adjust because all or most of the benefits from increased output would go to foreign creditors. Their argument is that high levels of debt acted like a tax on investment incentives (Sachs 1988).

The effects of such a debt overhang is analysed in Sachs (1984, 1988 and 1989) and Krugman (1985, 1986, 1988). These papers showed that the presence of a debt overhang may give creditors an incentive to lend even at an expected loss in order to protect their existing claims (Sachs (1984) and Krugman (1985). It also brought out that there could be conflicts between creditors' individual and collective interests and that free rider problems could constrain the ability to achieve desirable new lending.

On the other hand, the distortions created by the presence of a debt overhang could be minimised if creditors provided immediate debt forgiveness rather than providing new money. Partial forgiveness could provide more stimulus to growth and adjustment, and to the return of capital flight. To use Krugman's (1988) terminology, the debt is so high that countries are on the wrong side of the 'debt relief laffer curve'.

The general argument against debt relief is the **ceiling argument** which rests on the premise that as repayment capacity is uncertain, reducing the contractual debt would reduce the ceiling of possible payments and, if ultimately, the capacity to pay turns out to be higher, creditors would lose. According to the **incentives argument** in favour of debt relief, adjustment effort or investment designed to raise capacity to pay might increase as a result of relief (Sachs (1988), Sachs and Huizinga (1987), Krugman (1988) and Corden (1988 b)). Krugman illustrates this point on what he calls the Debt Relief Laffer Curve. Krugman's proposition is that beyond a certain point, the disincentive effect of additional debt is so great that the total expected payment from the country begins to decline. Ultimately, debt could become so high that repudiation is inevitable. In Krugman's analysis, debt forgiveness provides a clear gain to the debtor since it reduces foreigners' claims on domestic resources. An-

other argument in favour of debt relief is **debt-forestalling** (Corden 1988 b). Sufficient relief may discourage default and repayments after relief may be greater than if there has been partial default.

A group of observers have sought to fill the debt-reduction void through market-based schemes, such as buy-backs and exit bonds. Important papers by Helpman (1988), Dooley (1988 a, 1988 b) and Krugman (1989) have clarified the analytics of some of the market-based proposals. Helpman (1988) provided a very general analysis of debt-equity swaps and debt forgiveness. Dooley (1988 a) discussed the pricing of buybacks and stimulated their welfare effects. Dooley pointed out that existing market discounts could not be used to assess the cost of debt forgiveness because the anticipation of forgiveness would raise market prices. Krugman (1989) incorporated incentive effects to show that marginal buybacks and exit bond offerings are equivalent to unilateral debt relief.

Despite differences, market-based debt relief schemes as well as pure debt forgiveness rest on a common feature: the disincentive to invest created by a substantial debt overhang. Froot (1989) studied the role of liquidity in the design of an optional relief plan. According to this study, countries that were severely liquidity constrained were more likely to be on the wrong side of the debt relief Laffer Curve and hence were the best candidates for an optional relief package which should include new lending as well as partial debt forgiveness.

6. Causes Of External Debt Accumulation

A number of variables influence lending and borrowing decisions of countries. Nevertheless, the rise in external debt can be approximately modelled using a supply and demand framework for new loans. Economists have explained the debt crisis by focussing on the current account deficit. The primary cause of current account imbalances of countries has been attributed by a few authors, to inappropriate domestic policies such as overvalued exchange rates, large government deficits, and a variety of interventions in domestic markets. Other studies have stressed that the causes were external in origin, arising out of declining terms of trade, high real interest rates and recession in industrial countries.

The experience of several Latin American countries illustrates the interaction of domestic policy mistakes and global macro-economic developments. Domestic expansionary policies financed by rapid and high levels of external debt accumulation were exacerbated by escalation in

international interest rates and oil prices and a steep fall in primary commodity prices.

There is plenty of literature on the factors that led to the international debt crisis. Before proceeding into an analysis of the causes for debt accumulation in the Indian case, it is essential to briefly encapsulate the views in the existing literature.

The views in the existing literature can be classified into three categories : i) those which emphasise the role of external factors, ii) those which identify internal/domestic factors, and iii) those which attribute a combination of both factors as influencing the increase in external debt.

The line of distinction between the first and second classification is very thin and the interdependence between factors is well recognised.

Studies Emphasising External Factors

William Cline (1984), was perhaps the most emphatic proponent of this school of thought. According to him, the global debt problem stemmed in particular from the first oil price shock. In a broad sense, he viewed the problem as a consequence of the transition from inflation to disinflation in the world economy. Funds that were borrowed when inflation was high and real interest rates were low or negative were no longer cheap in an environment of lower inflation and high real interest rates. In his view, the problem intensified in 1982 primarily from the effects of global recession immediately preceding this period.

Cline (1985), while recognising the importance of domestic factors such as overvalued exchange rates and domestic interest rates which led to capital flight still found it difficult to believe that more than 30 developing countries simultaneously went on a binge of fiscal irresponsibility. The author reiterated that the similar and contemporaneous balance of payment problems was the result of a common external source, namely economic disruption. Indeed, according to him, external shock eroded export earnings and tax revenues, thereby contributing to fiscal deficits. He cited Chile as the case of a heavily indebted country with virtually no fiscal deficit.

Guttentag and Herring (1985) blamed the excesses in the commercial banking system and the inadequacies of prudential and supervisory regulations for the debt crisis. The authors could not reckon imprudent

borrowing possible without imprudent lending. Their study stressed that commercial banks continued to lend in support of unsound economic policies long after the residents of the borrowing countries demonstrably lost confidence in their government's policies. The result was that a substantial amount of bank lending was used to finance capital flight from the borrowing country.

Studies Emphasising Domestic/Internal Factors

Rudiger Dornbusch (1985) asserted that overvalued exchange rates and large budget deficits in developing countries, themselves a related phenomena, were often important causes of excessive foreign borrowing. Countries with inappropriate domestic policy stances in the 'seventies found themselves vulnerable during worldwide slowdowns, particularly as much of their debt was at floating rates of interest with short maturity.

A massive deterioration of the current account, a consequence of loose fiscal policy and a large increase in interest payments, were in Dornbusch's view, the major source of Brazil's increase in external debt. But, he upheld that the increase in Brazil's external debt was largely attributable to failure to adjust the government budget to exogenous shocks in the form of international interest rates and increased oil prices.

In contrast to the Brazilian case, Dornbusch felt that the major contributor to Argentina's foreign debt was private capital flight (facilitated by the absence of capital account restrictions). The openness of the Argentine capital market, in contrast to that of Brazil, facilitated massive private outflows as the real exchange rate became increasingly overvalued. Dornbusch contended that misalignment in the exchange rate affected not only capital flows but also various components of domestic expenditure, including private consumption and investment, and the government budget.

Despite the surge in oil export volume and prices in the late 'seventies and easy access to international capital markets, Mexico faced a more serious economic crisis than its other Latin American counterparts by the end of 1982. The ingredients of the crisis were a mixture of those that befell Chile, Argentina and Brazil. Extraordinary debt accumulation occurred during 1979-81 but especially in 1981, the climax year. Dramatic real appreciation of the peso, massive increases in public expenditure and unsustainably high fiscal deficits led to a big import bulge and ultimately, the flight of the peso. The critical year was 1981 when the big public sector deficit spilled over into its balance of payments.

Mc Fadden and others (1985) did not consider budget deficit as a contributor to debt difficulties in their econometric model, but their analysis did confirm the importance of real exchange rate overvaluation - at least for the period between 1976 and 1982.

Discussing the external debt problem of sub-Saharan Africa, Joshua Greene traced the problem largely to government actions, in particular the accumulation of external debt for development projects designed to improve industry and infrastructure rather than to boost export production directly. Many countries opted for major development programmes and highly expansionary fiscal policies during the commodity boom years of the late 'seventies, acquiring external debt as spending increases outpaced the rise in tax receipts. Growing fiscal deficits and surging demand for private credit led to rapid monetary expansion which in turn led to higher inflation and overvaluation in exchange rates. This inhibited exports and promoted imports.

Another factor that contributed to the external debt burden in sub-Saharan Africa during the 'eighties was the rise in international interest rates. Although less important than for market borrowers, as most of sub-Saharan countries are official borrowers, a number of countries including Botswana, Niger, Nigeria, Kenya, Malawi, Zambia and Zimbabwe had contracted significant commercial borrowings denominated in floating rates of interest.

Yung Chul Park's (1985) study on Korea's external debt revealed that Korea remained creditworthy even in its tightest days. In Korea, foreign borrowing was generally treated as bridging the gap between investment and savings. Free capital inflows and outflows were never permitted. Park claimed that there was no evidence that Korean savings were on balance reduced by the inflow of foreign capital.

Studies Emphasising a Combination of Internal and External Factors

Jeffrey Sachs (1985) emphasised that domestic policy choices were decisive in determining which countries escaped the debt trap and which did not. The debt crisis of the early 'eighties was triggered off by a combination of global economic events and domestic developments in the debtor countries. The best evidence of the contribution of global events was the simultaneous onset of the crisis in more than forty developing countries. The best evidence of the role of domestic national developments

was the success or failure of many debtor countries in surmounting external shocks without any emergency rescheduling.

According to Cuddington (1989), debt-ridden countries typically shared common characteristics such as highly distorted price systems, overvalued exchange rates and inward oriented trade policies. Further, they often responded inappropriately to transitory booms and busts, leading to fiscal disequilibrium and unsustainable deficit financing strategies. A single indicator that perhaps best illustrated the deterioration of the external debt situation in 1981-82 while at the same time suggesting that the bulk of this deterioration was related to external shocks was, according to the author, the difference between the interest rate and the growth rate of export earnings in nominal terms. He explained that unless a country is running a trade surplus, its external debt tends to grow at the rate of interest. Unless export earnings grow at this rate or faster, the ratio of debt to export will rise, making the debt burden in these countries more severe.

In Weisner's (1985) view, no other set of factors explained more of the debt crisis than the fiscal deficits incurred by most of the major countries in Latin America. World recession and high real rates of interest only aggravated the crisis. The logic of his argument was that larger fiscal deficits increased demand and created trade deficits both through the direct income effects and through price effects which reduced competitiveness of exports due to inflation. To elaborate further, the author felt that behind the growing fiscal deficits were strong political pressures for higher spending. As long as external financing permitted total absorption to exceed domestic income, it was possible to accommodate those demands. But as the world recession worsened and as it became evident that the additional financing from abroad was not being accompanied by a corresponding increase in exports or domestic capital formation, capital inflows dropped substantially and the fiscal imbalance became an exchange rate and debt crisis. While external financing was easily available, two fundamental developments took place. First, domestic savings as a proportion of GDP actually declined in a number of countries. Furthermore, gross domestic investment rate also actually declined. Countries absorbed external resources but they used it to increase consumption.

In another study on the Dominican Republic (DR) by Cuddington and Asilis, it was emphasised that the dramatic worsening of the current account was the major source of the growth of external debt. The DR debt crisis that emerged in the 'eighties was in part caused by external

conditions; in part it was the result of domestic policy choices. Among the latter, large fiscal imbalances were arguably the most important. The authors argued that four long-term changes in the domestic economy of DR accounted for much of the growth in debt. These related to major changes in the behaviour of investment and savings in public and private sectors; the erosion of public sector finances; the surge in government consumption after 1976; and adverse trends in government's revenue raising ability.

Selected Empirical Studies On the Causal Factor
Studies Covering Developing Countries in General

The following studies focus on external current account deficits rather than external debt.

Khan and Knight (1983) examined the direct quantitative relationship between variations in current account and a set of factors that were assumed to be the main determinants of current account. Using a pooled cross-section time-series analysis for a sample of 32 non-oil developing countries during 1973-80, five factors were identified as having exerted an important influence on the current account positions of non-oil developing countries for testing their respective influences. These were (i) terms of trade, (ii) the slowdown of economic activity in the industrial countries, (iii) the sharp increase in the level of real interest rates in the international credit markets, (iv) rising fiscal deficits, and (v) appreciation of real effective exchange rates.

The first three were classified as 'external' factors and the latter two as 'domestic' factors.

The authors concluded that both external and domestic factors were relevant in explaining the deterioration of current accounts of non-oil developing countries. The most important explanatory variable was the terms of trade while the two least important factors were growth in industrial countries and the time trend.

Manual Pastor, Jr. (1989) followed Khan and Knight (1983) in testing the relative importance of internal and external factors in causing deficits and debt accumulation. This study covered the period 1973-84 and focussed exclusively on Latin America. Pastor emphasised the importance of availability of credit to a country and included this variable in his equations in addition to the variables used by Khan and Knight. The

new variable for capital availability was measured as the ratio of the previous year's net inflow of long-term capital to the corresponding year's GNP. A 'financial breakdown' view was introduced to emphasise the role of the changing availability of capital during this period. Pastor's results exhibited a mixed performance. The real effective exchange rate was significant whereas the budget variable performed poorly. The capital account 'constraint' seemed to be important as well.

Select Empirical Studies on India

Ahluwalia (1986) used the decomposition analysis to determine the relative importance of different elements affecting India's current account during each of the two oil shocks. The single largest element contributing to the deterioration was clearly the rise in oil prices. Prices of non-oil imports, especially in the non-capital goods category, also had a relatively large adverse impact on the current account.

Kannan (1989) applied the monetary approach to balance of payments in India for the period 1968-85 and showed that central bank's credit to Government was a significant factor affecting monetary disequilibrium and the latter significantly affected different components of India's balance of payments. He, thus, showed that to attain sustainable balance of payments position and to reduce its fluctuations, the monetary disequilibrium factor should be controlled either through reducing budget deficit or curtailing central bank financing of budget deficit.

Kannan and Prasad (1992) studied the impact of external variability on India's external debt. Their paper sought to quantify the role played by external factors and their variability in increasing India's external debt. External variability in this paper was defined as variability in international interest rates, primary commodity prices, oil price and the rupee-dollar exchange rate. Monthly variability was measured as the coefficient of variation of the relevant variable in the preceding 12-month period. Annual variability was calculated using the arithmetic mean of the monthly coefficient of variations. Econometric analysis brought out the significant influence of oil price and non-oil commodity prices on India's external debt (incremental). The elasticity of debt with respect to oil price was more pronounced as compared with that of non-oil commodity prices. In terms of variability, interest rate and oil price variabilities revealed significant influence on incremental debt. However, the study acknowledged that the impact of domestic economic factors on external debt were more important in the case of India.

Prasad (1994) observed that neither internal nor external factors in isolation had any significant impact on external debt accumulation in India during 1971-90. A combination of factors served to highlight the major causes. Monetised deficit emerged as the most important explanatory variable and alongwith oil prices exhibited a positive and significant impact on the debt-export ratio during 1971-90 and the sub-period 1981-90. The relationship between real effective exchange rate and debt-export ratio was inversely proportional during the period under study. Primary commodity prices and to a certain extent, interest rates lost their significance during 1981-90.

Concluding Observations

The above survey gives a clear perception of the various aspects of international borrowing and lending that contributed to the debt servicing problems of developing countries. It also instills valuable lessons for management of external debt.

The past two decades highlighted two issues - the first related to the appropriate size of external debt and the second related to the management of external debt. Debt capacity has always been measured in more than one way - either in the form of absolute level of debt or debt servicing capacity. This survey addresses important issues relating to the determination of the optimal amount of external borrowing as also the econometric estimation of the precursors of debt repayment problems. It is evident from experience that developing countries did not devise any early warning systems to forecast debt servicing problems in time to take preventive action.

Although external debt of developing countries had reached unsustainable levels by the beginning of the 'eighties, there was no generalised repudiation of debt or debt servicing. This characterises the debtors' perceptions regarding the negative externalities in default, so succinctly analysed by Eaton and Gersovitz and others. As elucidated by Krugman, it is, therefore, the costs of default, by providing countries with an incentive to repay, that made international lending possible.

The short-term debt strategy of India to tide over its repayment obligations in 1991-92 is a classic example of a country not wanting to repudiate its loans. Rather than default, which would have been catastrophic, the Government sold gold with a buy-back option, and severely compressed imports even at the cost of contracting industrial growth and output.

There is now a widespread agreement that an efficient solution to the debt problem requires both debt reduction and economic growth. The Brady Plan is a tacit acceptance of the debt overhang proposition. The IMF and the World Bank, for the first time agreed to set aside funds for debt and debt-service reduction. Initial indications are that the implementation of the Brady Plan has been successful in removing the debt overhang in respect of a few Latin American borrowers. The World Debt Tables (1992-93) shifted Venezuela from the Severely Indebted Low-Income group to the Moderately Indebted Middle-Income Group. Chile has regained investor status, Mexico has regained access to voluntary funds in the international capital markets and many other Latin American countries are on the road to recovery. Yet, the problem persists for many countries. The key to the reduction of the problem lies in sustained reforms on the part of the indebted countries and debt-service reduction on the part of creditor countries, banks and multilateral institutions.

The broad consensus that emerges from the literature survey is that generally, on the domestic front, unrealistic exchange rates and unsustainable fiscal deficits were largely instrumental in increasing external debt of developing countries. These were exacerbated by external factors such as the escalation in oil prices, increase in international interest rates and a fall in primary commodity prices.

The findings of the various studies point to the need for appropriate policy responses to insulate economies from external shocks. It heightens the need for policy makers in India to explore avenues for increasing domestic oil production rather than construing it as a problem of external shock. These studies underscore the importance of exercising fiscal restraint and operating in a strong macroeconomic framework which ensures a stable and realistic exchange rate supportive of export efforts - issues which hardly need overemphasis in the Indian context.

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NOTES

Implications of the Uruguay Round for Indian Agriculture

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In a bid to shield their relatively inefficient agricultural sectors from the international competition, most of the industrialised countries so far have followed very protectionist farm trade policies and have tried to keep the issues related to trade in agricultural products out of the bounds of the multilateral bodies like the GATT. This has affected the commercial interests of many of the developing countries including India. This study has shown that inclusion of the issues related to the trade in agricultural products within the GATT in a comprehensive manner during the Uruguay Round is what the developing countries needed. This paper also shows that most of the issues raised in the debate on the impact of the Uruguay Round agreements on Indian agricultural can be accommodated within the framework of the agreements themselves without losing the power of autonomous decision making or affecting adversely the vulnerable section of the country's population. Indian agriculture has much to gain and little to lose from the Uruguay Round agreement.

Introduction

Since the inception of the General Agreement on Tariffs and Trade (GATT) in 1947, as a matter of deliberate policy, issues relating to trade in agricultural products have been, in general, kept out of the purview of this multilateral organisation till the first concrete step to include them was made in the Tokyo Round (1973-79). As an outcome of this Round, some aspects of trade in tropical agricultural products were brought under the GATT. But it still left out most of the major issues, including trade in temperate and sub-tropical agricultural products. The main factor behind such an outcome has been the continuous persistence of the major industrialised countries (ICs) that domestic farm policy of a country is

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necessarily an internal policy matter and should therefore remain outside the bounds of international scrutiny and limitations. The US in the past and more recently Japan and the European Economic Community (EEC) have held similar positions. However, many developing countries (DCs) including India have considered such viewpoint as a clear sign of protectionism by the ICs. The DCs, in fact, have time and again demanded the inclusion of various issues relating to trade in agricultural products within the framework of the GATT so as to limit unilateral actions of the ICs in this sphere which, as the DCs have claimed, have affected their export earnings adversely. Against this background, one would have expected the inclusion of trade in farm products within the GATT in a comprehensive way during the Uruguay Round (UR). But the manner in which agriculture was treated in the UR has given grounds for a strong public opinion in many DCs that the GATT provisions are inimical to domestic agricultural development. It is also feared in certain circles that the Uruguay Round Agreement (URA) on agriculture would affect the poorer strata of the population adversely and would also undermine the autonomous decision making process of the government in the context of agriculture.[1] However, to form any idea about the implications of the URA on India's farm sector, it is very essential to address at least three specific issues, namely,

(i) whether, *prima facie*, inclusion of the issues on agriculture within the GATT is in line with the interests of the DCs;

(ii) whether the broad directions of the URAs on agriculture are favourable for the DCs in general, and India in particular; and,

(iii) whether there are some specific provisions of the URA which can adversely affect the Indian agricultural sector and/or the vulnerable sections of her population.

The present study has tried to take up these specific questions to assess the impact of the URA on Indian agriculture.

The study has four sections. On the basis of available information, Section I discusses whether there exists a case for inclusion of the issues on agriculture within the GATT from the point of view of the DCs, in general, and India in particular. In Section II, an attempt has been made to give a snap-shot view of the major URAs affecting agriculture. This Section has also tried to see how far these agreements cater to the needs of the DCs. Section III picks up the particular provisions of the URA

relating to agriculture which have been the major areas of public debate in India. We have also attempted to examine the implications of these provisions in the current Indian agricultural situation. The last section presents a summary and conclusions.

SECTION I

Trade in Agriculture : The Pre-Uruguay Round Scenario

It is widely recognised that productivity increases in agriculture and allied activities in the ICs have generally been lower than that in their secondary sector. As factors of production in the primary and the secondary sectors are not perfect substitutes of each other and there is no perfect mobility of the factors across the sectors, there would have been, assuming the play of free market forces, a large gulf in the rates of returns to the grossly similar factors of production employed as between the sectors in the ICs. It would have created an explosive socio-political situation in these countries. To avoid this, the ICs have, in general, used farm policies to effect a redistribution process in favour of agriculture. Though there are studies which question the efficacy of such mechanisms to meet the desired end,[2] the ICs have nonetheless continued to follow these policies. Within a regime of free trade in agricultural products such a redistribution policy faces the obvious problem of leakage of incentives given to the domestic producers to the foreign producers of similar products through the channels of international trade. To put an end to it, the ICs have followed a policy of relative insulation of the farm sector from international competition. But as the supply elasticities of agricultural exports are generally considerably lower than those of manufacturing exports, price measures like tariffs are relatively ineffective to serve the need of such insulation. Besides, a high level of tariff imposed by the ICs on their agro-imports would attract the disadvantage of being subject to the GATT rules. Non-Tariff Barriers (NTBs), on the other hand, remained largely outside the surveillance of the GATT. NTBs, by virtue of being opaque, provide high levels of insulation to the farm sectors of the ICs from international competition and at the same time, help them to hide the extent of protectionism of their farm trade policies.

In the DCs the situation is, however, just the opposite. Here, the agricultural sector serves a dual role, that of being the supplier of surplus for industrialisation, and also of being the supplier of foreign exchange through exports of primary products. As a result, agriculture in DCs often is the net taxed sector partly because of the operation of the

'visible hand' of administered agricultural prices, and partly because it has to be relatively open in view of the compulsion to earn foreign exchange.

It must, however, be recognised that farm subsidies across the ICs are not uniform. But, in the recent past, they showed quick proliferation. In the US, government expenditure on farm support measures increased nearly 10-fold between 1980 and 1986 from US $ 2.7 billion to US $ 25.8 billion. In the EEC, farm support measures costed the authorities US $ 6.2 billion in 1976 which jumped to US $ 21.5 billion in 1986 [Valdes (1987)]. These countries also provided large amounts of explicit and implicit export subsidies to their agricultural products. These, in turn, affected the price competitiveness of the agricultural exports originating from the DCs.

On the trade policy front, NTBs remained the main form of barrier to the potential agro-exports to the ICs. NTBs imposed by the ICs took a complex form. The NTBs included para-tariff measures, surcharges, variable levies, anti-dumping and countervailing actions, quantitative restrictions (like, prohibitions, quotas, voluntary export restrictions, etc.), import surveillance, advance payment of duties and import deposits, various price control measures, additional customs formalities and other entry control measures, stringent quality requirements, local content requirement, etc.

The measurement of NTBs by UNCTAD (1993) during 1981-1991 is very interesting and worth a look. This study shows that while 15 per cent of the world imports of all commodities taken together faced NTBs, the figure for total non-raw material agricultural imports alone was as high as 35 per cent. This indicates that use of NTBs remained more frequent in the case of agro-exports than non-agricultural exports. This study also validates our argument that DCs followed a more open farm trade policy than the ICs. It has been shown that while 29.5 per cent of non-raw material category of agro-imports by the DCs faced NTBs in 1992, the corresponding figure for ICs stood at 37.6 per cent. World Bank (1987) shows that while applying NTBs to the agro-imports entering into their territory, ICs discriminated against those originating from the DCs *vis-a-vis* those exported by the other ICs. In 1981 19 per cent of the total agro-exports of the DCs to ICs faced 'hard-core' NTBs which in 1986 increased to 21 per cent. The corresponding figures for agro-exports from one IC to another remained 13 per cent and 16 per cent respectively.

In the case of India, the major portion of agro-exports outside protocols[3] go to the IC markets. The levels of tariffs imposed by the ICs on these exports were low, generally not more than 10 per cent [Asian Development Bank (1990)]. But Indian agro-exports faced formidable NTBs in these markets. For example, cashew kernel exports of India to the US face strict health and sanitary measures. Indian rice and sugar exports to the same country faced the requirements of special quality standards and quota respectively. Japan's strongly protectionist rice import policy affected the scope of rice exports from India to Japan. Further, Japan imposed strict health regulations and quality standards against Indian exports of coffee to Japan. In the EEC, while exports of coffee from India are subject to internal taxes, Indian tobacco exports to this country-group face the requirement of quality certificate. A considerable portion of agro-exports from India to the EEC comes under 'voluntary export restraints' and 'anti-dumping procedures'.

There are a number of studies which try to assess the impact of protectionism of the ICs on the price levels of the agricultural products. Anderson and Hayami (1986) show that these measures resulted in a situation where the prices of agricultural products in Japan and western Europe often remained 100 per cent higher than the international prices. There are other studies[4] which show that liberalisation of world trade in agricultural products can increase both volume and price of these exports. At the same time, such a trade regime would result in a reduction of volatility of prices and of quantity demanded in the international markets for agro-exports. It is important for India to draw clues from these studies that liberalisation of trade in agriculture can considerably increase the prices of many of her farm exports: price of rice can increase by 5-21 per cent, sugar by 13-29 per cent, and tea by 3 per cent, to name a few.

SECTION II

Major Provisions of the Uruguay Round Agreement in the Context of Agriculture

There are three major agreements and decisions of the UR which solely deal with the agricultural sector. These are :

(i) "Agreements on agriculture"; (ii) "Agreements on sanitary and phytosanitary measures"; and (iii) "Decision on measures concerning the possible negative effects of the reforms on least-developed and net food-importing developing countries".

Besides there is the "Agreement on trade related aspects of the intellectual property rights including trade in counterfeit goods" which has direct implications for agriculture. Then there are many general provisions of the UR which are likely to affect trade in agriculture along with trade in non-agricultural products but in view of the scope of this article the implications of such provisions have not been dealt with except by way of referencing and annotating the contexts under which other agreements could be influenced.

The "Agreements on agriculture" set the objective as the establishment of a liberalised, rule-based, multilateral trading system in agricultural products within the purview of the GATT. This agreement defines the methods for measuring the domestic support to agriculture and subsidies to agro-exports provided by the members. It calls for reduction of both domestic agricultural subsidies and export subsidies on agro-products. In the case of non-product specific agricultural subsidies, the agreement stipulates that the yearly level of this should not exceed 5 per cent of the value of total agricultural products of the member in that year. As regards to product specific subsidies, the maximum level is 5 per cent of the value of the product. However, for the DCs the maximum level is 10 per cent in both the cases. Moreover, the measures of domestic support exempt certain agriculture related subsidies from their scope. The product-specific and non-product specific domestic non-exempted subsidies beyond the maximum permissive limits have to be reduced by 20 per cent by the ICs and by 13.3 per cent in the case of the DCs. For export subsidies to the agro-products, the agreement asks the IC members to limit the budgetary outlay for such purposes and quantities of exports benefiting from such subsidies to 64 per cent and 79 per cent of the base period (1986-1990) levels, respectively. For the DCs these limits are 76 per cent and 86 per cent respectively of the base period levels.

The agreement under the articles on "market access" instructs the members to convert the NTBs into equivalent tariff measures. These tariffs, in turn, have to be reduced by an average 36 per cent by the ICs and 24 per cent by the DCs over the implementation period with some minimum reduction for each tariff line. Members are supposed to maintain the current access opportunities and they have to establish minimum access tariff quotas at reduced tariff rates for farm products when the minimum access tariff quotas are less than 3 per cent of the domestic consumption of these items. The minimum access tariff quotas will increase to 5 per cent of the domestic consumption over the implementation period. However, the members have been provided with discretion to

take action against sudden flooding of agro-imports. The level of discretion of a member to take action against imports in such situations is directly proportional to the country's openness to the imports of such products.

The implementation period of the above agreement extends up to A.D. 2001 for the ICs and A.D. 2005 for the DCs. There is no need for the least-developed countries (LDCs) to make any reduction commitment with regard to these agreements. Except for the LDCs all other members are required to provide details of their agricultural support measures and various commitments in these regards as well as in the context of market access in their national schedules. These national schedules will be an integral part of the GATT '94.

The "Agreements on sanitary and phytosanitary measures" recognise the need for such measures to safeguard the life and health of human, animal and plant. But it tries to eliminate the arbitrariness in this area since it would affect international trade in agricultural products, and tries to establish harmonised scientific and international standards in these respects. The agreement attempts to make the transition of the DCs to such standard requirements smooth by resolving to provide these countries required technical and financial assistance in these matters. The agreement also makes the standard requirement of the DC exports more flexible during the transitional period.

The "Decisions on measures concerning the possible negative effects of the reform programme on the least-developed and net food-importing countries" attempt to minimise the possible hardship of these countries due to rise in prices of agro-products consequent upon liberalisation of the agricultural policies. To do so, the UR proposes to try to increase the food aid and the grant element of such aid to these countries. It also resolves to transfer resources to increase agricultural productivity and infrastructure in these countries. The GATT has already started dialogue with the International Monetary Fund (IMF) and the World Bank (WB) to give concessional loans to these countries for imports of agro-products.

The provisions relating to the patents in the "Agreement on trade-related aspects of intellectual property rights, including trade in counterfeit goods" have a special relevance for the farm sector. They include issues on patenting agricultural chemical products and protection of plant varieties. The agreement allows patentability of both 'product' and 'process'. It recognises the private nature of a patent right and thus gives exclusive

right of commercial exploitation of a patent to the patent holder. The life for a patent will be 20 years. Members have accepted the obligation to follow substantial provision of the Paris convention (1967), the Stockholm Act of the Convention for the protection of industrial design. The agreement bars the patentability of animal or plant or the biological process of production of animal and plant. But, micro-organisms and non-biological and micro-biological processes are patentable. Members are required to protect plant varieties through either patents or a *sui generis* system or a combination thereof. Members, however, have the right to authorise the use of a patent without the permission of the holder in cases of emergency, non-commercial public use etc. The implementation period of the agreement is 1 year for the ICs and 5 years for the DCs, the latter being extendible up to 10 years in special cases. For LDCs the period is 11 years. However, the members are supposed to accept applications for patents even during the implementation period.

From the various provisions of the UR on agriculture, one could notice that they are in the spirit of establishing a liberalised, rule-based, multilateral trading system, with concessions extended to both the DCs and LDCs to adjust to the proposed trading environment. As rule based and liberalised systems are what the DCs need, there is very little reason to call the general spirit of the URA in the context of agriculture anti-DC. It is, however, possible that certain provisions of the URA on agriculture are not in line with the interests of the DCs as a group or of any particular country.

SECTION III

Uruguay Round and Indian Agriculture : Some Issues

The main concerns which have been voiced in many circles of the country against the provision of the URA for agriculture, in brief, are :

1. The URA puts serious constraints on the operation of the public distribution system (PDS) of food grains and thus it would affect the vulnerable section of the Indian population.

2. The obligations to reduce domestic support commitments to agriculture will undermine the autonomous decision making process of the Government of India and thus it would affect the agricultural sector severely.

3. The patenting of agricultural chemicals and plant varieties would result in a situation where customary right of the farmers on retention of seeds for future cultivation and exchange would be eliminated. Indian researchers would not have the right to use patented varieties of seeds for research.

4. The market access commitments under the UR will result in large scale import of agricultural products to India and this in turn would adversely affect the farmers of the country.

The tenability of these four observations need to be examined in detail.

Domestic Food Aid

The URA has left the issues on the operation of domestic food aid programmes and the levels of government expenditure for such purposes to the total discretion of the members, provided such measures benefit the poorer sections of the population and there is no implicit subsidy to the farmers through these programmes[5].

In India, the operation of PDS, as it exits today, does not fulfill the requirement of targeting it to the poorer section alone. But, recently the Government has announced its intention of revamping the PDS through cutting the access of the relatively rich to such channels. In some states (e.g. Maharashtra) such an intention was in fact put into effect. So given the expressed stand of the government to move towards targeting of PDS, the present lack of targeting practices is not likely to invite any adverse reaction from the GATT.

As can be seen from Tables 1 and 2 the procurement of foodgrains by the Government for the purpose of food security and distribution through the channels of PDS does not have any subsidy element for the farmers. In fact, procurement of food grains by the government has acted as a tax rather than subsidy for the farmers. Table 1 shows that procurement/minimum support (MS) price of paddy during 1980-81 to 1993-94 has remained as low as 38-46 per cent of the open market wholesale price. Table 2 shows that the procurement/MS price of wheat during the same period remained at 70-91 per cent of the corresponding wholesale price. On the other hand, during the period issue prices of paddy and wheat ranged between 59-76 per cent and 81-103 per cent of the corresponding wholesale prices respectively. In none of these years procure-

ment/MS price exceeded the corresponding issue prices of the foodgrains. Thus, on this count PDS in India satisfies the norm put down by the URA.

Agricultural Input Subsidy

The "Agreement on agriculture" has comprehensively put down which of the domestic support programmes should be included in the "Total Aggregate Measure of Support" (TAMS). TAMS provides the basis according to which countries have to make the commitment to reduce such measures in case it exceeds the stipulated level. It is required to include both explicit and implicit categories of subsidies in the calculation of the TAMS[6]. In India, most of the domestic support programmes to agriculture consist of non-product specific subsidies. Even when product specific subsidies are given, most of these come under such categories as special area development programmes (e.g. assistance for dry land farming, desert development programme etc.), government's financial participation in income insurance and income safety-net programme, payments for relief from natural disasters etc. But these categories of domestic subsidies are exempted from the scope of TAMS.[7]

There are mainly four agricultural products (jute, cotton, potato and onion) which receive product specific subsidies from the proceeds of the Central Government budget. Subsidy to potato and onion is provided not individually but both of them taken together. The table given below shows that except in the case of jute in 1986-87, the product-specific TAMS for none of the commodities exceeded the 10 per cent limit. So the product specific agricultural supports are in conformity with the provisions of the URA.

Product Specific Total Aggregate Measure of Support in India for Selected Commodities

(per cent)

Year	Potato & Onion	Jute	Cotton
1986-87	1.22	11.29	9.43
1987-88	2.79	5.12	1.68
1988-89	1.49	3.39	0
1989-90	1.20	2.73	0
1990-91	2.26	1.33	0

Source: Calculated on the basis of data from Ministry of Agriculture, Government of India.

Non-product specific subsidies for the Indian agriculture which qualify for inclusion within the calculations of the TAMS are four in number: (a) fertilizer subsidy; (b) irrigation subsidy; (c) interest subsidy to agriculture; and (d) electricity subsidy to agriculture. While fertilizer subsidy is an explicit subsidy, the remaining three are subsidies only in the implicit sense. This Study has measured the non-product specific total aggregate measure of support in two ways - a 'narrow' estimate (Table 3) and a 'broad' estimate (Table 4). The methodologies used for such calculations has been discussed below.

The total fertilizer subsidy given by the Central Government consists of two parts (i) subsidies given to imported fertilizers, and (ii) subsidies given to domestic fertilizers. Under the Retention Price Scheme (RPS) the Government of India tries to ensure a fair return to the domestic fertilizer industry by providing a 27.507 per cent pre-tax (12 per cent post-tax) return on the net worth of the plant. Gulati (1989) has disaggregated the total fertilizer subsidy into two components - (i) subsidy to agriculture, and (ii) subsidy to the domestic fertilizer industry. His calculations for the period 1980-81 to 1986-87 show that on average 59.37 per cent of the total fertilizer subsidy has gone to the agricultural sector, and the rest to the fertilizer industry. Assuming that this trend has continued thereafter, only that component of fertilizer subsidy which has gone to the agriculture has been taken into account in Table 3, as has been done by Gulati (1989). But in Table 4, the total amount of fertilizer subsidy, as given by the budget of the Government of India, has been taken into account to measure the non-product specific TAMS.

Irrigation subsidy to agriculture can come from two sources : (i) subsidy on account of the capital cost of construction of such projects, and (ii) subsidy on running cost of these projects. But the subsidy on account of construction of large and medium irrigation projects which account for almost 70 per cent of the total non-product specific subsidy to agriculture in India [Gulati (1989)] is exempted by the URA from the calculations of the TAMS.[8] Thus, in both Tables 3 and 4 irrigation subsidy includes only subsidy on operational costs of such projects (i.e. working expenses net of receipts for such purposes). The Second Report of the Ninth Finance Commission provides information on working expenses and receipts in the major and medium irrigation projects for the period 1990-91 to 1994-95 : such expenses for 1980-81 to 1989-90 has been calculated by extrapolating the data series provided by the Commission. Subsidies on minor irrigation projects have not been taken up in the irrigation subsidy. But the interest subsidy for such projects gets cov-

ered by the total interest subsidy and electricity subsidy for minor irrigation is included in total electricity subsidy.

Electricity subsidy to agriculture has been calculated for both Tables 3 and 4 in the following way. The study has taken the difference between the average cost of electricity per unit and the average revenue realised per unit of electricity sold to agriculture. This in turn has been multiplied by the volume of electricity sold to agriculture in each State for all the years. The yearly figures of State-specific electricity subsidies have been summed up to get the yearly figure for India.

Interest subsidy on per unit of credit to agriculture is approximately 4.5 per cent. This figure is deduced from the difference between the average interest charged to retail trade and that charged to agriculture by all forms of organised bodies which lend to agriculture. For the purpose of data presented in Table 3 this difference is multiplied by the total direct institutional credit outstanding against agriculture as of June 30 of the concerned year. In Table 4 the sum of direct and indirect institutional credit to agriculture has been taken into account.

Table 3 shows that the 'narrow' measure of non-product specific TAMS for India during 1980-81 to 1991-92 varied between 2.21 and 6.29 per cent of the agricultural NDP. According to the 'broad' measure of non-product specific TAMS the range is 2.97 - 8.3 per cent of the agricultural NDP (Table 4). As the 'broad' measure of TAMS is an over estimate of TAMS calculated by the norms of the UR (because it contains non-agricultural subsidies as well) it could be taken as the upper limit of the non-product specific TAMS in India (both at national and sub-national levels). Moreover, URA has stipulated that the difference between the amount which government spends to buy agricultural products for public stock-holding and for domestic food aid and the free market value of such products should be carried on to the calculations of the TAMS.[9] Here the UR presumed that government's procurement price is higher than free market price. But Tables 1 and 2 show that in India it is just the opposite. So India can add a negative quantity to TAMS on this count and can show her level of TAMS lower than that shown in Tables 3 and 4.

As both product-specific and non-product specific TAMS in India are below the 10 per cent level stipulated by the URA, the question of reduction of domestic support measures to agriculture or the loss of government autonomy in India in the sphere of decision making for agriculture

due to URA would essentially be an academic one. It should, however, be useful to keep in mind that higher prices for Indian agricultural exports in future (which will occur as the ICs reduce their domestic support to agriculture and open up their domestic markets to the international competition) would effect far reaching changes on the Indian farm sector.

Intellectual Property Rights in Agriculture

In the UR India tried to keep the issue of protection of plant varieties outside the scope of patent or a *sui generis* system. India also made attempts to reduce the life of patents from 20 years [Government of India (1994 a)]. But most of the members agreed to these provisions.

Since a patent regime requires much strict restrictions than a *sui generis* system, India is likely to adopt the latter system for protection of plant varieties. Under a *sui generis* system protection of 'farmers' right' to retain patented seeds for future cultivation can be taken care of.[10] Exchange of patented seeds among the farmers can be possible so long it is not on a commercial basis.[11] But more importantly, all the existing plant varieties and almost all the varieties which come to the market till the turn of the century will remain outside the scope of the URA. So neither the 'farmers' right' nor the 'researchers' right' to use the existing patented seeds will be affected. But there are two provisions of the URA on patents and protection of plant varieties which might not be beneficial for India.

First, although India can apply for a 10-year implementation period to put a *sui generis* system into force[12], according to GATT (1993) Agreements on TRIPs, Article 70(8), the country has to accept applications for patents during the implementation period, she has to protect such potential patents, and when the implementation period is over, if patent is granted, it will have a retrospective effect from the date of application. This provision dilutes the concessions given during the implementation period. Secondly, to authorise researchers to use patented plant varieties, government has to make payment to the original patent holder.[13] Further, if a new plant variety is invented using a patented plant variety then the owner of the first patent shall be entitled to cross-license on reasonable terms to use the invention claimed in the new patent.[14] Even if India goes for a *sui generis* system for protection of plant varieties, it will be difficult for her to set up a system which will go against the expressed provisions of the URA. So, the indigenous research activities on plant varieties may need a reorientation in these respects. But, the greater

protection of plant varieties can also stimulate more indigenous private research activities in these fields.

Market Access

India's total domestic consumption of the agricultural products could be derived by adding the NDP originating from agriculture added to the excess of agricultural imports over exports, less changes in stocks. The share of imports of agricultural products in domestic consumption was 3.21 per cent in 1980-81 and it decreased to 2.76 per cent in 1986-87 and further to 1.49 per cent in 1991-92. This does not, however, imply that the country is not reasonably open to agricultural imports. The lower import of agricultural products to India is mainly because of lower domestic prices of the products in relation to external prices [Gulati 1989a]. For some major agricultural products, the market access in India during the recent past (see the table below) has differed widely. In the case of pulses and vegetable oils, the market access has been high whereas in the case of cereals it has been traditionally low. This is because the prices of cereals in India are much lower than the world prices. Gulati (1989a) shows that the price of rice in India is about 30 per cent lower than world prices and in case of wheat it is 20 per cent lower.

Imports as a Percentage of Total Availability

Year	Cereals	Pulses	Vegetable oil	Sugar
1987-88	1.17	6.73	4.19	7.64
1988-89	2.00	7.48	25.50	0.00
1989-90	0.60	3.20	6.71	1.00
1990-91	0.21	9.60	11.57	0.10

Source : Ministry of Agriculture, GOI.

The UR has described the methods to convert the NTBs into equivalent tariff measures.[15] As a response to that the Government of India took the view that it could increasingly convert the NTBs towards tariffs and have tariffs for primary agricultural products at 100 per cent, processed products at 150 per cent and edible oils at 300 per cent [Government of India (1994 a)]. Conformity of these particular tariff equivalents to the GATT guideline could not be ascertained due to lack of details. Further, one can argue that the proposal of the Government to use balance-of-payment clauses to maintain some NTBs on agricultural imports

may not be useful as a long-term strategy, if the balance-of-payment position of the country improves. But, the particular agricultural products for which the market access is low in India are also the commodities for which the domestic price levels are generally lower than external prices. As a result, even a reduction in the tariff rate under tariff quota for these products is not likely to increase agricultural imports substantially. Hence, the question of flooding of domestic market by imported agricultural products does not arise. Even if there was such a possibility, UR provides scope to take counter actions in such cases through Article 5 of the Agreement on Agriculture.

SECTION IV

Summary and Conclusions

This study showed that the ICs have so far followed very restrictive trade practices in case of agricultural products. This affected the DCs as many of them have major interests in agricultural exports. It is therefore of benefit to the DCs that the UR has included major areas of agriculture within its fold. India has much to gain and little to lose through the UR mechanism. Most of the issues raised in the debates on the impact of the UR on Indian agriculture can easily be accommodated within the UR framework without any specific disadvantage to the country. It is necessary to recognise that a rule based multilateral negotiating mechanism is generally in the interests of DCs because it limits the scope of bilateral leveraging by the ICs.

Notes

(1) See Shiva (1994) and Sahai (1994) for discussions on these lines.

(2) See, for example, GATT (1986).

(3) Most of India's trade under protocol was with the erstwhile socialist countries of the eastern Europe and the erstwhile USSR.

(4) See, for example, Voldes and Zietz (1980), Zietz and Voldes (1986), Tyres and Anderson (1986), Parikh and Tims (1986).

(5) GATT (1993), Agreement on agriculture, Annex-2, para.-4.

(6) GATT (1993), Agreement on agriculture, Article-1.

(7) GATT (1993), Agreement on agriculture, Annex-2, para.s 5-13.

(8) GATT (1993), Agreement on agriculture, Annex-2, para 2(vii).

(9) GATT (1993), Agreement on agriculture, foot note-5.

(10) The Director General of GATT, Mr. Peter Southerland, himself has mentioned about the feasibility of such a step. (Economic Times, 12.4.1994)

(11) GATT (1993), Agreement on TRIPs, Article-31 (6).

(12) The normal implementation for the DCs is 5 years under the Agreements on TRIPs. But since India does not have a product patent system for the protection of plant varieties until now, she can apply for an extended period of implementation in this regard under Article-65 (4) of the Agreement on TRIPs of GATT 1994.

(13) GATT (1993), Agreement on TRIPs, Article-31 (h).

(14) GATT (1993), Agreement on TRIPs, Article-37 (c).

(15) GATT (1993), Agreement on agriculture, Attachment of Annex-5.

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Table 1 : Prices of Paddy (Common) in India : 1980-81 to 1993-94

(Rs. per quintal)

Year	Whole-sale Price	Procu/ Mini Supp Price	Issue Price	Iss Pr Effective from	(3)as % of (2)	(4)as % of (2)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1980-81	226	105	165	1-1-1981	46	73
1981-82	266 *	115	175	1-10-1981	43	66
1982-83	306 *	122	188	1-10-1982	40	61
1983-84	343 *	132	208	16-1-1984	38	61
1984-85	322 *	137	—	—	43	—
1985-86	338	142	217	10-10-1985	42	64
	—	—	231	1-2-1986	—	68
1986-87	346	146	239	1-10-1986	42	69
1987-88	380	150	239	1-10-1987	39	63
1988-89	383	160	244	25-1-1989	42	64
1989-90	426	185	—	—	43	—
1990-91	490	205	289	25-6-1990	42	59
1991-92	578 *	230	377	28-12-1991	40	65
1992-93	663 *	270	437	11-1-1993	41	66
1993-94	703 *#	310	537	1-2-1994	44	76

Note : (1) * : Estimated price.

(2) # : Average wholesale price for 1993-94 is based on the average of wholesale price for April-December 1993.

(3) Procurement/ Minimum Support Price indicates the same announced by the Government.

(4) Issue price indicates the central issue price.

(5) Wholesale price indicates the price of common variety of paddy at Sainthia.

Source : Ministry of Agriculture, Government of India.

Table 2 : Prices of Wheat in India : 1980-81 to 1993-94

(Rs per quintal)

Year	Whole-sale Price	Procu/ Mini Supp Price	Issue Price	Iss Pr Effective from	(3)as % of (2)	(4)as % of (2)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1980-81	147	127	145	1-4-1981	86	99
1981-82	159 *	142	160	1-8-1982	89	101
1982-83	176 *	151	172	15-4-1983	86	98
1983-84	181 *	155	172	10-8-1984	86	95
1984-85	176 *	157	—	—	89	—
1985-86	189	162	190	1-2-1986	86	101
1986-87	200	165	190	1-4-1986	83	95
	—	—	190	1-7-1986	—	95
1987-88	216	173	195	1-5-1987	80	90
	—	—	204	25-3-1988	—	94
1988-89	262	183	—	—	70	—
1989-90	244	200	—	—	82	—
1990-91	290 *	225	234	1-5-1990	78	81
1991-92	324 *	275 @	280	20-12-1991	85	86
1992-93	361 *	330 @	330	1-1-1993	91	91
1993-94	390 *#	350	402	1-2-1994	90	103

Note : (1) * : Estimated price.

(2) # : Average wholesale price for 1993-94 is based on the average of wholesale price for April-December 1993.

(3) @ : These prices include a central bonus of Rs. 25 per quintal.

(4) Procurement/ Minimum Support Price is according to the year of procurement.

(5) Issue price indicates the central issue price for PDS.

(6) While the procurement/ minimum support and issue prices are for course varieties (long bold/short bold) wholesale price is for Kalyan Sona variety in Delhi.

Source : Ministry of Agriculture, Government of India.

Table 3 : The Narrow Estimate of Non-Product Specific Total Aggregate Measure of Support to Indian Agriculture : 1980-81 to 1991-92

(Rs. crore)

Year	Fertilizer Subsidy	Irrigation Subsidy	Electricity Subsidy	Interest Subsidy	Total Subsidy	(6) as a % of the Agri-cultural NDP
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1980-81	659	3	353	287	1,302	3.25
1981-82	685	3	426	339	1,453	3.43
1982-83	42	4	612	389	1,046	2.21
1983-84	342	4	728	454	1,528	2.64
1984-85	1,334	5	941	519	2,798	4.57
1985-86	1,616	5	1,157	615	3,393	5.19
1986-87	256	6	1,457	731	2,449	3.53
1987-88	1,284	7	1,886	805	3,981	5.10
1988-89	1,900	7	2,394	949	5,250	5.36
1989-90	2,697	8	3,039	1,071	6,815	6.29
1990-91	2,606	9	3,858	1,256	7,729	5.97
1991-92	3,235	12	4,897	1,319	9,463	6.25

Table 4 : The Broad Estimate of Non-Product Specific Total Aggregate Measure of Support to Indian Agriculture 1980-81 to 1991-92

(Rs. Crore)

Year	Fertilizer Subsidy	Irrigation Subsidy	Electricity Subsidy	Interest Subsidy	Total Subsidy	(6) as a % of the Agri-cultural NDP
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1980-81	505	3	353	381	1,242	3.10
1981-82	375	3	426	456	1,260	2.97
1982-83	605	4	612	529	1,749	3.69
1983-84	1042	4	728	614	2,388	4.13
1984-85	1927	5	941	726	3,599	5.87
1985-86	1924	5	1,157	857	3,943	6.03
1986-87	1898	6	1,457	1,010	4,371	6.29
1987-88	2164	7	1,886	1,151	5,207	6.67
1988-89	3201	7	2,394	1,380	6,982	7.13
1989-90	4542	8	3,039	1,405	8,994	8.30
1990-91	4389	9	3,858	1,601	9,857	7.61
1991-92	5185	12	4,897	1,683	11,777	7.78

Reserve Bank of India Occasional Papers
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VIEWPOINT

Readers of this journal are aware that the 'Occasional Papers' carries contributions only of the staff members of the Reserve Bank of India. So far these contributions have been in the form of articles, notes and book reviews. Viewpoints of staff members however could differ even on one focussed subject-area but they have never been so far given expression to in any published form. When an announcement was made in June 1994 about the increase in procurement prices of agricultural commodities, some of the economists working in the Department of Economic Analysis and Policy reacted to it, and presented their independent views on the policy pronouncement in particular and agricultural price policy in general. It was in this context that the Editorial Board of the Journal felt that a channel could be opened within the format of the journal to present, on an off-and-on basis, the points and counterpoints of the staff members on any one subject in a brief manner. The usual caveat applies here too: the viewpoints are the authors' own and do not represent those of either the Editorial Board or the Reserve Bank of India -- **Editor.**

Hike in Procurement Prices of Agricultural Commodities

1) Mridul Saggar[1]:

The hike in procurement/minimum support prices (PP/MSP) continue to be steep as has been the practice since 1989. In general, one needs to question the appositeness of the policy of large increases in these administered prices. The impact of PP/MSP on food prices and the general price level are phenomenal and hurt the poor more, as following the Engel Law, they consume more food as a percentage of their total consumption expenditure. Since adequate safety net in form of re-targeted public distribution system (PDS) is still not available to the poor who are net purchasers of foodgrains, the objective of improving farm incomes will have to be balanced by the need to keep farm prices in check.

The significance of the price policy of Kharif 1994 lies not so much in another large increase in the procurement price for paddy, as in the rise in its issue price. By announcing an increase in issue price along with the procurement price and effecting it from the very start of the

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new marketing season there is a conscious attempt to acknowledge the inevitability of the link between the two. Raising of the issue price by proportionally larger magnitude this year will at least partly address the fiscal concerns and will have a dampening effect on prices through reduction in subsidy bills. The transmission mechanism would however be indirect and would only partially offset the inflationary impact of administered price hike in commodities.

The new policy may address the fiscal side of the problem, but the question of appropriateness of an administered price for the agricultural commodities cannot be detached from the paying capacity of the vast mass of low income purchasers. Against an average annual increase of 3.9 per cent and 2.9 per cent, respectively, for paddy (common variety) and wheat procurement prices during the five year period 1984-85 to 1988-89, the procurement prices have been raised by an average of 14.2 per cent per annum in case of paddy and 14.0 per cent in case of wheat in the next five years. The behaviour of PP/MPS for coarse cereals, pulses and many a cash crop is similar. For instance, the MSP for groundnut in-shell has been hiked by an average of 12.0 per cent per annum since 1988-89 compared with a moderate average increase of 5.5 per cent in the preceding four years. MSP for Cotton (H-4 variety) had been hiked by an average of 11.4 per cent per annum since 1988-89 against a nominal average increase of 1.1 per cent in preceding four years. These are phenomenal increases. The wholesale market prices are found to be elastic to PP/MSP and if one attempts to quantify the impact of increase in PP/MSP on general price level through input-output matrices, the direct and indirect response of increases in PP/MSP felt on the wholesale price index amount to nearly 4.0 per cent in terms of inflation rate. Thus, around two-fifths of the annual WPI increase of around 10 per cent may be attributed to the pressures generated by the administered price hikes in farm products. And, this is a measure for the static impact. In dynamic terms further price increases could take place, as industrial prices are adjusted upwards to compensate for indexed contracts and cost-push generated by raw material prices. There is therefore merit in the perception that containing food-fueled inflation is a very difficult proposition, unlike the inflation potential embedded in inflows of capital which could be sterilised by a number of policy actions. No doubt there has been some moderation in the Kharif price policy during the year under view but the increases of even this magnitude are not sustainable. For, the overall increase still works out to be nearly double digit for all the Kharif crops except sunflower seed. The hike is particularly steep in the case of cotton and soyabean. It would be possible to lower

the inflation rate by at least 2-3 percentage points if only administered price hikes for agricultural commodities are moderated to half the level of increases granted in the recent past. The price policy must, after all, maintain broad-consistency with the set of macro-economic objectives.

The central issue is that aggregate supply response in Indian agriculture is low, if not perverse, and high agricultural prices in the absence of suitable technology will not raise production in any significant way. The crop-mix may be influenced but the gains from having an appropriate crop-mix are outweighed by the inflationary losses.

The successive increases in PP/MSP have fueled food speculation in the Indian economy. Rakshit, Dutt, Rattso, Bland and others have shown that with imperfectly developed capital markets, foodgrain stocks constitute a widely used financial asset in the economy. The price support policy induces an exogenous increase in investment demand for agricultural commodities and drive their prices upward. There may be a substitution in investment at the expense of productive capital for purely speculative gains.

The large increases in PP/MSP have introduced an administered mechanism which tends to exacerbate inflation as also skewness in income distribution in rural sector. But having taken this position, one must admit that from an analytical point of view, a challenge to this stance can come from the adverse terms of trade movements in agriculture. The evidence in general shows that over time the sector suffered from negative effective protection. No doubt, there is a merit in this position, but it must also be recognised that the benefits of the price policy would percolate to only those farmers who have large surpluses. Furthermore, the large price hikes would have to be judged in the totality of the on-going liberalisation and structural changes. The opening up of the economy is accompanied by export thrust in the form of raw products or processed ones and these policies too would improve income terms of trade of the farmers who have surpluses. In this context, it is notable that agro-exports recorded a steep rise of 27 per cent in dollar terms in 1993-94. Perhaps, it would be best in the economy's interest if the magnitude of procurement price hikes is somewhat lower than it has been in the recent past. This should not be interpreted as an opinion in favour of Preobrazhenski's proposition of moving the scissors against agriculture and in favour of industry. It only cautions against correcting net taxed position of agriculture in one go, which might result in overshooting as the impact of accompanying macro-economic changes is felt over a period. If

reforms have at all to be staggered, they have to be staggered and sequenced in agriculture sector too.

In sequencing the reforms, the primacy has to be accorded to putting in place a PDS that targets primarily those below the poverty line. This will provide the safety net to agricultural labourers and small and marginal farmers, as also the urban poor. The PDS has therefore to be recast. The revamped PDS now introduced in select geographical regions is a step in right direction but is still to go far enough to meet the set objectives. In a study by K. R. Venugopal, it has been shown that off-take will aggregate to around 12 million tonnes if one-third of ICMR norms on food-intake are given as PDS entitlements to the poor alone. This is an affordable off-take from the fiscal viewpoint and there is a case for implementing this strategy coupled with perhaps an equal amount of off-take in the form of open-market sales by FCI at non-subsidised prices. With stocks surpassing the 30 million tonne level, and with continuing political and economic commitment to procure what is offered, FCI must turn itself more and more towards commercial operations by cutting its inefficiencies the way similar bodies like MMTC and STC are trying. However, a runaway increase in procurement, and consequently issue prices hampers off-loading of old FCI stocks and forces government to increase subsidies thereupon. Therefore, some restraint on procurement price hikes appear desirable. It would then be appropriate to build the food security on a two-pronged strategy. PDS would have to be targeted narrowly and FCI would have to improve its efficiency *inter-alia*, through cross-subsidizing commercial operations.

2) Deepak Mohanty[2]:

It would be difficult to pronounce a judgement on whether the increase in PP/MSP is large or small. The issue is more fundamental. There could be a strong case to get the agricultural prices corrected of policy induced distortions. However, apart from poverty considerations, it is desirable to leave the pricing mechanism to the market rather than using procurement prices as an instrument to set the prices right. The increase in administered prices, on the demand side, creates inflationary expectations which drive the prices over time. As the economy is increasingly moving towards market determined prices, even in hitherto captive markets in the industrial goods sector, the agricultural sector cannot afford to be left isolated. The process of reform and liberalisation must

2. Shri Deepak Mohanty is Director in the Department of Economic Analysis & Policy.

encompass the farm sector and one wishes that the Kharif price policy for this year would have set the tone in this direction.

The welfare-losses on account of distortions introduced by price intervention could be large and are clearly avoidable. It introduces discrimination in which pay-off of some farmers of some region producing some crop increases while that of some others reduces. It is after all a zero-sum game with aggregate supply response being close to zero. The appropriate crop-mix should be left to the markets. With excessive intervention, there is also the danger that the average price of rationed and open market sale may be more than what might prevail under a free market and at the same time the farm gate price is lower than under free market conditions. The importance of markets should not therefore be undermined.

The terms of trade have been favourable to agriculture. Thamarajakshi had shown that terms of trade moved in favour of agriculture during the fifties and sixties. In a study conducted by Professor M.V.Nadkarni under the auspices of Development Research Group at the Reserve Bank, it was found that terms of trade had moved against the farm sector in the seventies but the trend was reversed in the eighties with the terms of trade in 1989-90 being better for the farmers than in 1970-71. The sharp rise in PP/MSP since then would have only accelerated the favourable movement. But the question is whether these changes are policy induced. There can be a case for correction if it were so but, as already agreed, one has to be circumspect about creating further distortions in the market.

It is necessary to add that there is no strong case for raising domestic procurement prices only because there is negative protection. First, the international price of most agricultural commodities are not necessarily reflective of competitive market forces, nor do they reflect the true cost of production as agriculture in industrial countries remain highly subsidised. Second, there are high tariff and non-tariff barriers which distort prices. In the current ambience, with the removal of most of the restrictions on agricultural exports, the domestic agricultural sector could harness the fruits of comparative advantage which would constitute an incentive for production.

The present system of food security operations has lost its relevance. With the removal of foreign exchange constraint and a move towards a more open trading system in agriculture following the Uruguay Round Agreement (URA) under the auspices of the GATT. The impact of pro-

curement price hikes could be reduced by revamping PDS through better targeting so that it benefits the poor. To the extent PDS stocks are used as hedge against inflation, it is desirable to carry an optimal level of stocks and off-load the excess into the open market so that it would help to influence open market prices and if not, at least minimise the carrying cost of excess inventories. In this context, policy-makers may like to explore the possibilities for some price-flexibility in which issue prices are not only linked to procurement, but also with the market price; although the link could be weaker in case of the latter.

3) Sitikantha Pattanaik[3]:

Any discussion on the fixation of procurement/support prices by the CACP and its varied implications generally starts from questioning the methodology followed by the CACP. So far the methodology has been entirely based on three main approaches, i.e. cost-plus, terms of trade (i.e. the parity approach), and the forward pricing (i.e. to account for the expected increase in the costs during the year for which the prices are declared in advance). CACP follows essentially the cost-plus approach. It is generally considered that the weightage given to the cost-plus approach is around 80 to 85 per cent.

In the cost-plus approach the 6 variety of costs i.e. A_1,A_2,B_1,B_2,C_1 and C_2 account for in the most exhaustive manner all possible costs - both explicit and implicit *.

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*Cost A1 : All actual expenses in cash and kind incurred in production by owner operator.

Cost A2: Cost A1 + rent paid for leased-in land.
Cost B1: Cost A1 + interest on own capital assets(excluding land).
Cost B2: Cost B1 + rental value of own land (net of the land revenue) and rent paid for leased-in land.
Cost C1: CostB1 + imputed value of family labour.
Cost C2: Cost B2 + imputed value of family labour.

At times to give the status of industry to agriculture, some, as even in the Hanumantha Rao Committee's Report ** have suggested an addi-

3. Shri Sitikantha Pattanaik is Research Officer in the Department of Economic Analysis and Policy.

** Interim report of the "Export Committee for review of methodology of cost of production of crops" (1990).

tion of 10% as the "managerial cost" i.e. cost C_3 for the CACP. (This is to bring parity with the methodology of the BICP). It has been widely criticised that the valuation of these costs are overestimates and hence do not reflect the true cost conditions. To further increase the prices, some have argued for taking into consideration statutory wages' rather than the actual wages. These over estimated costs have made the procurement prices the `lead' factors rather than the `lag' factors in shaping the market prices for foodgrains.

The argument contrary to this view, i.e. procurement prices follow market prices is often made due to lack of understanding of the exact mechanism through which the Government procures foodgrains, as it is entirely controlled by the organised grain merchants. In the most organised and advanced grain markets, from where the Government procures almost the entire requirement for the purpose of PDS/buffer stocking, the market conditions are fashioned by the grain merchants and the commission agents. A large chunk of the foodgrains are marketed through the organised agents who commit to fetch the best possible price for the products to the farmers. (For days together if the agent finds the price below the expected level, he then arranges boarding, lodging and other facilities for the farmers and keeps the foodgrains in safe custody).

The grain merchants know it very well that during a particular period of the year i.e. the post harvest period, the Government would enter the market with a huge demand for procurement. As the price has to be decided on a competitive bidding basis, the grain merchants bid higher prices than those by the Government and withdraw after the price reaches a level which is acceptable to the commission agents and the farmers. (This is because of the clandestine agreement between the grain merchants and commission agents i.e. the grain merchants which would ensure a higher price by fake bidding for sales to the Government whereas the commission agents would ensure a lower price for the grain merchants once the Government is out of the market). As a result, the Government always ends up in procuring at prices which are higher than the declared procurement prices.

The alternative that is often suggested in the present situation is that the Government should procure at different time periods rather than entering only once or infrequently in the post harvest period. In that case, the shortage of demand arising out of phased procurement by the Government would ensure the real market forces operate in the market which would imply relatively low prices. Thus, the Government should follow the mar-

ket as, and when, it intends to set the market the intricate market mechanism pushes up prices.

Linking hike in procurement prices to issue prices could be justified on the ground of neutralising the effects on Government expenditure in the form of food subsidies. But a uniform allocation for PDS over months is not appropriate for the purposes or even for influencing market prices. During the months when the market prices are low, the allocation for PDS should also be reduced and only in those months when market prices generally rule high, higher allocation could be made through PDS. Thus release of stocks for PDS should be linked to relative scarcity of supply in the market. This would enable achieving effective market intervention to sober price movements.

Instead of maintaining large buffer stocks (the huge maintenance costs add to the problem), as has been often stressed by the grain merchants, they may be allowed to maintain the stocks under direct supervision of the Government. Only the godown facilities and concessional credit could be made available to them for this purpose. The private sector has proved to distribute foodgrains at a far lower cost than the public agencies. Thus, a large part -perhaps one half- of the present level of buffer stocks may be left to the grain merchants for disposal in the market.

Instead of having a vast PDS network, the food for work programme should be revamped. When the basic intention is to generate greater employment opportunities in the rural areas at increasing real wages, foodgrains prices and PDS related issues be addressed from a different angle. The real income that may be attained could be given by the following formula.

$$\text{Real income} = \frac{\text{Money wage rate X Days employed}}{\text{Foodgrains prices}}$$

When foodgrains prices are increasing at a faster rate than the money wage rate or employment opportunities, real income in rural areas decline which could be best protected if a part of the wage is given in kind i.e. foodgrains.

(4) Michael Debabrata Patra[4]:

The spate of reactions to the consequences of the minimum support price/procurement price (MSP/PP) hike are typical of a case of an instru-

4. Shri Michael Debabrata Patra is Director in the Department of Economic Analysis and Policy.

ment with too many objectives ascribed to it. The distributional and inflationary effects of the MSP/PP change are fall outs rather than specific objectives sought to be addressed. These consequences become the subject matter of other policy measures. While not denying the need for coordination and complementarity between policy initiatives, the trade-off between various goals are so high that each policy is best left to pursue its prime objective(s) with adjustments taking place in the economy.

Goods market, especially markets for agricultural produce are notoriously asymmetric, grossly imperfect and just do not clear. Market prices are continually subjected to tremendous monopsonistic pressure and the average farmer, even the rich one has cost constraints which depress the minimum supply price of his perishable produce. The distributional consequences of the resulting erosion of life supporting purchasing power are far more deleterious than those which the net purchasers of foodgrains among the farmers face when the procurement price is hiked.

The cardinal role of MSP/PP is to provide a plynth from which market prices and farm incomes can grow stably and to prevent the secular tendency of market prices of agricultural produce to wilt in a buyer's market.

Despite Raj Krishna (1980), the market price has not been the leader and the procurement price, a reluctant follower. The fixation of MSP/PP may be backward looking but it is undeniable that during the months between the announcement and implementation of a hike, market prices are driven up by expectations created by the MSP/PP change. As soon as the post-harvest procurement is over, market prices fall away, unable to sustain on their own that brief moment of splendour. Procurement prices keep taking the sagging market price line to higher and higher pegs (Exhibit 1). To look more closely at the hypothesis a functional form was set up relating the market price to its own lagged value and to a dummy constructed to capture the expectation building role of MSP/PP by assigning the value of 1 to the months when a MSP/PP induced rise in market prices occurs and 0 otherwise. The lagged dependent variable represents the inertial dynamics of the price formation process itself while the dummy captures the explicit pull of the MSP/PP change. The results presented in the lower half of Exhibit II attest to the predominant influence of the MSP/PP. Forecasts generated from the equation for the period October 1989 to May 1994 were plotted against the MSP/PP changes and it was as if the market price (forecasts) was a garland held aloft by

the staircase of MSP/PP. If the support of the MSP/PP is removed from the market price by deflating the latter by the former, the steady state tendency of the market price to deteriorate is starkly visible. In Exhibit III, the deflated market price is plotted against the actual market price and the MSP/PP. In Exhibit IV, the plots of market price (estimated) and market price (deflated) are compared. To draw from an old Keynesian adage, the increases in MSP/PP may be unjust but the depression in market price which would surely result without them is inexpedient and asphyxiating.

MSP/PP changes perform another useful function. By inducing shifts in relative prices they can influence changes in cropping and output patterns. The ideal situation would be one where the market price determined under competitive conditions induced production and allocation patterns. But until then.....

It is possible to turn to the inflationary consequences with a broad acceptance that today intervention in agricultural pricing is necessary. If and when the calculations of the CACP become available the extent of hike may even be found to be warranted if the increase in the general level of prices is any early indication. (Imputed values may not change but expenses incurred in production and rents paid would). In a medium term sense, the MSP/PP changes would be seen as a process of withdrawing administration from price determination and inflationary flares as the cost of this adjustment. The issue before macro-management then becomes simple, essentially a matter of timing.

Advantage: Policy. A fiscal neutral MSP/PP change is to be accommodated at a time when monetary policy has its heckles up, an easing of the balance of payments constraint has fortified the ex ante aggregate supply response to shocks and the fisc is committed to a fixed level of automatically monetised debt. The skill of macro-economic management lies in synchronizing the time taken for MSP/PP to pass through issue prices to the general level of prices and the seasonal trough in the latter which is observed during August, to November.

All this is not to say that there is no alternative to intervention in pricing. The conditions which characterise the agricultural economy do not warrant a reduction in such policy intervention. The MSP/PP changes need to be seen inclusive of buffer-stocking, PDS and issue prices. In doing so the horns of the dilemma between which the policy

maker is caught can be clearly perceived. To be anti-inflationary, it would require that the relationship between procurement and buffer-stocking of those items of agricultural production to the shortages of which the general level of prices is most sensitive (eg., sugar) is well established. On the other hand, to be redistributive, these efforts should go into the constituents of the consumption basket of the poorest section.

Prices do not create output. It comes from investing in economic infrastructure, R&D and technological upgradation. The gestation would require a safety net which the PDS has failed to be and therefore, can be knocked off completely. Reaching a consumption basket to the poorer sections can be done more efficiently through properly targeted food for work programmes. It is desirable that intervention is not a one-shot affair but rather a phased round the year operation supported by open market purchases and sales. Agriculture must directly benefit from the gains from trade. Market imperfections need to be addressed. In states with active procuring agencies, collusions lead to the bidding up of prices much higher than the procurement price in the post-harvest sale. In states where procuring agencies are not active and for the majority of small farmers who do not have the means to store or to transport to the mandi, prices are much below MSP/PP. It is recognised that these suggestions will take time to implement. Meanwhile, in the tradition of Mc Kinnon, Shaw and Maxwell Fry, where competitive conditions cannot be achieved immediately, minimum prices may be imposed to stimulate the competitive outcome.

EXHIBIT-1

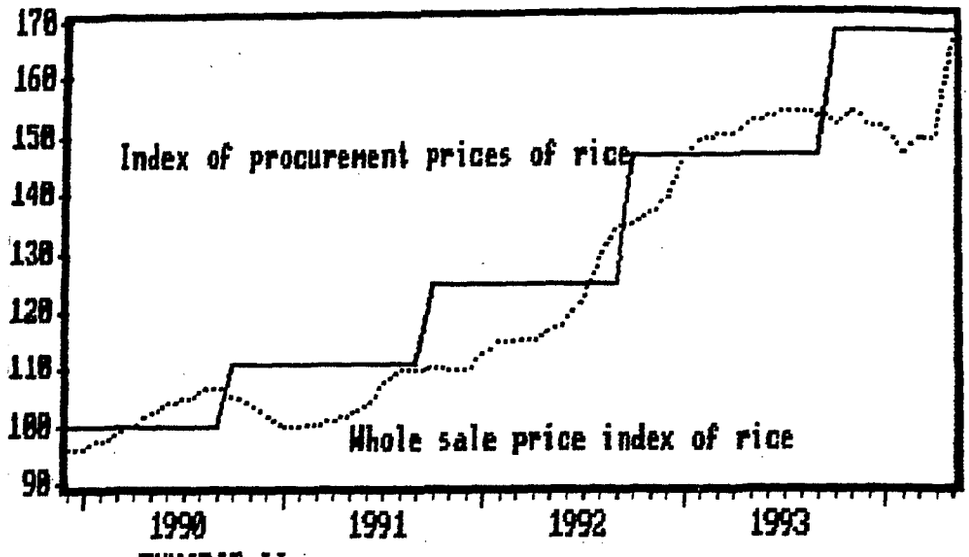
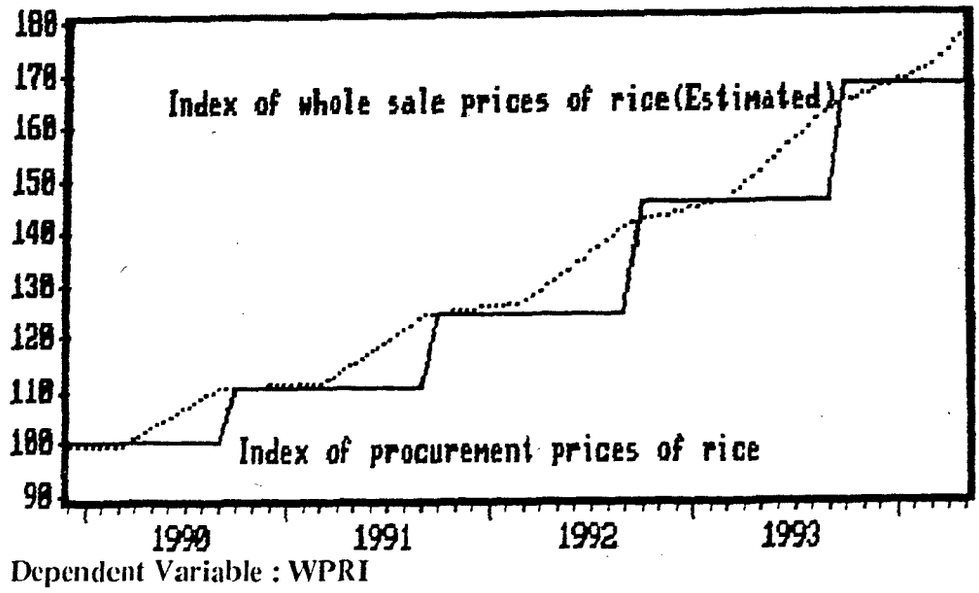


EXHIBIT-II



Dependent Variable : WPRI

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT	2-TAIL SIG.
C	-1.8832965	2.4190155	-0.7785384	0.440
WPRI (-1)	1.0189275	0.0192715	52.872333	0.000
DUM	1.7905168	0.8142633	2.1989408	0.032

R-squared	0.982104	Mean of dependent var	123.1899
Adjusted R-squared	0.981402	S.D. of dependent var	21.92249
S.E. of regression	2.989663	Sum of squared resid	455.8424
Durbin-Watson stat	1.314969	F-statistic	1399.390
Log likelihood	134.2181		

EXHIBIT-III

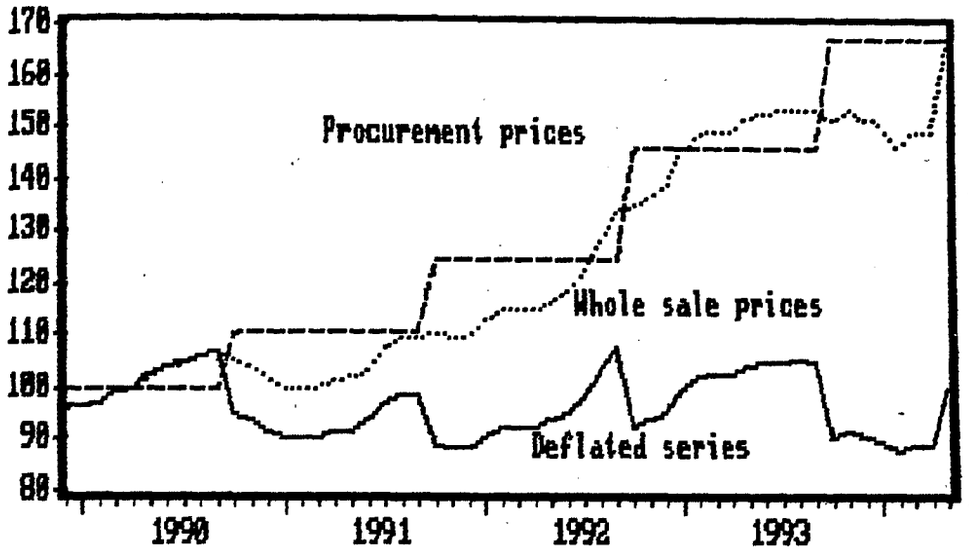
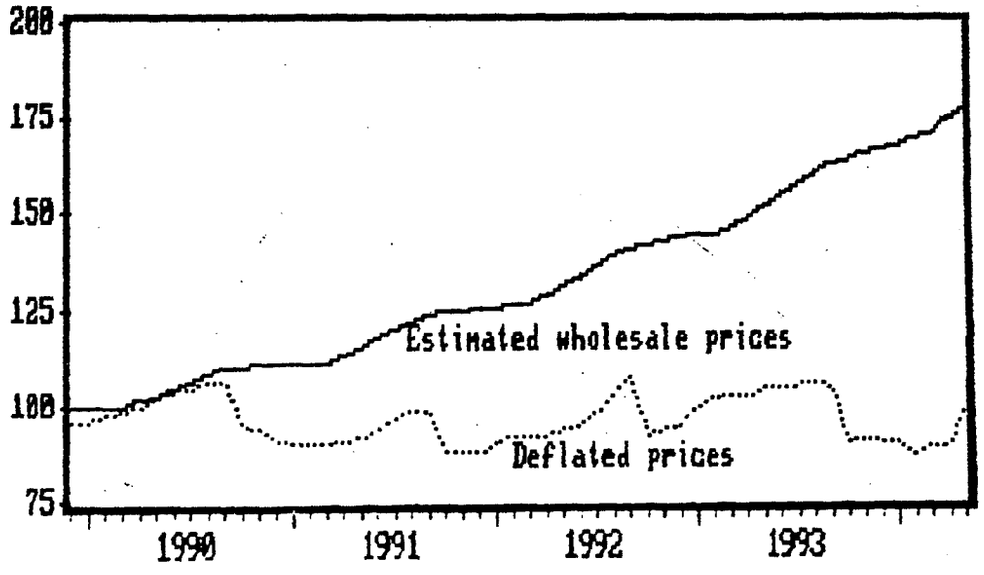


EXHIBIT-IV



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BOOK REVIEWS

Tax Policy and Planning in Developing Countries, Edited by Amresh Bagchi and Nicholas Stern, Oxford University Press, 1994, Pp. Xi + 480, Rs. 435

In recent times considerable amount of literature has been focussing on the conduct of fiscal policy in developing countries. Indeed, as is evident from the world-wide fiscal reform now under progress, a growing body of literature has brought to bear a deep sense of awareness among the fiscal authorities that the ideological basis of State intervention or a pro-active fiscal policy to promote growth and distribution cannot be self-sustaining in nature over the long-term. This concern stems essentially from the evident failure of governments of developing countries in maintaining macroeconomic stability in the event of growing fiscal deficits - a manifestation of 'fiscal overloading' and inefficient public sector. The resource allocation aspect of tax and expenditure policies has also come under critical review as realisation grew stronger that sub-optimal conditions distort individual incentives for work and stifle growth processes. Indeed, the fiscal revolution has been so rapid and extensive around the world that the erstwhile centrally planned economies could not keep to their ideological stance that State alone knows it best to direct saving and investment activities in the economy. As many of the centrally planned and mixed economies are currently passing through the transition from active to passive fiscal policy stance and from the inefficient to efficient form of government intervention, it has become necessary to understand the true magnitude and dimensions of fiscal problems in these economies and the theoretical and practical basis underlying the process of fiscal revolution. This was the theme of discussion at the International Seminar on Public Finance and Planning Process in Delhi in 1990 by some eminent scholars of public economics. The present book is a collection of papers presented at this seminar. Most of the papers included in the volume have, however already appeared in some of the reputed journals and have gone into shaping views on fiscal policy in India.

The book makes an immediate impact on the reader because of the scholastic justice with which each subject has been dealt with. Imbued with a theoretical flavour, majority of the articles present stylised versions of the subject while exploring practical policy options for the develop-

ing countries to reform their finances. The empirical papers deal with the macroeconomic aspects of public finance, inter-governmental fiscal relations and tax policy and planning in developing countries with special reference to India and China, which not only represent two different strands of economic thought but also two different institutional backgrounds, making up the fiscal system. There is a yet another finer aspect of the book: each paper is followed by comments of an expert(s). These comments often facilitate an objective assessment of the subject under discussion. The introduction by editors, Amresh Bagchi and Nicholas Stern, provides a competent outline of the major findings of each paper. The book is divided into two parts: the first part deals with the evaluation of planning process and macroeconomic consequences of public deficit while the second part presents some models on tax theory and policy.

The Indian experience with planning over the past four decades provides the most illustrative example of the achievements and failures of fiscal policy in developing countries. A survey paper by Amaresh Bagchi and Pulin B.Nayak explores in considerable depth the inherent contradictions and trade-offs involved in balancing various objectives of fiscal policy in India and why despite some notable achievements in key areas, planning in India, as it has evolved over the years, has found itself in cross roads. Besides, the survey undertakes an evaluation of the tax, expenditure and financing policies of the government with reference to the plan objectives of growth, redistribution, macroeconomic stability and efficient resource allocation. On the first two objectives, the Indian fiscal policy can be credited with some success, but it is on the last two objectives that the track record has been poor. The rigidities of the fiscal system, the excessive reliance on debt and money financing of deficit and inefficiency of resource use in public sector have threatened the macro economic stability of the system which manifested in rising inflation and difficult balance of payment situation. On the equity front the authors note that in its redistribution function, the tax system has probably not been very effective, although, together with the expenditure programmes, it has played a part in containing the inequalities, as otherwise the disparities might have been accentuated. The structure of the Indian tax system, despite its preferred aims of resource allocation, has indeed constituted a major source of distortion in the system. In exploring the policy alternatives and implications, the survey observes that "it is somewhat ironic that planning should be facing a crisis in India because of a fiscal crisis after the country had attained a saving and investment ratio of a much higher order than postulated by development economists in the fifties for a low income country to take off on the path of self-sustained growth".

This is indeed an appropriate observation in the current milieu of economic reforms. While the inefficiency of the tax-expenditure system and the regime of controls have much to do with the economic crisis, they may not necessarily form the root of the problem. The crisis in respect of planning cannot be attributed to factors like the high level of taxation, the influence of controls or the faulty plan models. Nor the problem can be thought of as resulting from a conflict between the 'market' and 'regulation', especially for a country where there exist as many reasons for the Government to intervene in the market as to withdraw in favour of the market. The root of the problem, as the authors rightly point out, lies in the will to implement hard decisions which brings in the issue of vested interests. Therefore the success of planning as observed by the authors "depends on whether the political system succeeds in subduing these vested interests and making them to part with the surplus generated by development for growth".

Some of the missing points in the survey are brought out by the two commentators, Indira Rajaraman and Shankar N. Acharya. One of the serious consequences of fiscal policy which has not been covered by the survey is the phenomenon of capital flight, having roots in the structure of domestic and trade taxes. Moreover, as Acharya notes, the link between fiscal policy and poverty should not be seen in terms of increase in private consumption expenditure alone. Fiscal policy can have and infact has significant distributional implications through the provision of public and semi-public goods at nil or subsidised rates, which do not get reflected on private consumption expenditure.

The book includes two papers on the public debt dynamics in India. While C.Rangarajan, and others address the dynamic interaction between government deficit and debt under the alternative financing scenarios, Willem H. Buiter and U.R.Patel look at the problem of Indian public finance as one of 'crisis of confidence': whether the Indian public sector can be considered solvent given the kind of fiscal policy that it pursued in the 1980s.

Central to the issue of sustainability of the fiscal situation is the condition under which the national debt as a proportion of national income stays within manageable and stable values in the medium to long run. If debt grows faster than income, which will be the case when interest rate exceeds the growth rate, the debt to income ratio will grow continuously without an upper bound. The rigorous pursuance of this stability rule by Rangarajan, Basu and Jadhav in the Indian context shows that

central government finances, as they were towards the close of 1980s, had entered into an unsustainable phase.

The alternative between debt and money financing of deficit leaves little option for the authorities in terms of ensuring macroeconomic stability. Allowing the government net primary deficit to evolve passively leads to escalation of debt to GDP ratio in the medium term to over 100 per cent under a pure debt financing scenario. In a monetary financing scenario, the consequences are more severe, "such an attempt would lead to a vicious circle of large deficit, higher monetary financing, more inflation leading again to larger deficit and so on." This paper raised, for the first time in India the inadequacies of the traditional concept of budget deficit to reflect the true magnitude of fiscal gap. The alternative concepts of deficit presented in the paper provides economically meaningful ways of analysing and evaluating the government fiscal programme.

Prof. B. B. Bhattacharya in his comment raises two interesting issues on the paper, the need for evaluation of the government's net worth and the interaction between public debt, interest rate and economic growth. It may be however noted that in the Indian context the former aspect is difficult to study because of limitations on the data front which make it difficult for a comprehensive accounting of government assets (real and financial) and liabilities. The latter aspect of the comment addresses a vital point in that the sustainability of public debt must be seen in terms of the impact it has on private investment and capital formation.

The most feared consequence of the fragile fiscal situation is the threat of solvency of the government, a question addressed by Buiter and Patel through the public sector present value budget constraint. Applying the inter-temporal solvency constraint rule, it can be shown that for the government to remain solvent at a future terminal date, the present value of future taxes and seignorage minus the discounted value of the government expenditure must equal the net initial liabilities (liability minus assets). In such a finite horizon economy, the solvency constraint requires that the public debt at the terminal date must be non positive. But, if the economy is dynamically inefficient, that is, interest rate stays below growth rate for infinite period, then the solution can be on the lines of "Ponzi Games" where government pays off its debt and interest by resorting to further borrowing. This, however, is an exceptional situation, and cannot hold forever. By the help of the inter-temporal solvency constraint rule, the authors demonstrate that given the fiscal stance that prevailed in the mid 'eighties the Indian public sector faced the threat of insolvency.

Although government could choose to finance its budgetary gap by using the option of inflation tax, this will imply high cost in terms of unsustainable rise in prices and even the maximal use of the 'inflation tax' will be insufficient to tide over the solvency gap. Suggesting fiscal retrenchment, the authors observe that the fiscal crisis might first manifest itself in a foreign exchange crisis, even though India's external debt burden is modest.

A critical question that the formal solvency test raises is about the right measure of national debt: should it be external debt alone or both internal and external debt? For, this is important as government can amortise a part of its internal debt through price inflation which is equivalent to debt repudiation. This point is very appropriately raised by Alan S. Auerbach in his comment. Secondly, what the solvency test implies is: whether the current fiscal policy stance can go on forever without inviting problems with regard to the credibility of the fiscal programme. Governments can manage to pull on with the fiscal problem for a long time if the real interest rate does not exceed the growth rate, but eventually such a condition cannot be maintained for long if deficit is incurred for unproductive purposes, and certainly not sustainable for an economy that is susceptible to loss of international confidence.

A significant part of the book focuses on the federal fiscal transfers in India particularly the issues involving the criteria of distribution of Central transfers among the States. Two papers, one by M.Govinda Rao and Vandana Agarwal and the other by M.N. Murty and Pulin B. Nayak, explore the shortcomings of the present arrangements and suggest alternative designs of federal transfers. The objectives of federal transfers are to offset the fiscal disadvantages of the poorer states and raise the levels of services provided by the States where they are deficient. In this context a proper assessment of unit cost of providing services and expenditure needs of each State becomes an essential prerequisite to achieving an efficient federal transfer system. Rao and Agarwal attempt to measure cost indices and levels of public services in a decisive voter's utility maximisation model. The problem posed is: an individual maximises his utility by choosing a level of composite private goods, certain level of public services and tax rates so that the marginal rate of substitution between public and private goods equals the marginal cost of providing the service. Translating this model into estimable cost functions across major category of public services, the authors point out the existence of significant cost differences between the poorer and richer States and argue in favour of sizable increase in the outlay of the former category of

States. Some useful comments on the paper by G. Thimmaiah and Atul Sarma provide the basis for an objective assessment of the criteria proposed by the authors. The transfer design proposed by the authors heavily draws from market signals, *viz.*, the price elasticity demand for services, whereas most of the government services are non-marketable in nature. Thimmaiah notes that the objective of ensuring minimum public services to all the people living in a federation is "paternalistic" and should not be mixed up with preferences and other market signals. Instead he argues that Central transfers should be appropriately related to the budgetary decision of States, whether or not it stimulates State expenditure on the intended line.

The same problem has been addressed by Murty and Nayak from a different theoretical standpoint. Resource transfers are aimed at promoting the objectives of efficiency and distributional equity. Economic efficiency is concerned with efficient allocation of resources by a State with a view to maximising the State Domestic Product. Central transfers in a developing federal country should thus be designed with the objectives of improving resource allocation by encouraging States to undertake welfare-improving marginal reform in their finances. Given the autonomy of States to levy several taxes, revenue policies of provincial governments can go contrary to the national objectives of reducing tax induced distortion in the economy. In this context, there is a need to gear the transfer mechanism towards encouraging the States to undertake tax reforms in the line with the Central Government. The authors examine this issue through the rules of optimal tax theory, and underscore the welfare improving role of a coordinated approach in designing tax reform in Central and provincial Governments. The model applied to India proves an important point that the current method of resource transfers does not provide incentive for the provincial governments to undertake budgetary reforms with a view to improving efficiency and distributional equity. The alternative criteria suggested by the authors take into account factors such as State income, tax effort, reciprocal of an index of efficiency of State taxes, State per capita consumption and reciprocal of an index of inequality in the distribution of income/consumption in the State. Since resource transfers would not only be related to the levels of these indices but also to their incremental values, there will be incentive for States to undertake budgetary reforms in anticipation of higher transfers.

The comment on the paper by Nicholas Stern makes an interesting comparison of criteria based on 'needs', 'rights' and 'incentives', which he calls as the notion of 'deserts'. He argues that although the incentive

aspect has a prominent role to play in the theoretical design presented by the authors, it does not indeed play such an important role in the empirical analysis, since the criteria proposed by the authors are not significantly different from those underlined in the Finance Commission's formulae. The second comment on the paper by M. Govinda Rao, makes some interesting reading. Is it justified to base the central transfers on such criteria which provide inducement to economic growth? Is economic growth of a State merely a function of its budgetary policies? While these concerns are understandable, it needs also to be appreciated that State budgetary reforms are absolute precondition to the improvement in the general fiscal situation. Under the existing arrangement for resource devolution a large weight has been placed on population and fiscal disadvantages through the factor of per capita State income. While this has gone to confer some right on States to receive Central transfers they are under no commitment to improve efficiency in the mobilisation and use of resources. Linking central transfers to certain efficiency improving tax reform at the State level is a very welcome proposition in the present context of fiscal reform.

An interesting account of the evolution of the fiscal system in China by Jinglian Wu reflects the problems encountered by Centrally planned economies in instituting viable fiscal reform. China had a chequered history in bringing reform to the fiscal sector ever since the formation of People's Republic of China in 1949. It may be recalled that as early as 1979, 'administrative decentralisation' was envisaged where micro and macro economic decision making powers were left to the provincial governments and the government enterprises. Under this dispensation, local governments were given some sources of fixed income and flexible income. If these two together exceed the stipulated local expenditure some of the revenues collected by the provincial governments are returned to the Central Government: in the opposite case, provincial governments would receive support from the central government. The reform process, notwithstanding its intended purpose of making the provincial governments more autonomous, produced serious negative results which were manifested in high inflation, accentuation of regional disparity, large underutilised industrial capacity, local protectionism and segregation of the domestic market. This happened as local governments misused their rights of taxation and concentrated excessively on building up their own enterprises which could not be viable given the market demand and cost conditions. While the reform did not succeed, it could not be replaced by an alternative either as peoples' faith on administrative decentralisation was wanning due to deteriorating economic environment. As Professor Wu notes "fiscal re-

form is related to the choice of reforms strategy .... and the realignment of vested interests .....As yet, there are no signs of such a reform being implemented". The fundamental question currently facing China is: whether to return to highly centralized fiscal system or traverse through the difficulties and obstacles brought about by the market-oriented reform based on fiscal decentralisation.

These problems are not unique to China alone; in fact, they have a general presence in most erstwhile Centrally planned economies where the institutional reforms have not been pursued to the extent necessary for maximising benefits thrown open by the market mechanism. As the book has rightly suggested, political constraints form the greatest obstacle to the emergence of a viable and efficient fiscal sector in these economies.

The second part of the book deals with tax models and their application to the developing and centrally planned economies. Six papers included in this part explore in considerable depth the structure of taxation in developing countries and how optimal tax theory can be useful in answering some of the problems faced by the planners in designing tax reform. Christopher Heady and Pradeep K. Mitra put forward a model for designing commodity taxation in an economy where some production is centrally planned and some subject to decentralised decision making. Using the Chinese economy as an example they argue that while standard optimal tax rule would suggest uniformity in commodity tax rate such a rule may not be very useful in the context of centrally planned economies, where backward shifting of taxes in the presence of price controls has significant distributional implications. A similar issue is addressed by Mitra in another paper where he examines the tariff design in a revenue-constrained economy. He sets up an intertemporal model to examine the costs and benefits of protective tariff and suggests the rules for optimal tariff structure in the context of a revenue shortage economy. Applying the model to India, Mitra observes that uniformity in protective tariff is a reasonably good policy option for the country from the view point of welfare, and stresses the merit in pursuing co-ordinated reform of tariff and domestic taxes that sets rate levels in accordance with the public revenue requirements, and establishes rate structure that, while administratively simple, is sensitive to consideration of equity, efficiency and protection. The results of the study assume significance from two major considerations. First, uniform tariff rate is administratively easy to handle and can lead to significant improvement in welfare by reducing economic distortions caused by differential protection structure. Secondly, uniform

rates will remove rent-seeking opportunity from the tariff regime, thereby contributing directly to efficiency. It may be, however, noted that uniform tariff, though optimal, may not always be a preferred option for the countries where there exist sufficient ground for providing different protection levels to different industries based on such considerations as value added or employment.

The paper by Paul G.Hare examines the economic consequences of tax and pricing decision in the pre-liberalisation economies of Eastern Europe. The distortion generated by the regimes in these economies were many, principal among which are the individual approach of negotiation with enterprises that did not take into account the consequences of decisions elsewhere, the inefficiency in the use of inputs by enterprises, and the weak link between resource allocation and profit.

A typical problem associated with these economies is the lack of incentives for innovation of the kinds associated with competitive market processes. In the absence of market clearing mechanism the command system is driven by administrative pricing rule which creates problem of shortages. Consequently, the kinds of innovation that firms are most likely to undertake are in the nature of reducing uncertainty of input supplies. Since investment decisions are not guided by price signals but respond to ways of overcoming shortages, the production system tends to be vertically integrated which increases input use and inefficiency. Professor Hare notes that as the old command system is replaced by the market mechanism, the role of taxes and subsidies in influencing investment in these countries would emerge stronger than at present. Streamlining growth in these economies depends on invigorating the innovation process and making investment more efficient. This requires that public policy should be designed towards eliminating distorting taxes and subsidies, enforcement of bankruptcy rules, easier conditions for new entrants into the market, a proper credit policy and more importantly, withdrawal of the bulk of production activities from the State through proper privatisation policy.

The paper has rightly observed that planning and public finance in Centrally Planned economies are not integrated through rational principles; rather, tax and subsidy policies play only a secondary role where too much emphasis is placed on so called material balance. As the role of price factor in resource allocation is enhanced, tax and subsidy policies would emerge important public policy tools for achieving the stated national economic objectives.

A controversial aspect of taxation in developing countries relates to taxation and pricing policies in agriculture where the conflict between tax theory and practice is very much widespread. Public policies involving agriculture in developing countries pose several dilemmas. But what concerns most is resolving the dilemma of meeting the public investment requirements in agriculture while keeping the tax burden on this sector to the minimum. One side of the argument is that agriculture should be heavily taxed as the economic cost of such a tax is very little, given the low price elasticity of supply while at the same time it is argued that the policy should favour high investment in agricultural infrastructure which has high social marginal return. The other side of the argument is that agriculture should not be taxed heavily because this will encourage farmers to press for public provision of all sorts of complementary investment in agriculture. A contribution from David Newbury holds the first view and argues that investment in agricultural infrastructure has favourable implications for supply position, which by increasing the taxable surplus in agriculture will help government to mop up additional tax revenue. This, however, gives rise to another set of problems. A rise in rural living standard increases the supply price of urban labour and reduces the taxable surplus in the modern sector. The question that the author addresses is whether the social returns on investment are below or above those at market prices (world prices). He demonstrates through the help of a dual economy model that if prices of agriculture sector can be insulated from urban food prices, then the social marginal product would exceed that measured at distorted agricultural output prices. In the case where agriculture is taxed via trade taxes, then it is not easy to say whether rural price signals are misleading or not. The arguments for taxing agriculture and investment in rural infrastructure becomes strong if the modern (industry) sector experiences economies of scale while agriculture exhibits diminishing return to scale.

This contribution has some practical policy relevance for developing countries. If agriculture cannot be taxed directly because of several non-economic factors, then under-pricing of agricultural output can be welfare augmenting policy if this implicit tax is ploughed back to rural sector by way of infrastructural investment. The conclusion is based on the critical assumption that agricultural supplies are sensitive to investment in infrastructure but not that much sensitive to price. While this assumption seems reasonable in the context of developing countries, what the model seems to have missed out is the role of huge input subsidies in the pricing policy for agricultural output.

As observed by Ranjan Roy in his comment the model takes an orthodox view on developing economies about the 'rural' and 'urban' sectors and 'traditional' and 'industrial' sector. The significant presence of 'agro-industries' in rural area does not find a place in the model. The assumptions that farmers are identical and that there is no reverse migration in the system are some of the other shortcomings of the model.

A particularly interesting contribution included in the book is that of Nicholas Stem on the problems of theory of taxation in dealing with the dynamic issues relating to growth. Here he discusses the qualitative aspects of tax system and how optimal taxation which is at the centre of the normative tax theory, is able to subserve the objective of economic growth in a dynamic environment. The development of tax theory has been largely confined to static models, which usually assume that the rest of the economy is perfectly competitive and suffers from no market failure. Given these basic conditions, the objective of tax policy is to minimise the distortions created by taxes to an otherwise efficient market condition. On the other hand, while the growth theories throw helpful insights into saving and investment policies in developing countries they, treat the long-run growth as exogenously determined by factors such as population and technical progress. In more recent period, however, increasing attention has been drawn to the influence of public policies on the long-run growth rate. Stem shows how the basic elements of tax and growth theories can be drawn together and to what extent the static tax theory can reflect the dynamic considerations relevant for growth. For example, he shows that while optimal taxation and efficient production conditions suggest uniform tax rates across commodities, in the dynamic framework, where inter-temporal consumption decisions assume significance, the tax base relevant for optimality shifts from consumption and income to expenditure.

Some of the other factors which assume significance in the dynamic context are the problem of dealing with transitions, expectations, timing and duration of policies which have important consequences for savings and investment decisions. The author poses an interesting question with regard to taxation of externalities associated with growth process. Accumulation of knowledge, or learning by doing is like an externality which flows like a by-product from investment. Knowledge may also arise due to investment in research and development. If the government is the sole provider of such investment, then the problem of taxation from the theoretical standpoint is fairly straight forward. But the fact that private investment generates knowledge, creating externalities, would mean that

taxation issues do not remain simple and straightforward. There is also the issue of 'dynamic inconsistency'. The future tax policy announced by government in the previous period may no longer look optimal when it comes to implementation in the current period. Stern notes that this is so since the passage of time makes certain disincentives/incentives irrelevant. 'Dynamic inconsistency' may also arise due to change of governments, which creates expectations about the future changes in tax policy.

Some of these issues raised by Stern provide useful insights into the current stage of development of tax theory and the agenda for future research in this area. Indeed these issues are particularly relevant for the developing countries, where the institutional development and changing sectoral composition of the economy open up new challenging areas for tax policy in addition to the dynamic aspects considered by Stern.

It is interesting as well as and intriguing to note that while the development of normative tax theory has revolutionalised the basic thinkings on the economic effects of taxation, the optimal tax rules have never had a significant impact on the actual shaping of the tax policy in many developing countries. On the other hand, practical considerations such as administrative feasibility and other constraints had a more decisive influence on the design of tax reform in these countries. In this context, a paper by Vito Tanzi provides an illumunating reflection on the influence of Fund - supported programme on the tax reform designs in the developing countries. The Fund advice on tax matters is mainly confined to rendering technical assistance to member countries. However, to the extent that taxation issues have a bearing on the general fiscal condition, they have formed an important thrust area in the adjustment programme recommended by the Fund. Tanzi mentions that while arriving at the desirable tax structure, the IMF considers such factors as government priorities, the countries' macro-economic situation, the strength and honesty of tax administration, the existing statutory tax structure, the structure of the economy and a variety of other factors. The Fund is generally concerned with efficiency aspects of taxation which led it to recommend lower tax rates and broader tax base. In the indirect tax areas the Fund missions have a strong preference for replacing tax on foreign trade by domestic indirect taxes, although such a policy recommendation has not been found feasible in most cases. The other preferred options in the Fund tax reform design are the introduction of Value Added Tax at a minimum differentiated rate, and the use of excise tax to discourage certain sumptuary consumption.

It would be fair to recognise that the typical Fund supported programme has the short-term objective of restoring macro-economic imbalances in the economy in view of its bearing on the country's balance of payments, while taxation issues are concerned with structural reforms in the economy. However, to the extent that fiscal imbalances are due to low levels of taxation as compared to expenditure overruns, the recommendations of the Fund concerning a particular tax structure does assume significance in the formation of tax policies in borrower countries.

To conclude, the book is an outstanding contribution to the literature on public economics in developing countries and economies in transition. As we have noted, it covers a wide spectrum of issues in public finance in these countries and provides useful insights into the type of problems that the developing countries have to tackle in their efforts towards achieving sustainable growth through the instruments of fiscal policy. The attractive feature of the book is its completeness in terms of achieving a right blend of theory and empiricism in presenting the issues relating to taxation policy and macro-economics of public finance. The analytical rigor with which each subject has been dealt with makes the book a particularly interesting piece of research work, worth comparing with similar outstanding contributions on tax policy in developing countries.

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Agricultural Development Price Policy and Marketed Surplus in India: Study of Green Revolution Region, by Ramesh Chand, Concept Publishing Company, New Delhi, 1991, Pp.128, Price : Rs. 100

Supply response studies with respect to changes in product/factor prices in the agricultural context are generally attempted from two perspectives, i.e. (a) supply response of agricultural output (mostly individual crops separately) often proxied by response of acerage under a crop or yield per acre; and (b) supply response of marketed/marketable surplus often adjusted for different holding sizes. The broad consensus which emerges from most such studies in the Indian context is that even though farmers respond positively (irrespective of the holding size) to price incentives, the elasticities themselves are quite low. On the other hand, it is found that favourable price structure leads to early diffusion and faster adoption of new technology to which the output and marketable surplus both respond positively with a higher magnitude in terms of elasticities. Given the low level of technology to which a substantial part of Indian agriculture has been exposed so far, a target of output expansion could be attained only through substantial incentives in terms of price hikes. Agricultural Pricing Policy in India, as it has evolved over the years, has drawn upon this rationale. However, the varied and adverse distribution aspects of such policy intervention by the Government have been widely debated.

The growing demand for foodgrains (even cash crops) fuelled by an increasing population and rising nominal incomes, nevertheless, calls for policy efforts on the supply side. Empirical studies encompassing different regions and time periods on various aspects of supply responses assume importance, as Dr.Ramesh Chand argues in his book "Price Policy and Marketed surplus in India." This is a major academic contribution on the issue of aggrarian surplus in India. The State of Punjab, selected as the field area of research, has been empirically studied for the period 1977-78 to 1979-90. Against the backdrop of the findings and policy prescriptions of some of the major empirical studies on supply response done in India and elsewhere, set out in Chapter 2 of the book, Dr.Chand advocates a break from the state of the art in terms of methodological approach in Chapter 3. He specifies a model in the form of a normalised quadratic profit function generalised for various crops (in this

study, for wheat, paddy, cotton and gram), given certain variable and fixed inputs. The factor demand (for human labour, fertiliser and animal labour) and output supply equations are then derived from the profit function (output supply considered as residual of profit and cost) and the model is estimated by using Zellner's Seemingly Unrelated Regression (SUR) method to compute various price elasticities of factor demand and output supply.

Unlike most other studies where the response of marketed surplus is tested against product price changes, output levels, land tenure systems, etc., the marketed surplus function which has been employed here, has been so modelled as to study the response to both product and factor price movements simultaneously. This is appropriate since marketed surplus elasticities estimated from such a model gives an idea about the required extent of product price adjustments which need to be effected through policy changes in order to attain distributive and welfare goals.

In a sojourn to the state of agriculture in Punjab (Chapter 4), Dr. Chand underscores the importance of agriculture in shaping the States's economy (as also the national economy). After a detailed account of the results of the modelling exercise, Dr.Chand presents the findings of the study which are revealing and have substantial policy implications. The results which are thrown up by this empirical exercise are in consonance with the results of earlier studies. Normalised quadratic profit functions express profit as a function of normalised prices of variable inputs and levels of fixed factors. Profit tends to fall when variable input prices increase and rises when levels of land, capital, and irrigation are increased. This is borne out by Dr.Chand's findings.

Furthermore, as expected, while the elasticity of demand for inputs with respect to input prices was found to be negative (indicating that input use increases with fall in prices), the responsiveness of input demand to output price movements was positive. Thus remunerative output prices can spur demand for inputs provided the input prices rise at a lesser rate than the output prices. The existing price structure in India so far has, however, been such that the negative effect of factor prices on employment has hardly been compensated by the positive effect of output prices on employment. This reveals the labour displacing nature of the present pricing policy in India. Thus, as the author rightly observes, given the level of fixed factors and technology, if the objective is to maintain a constant level of farm employment, the output prices must be increased by 100 per cent of the rise in factor prices.

Estimated elasticities (for factor inputs) also attest on the one hand to the complementarity between fertiliser use and demand for human labour and on the other, to the substitutability (one way) between demand for human labour and bullocks. Thus a reduction in fertiliser prices and an increase in the bullock prices could well increase the demand for human labour.

As regards the fixed factors of production the estimated elasticities showed that area under a crop and irrigation were the most important factors contributing to generation of employment while capital used in the form of implements and machinery had a negative (but insignificant) impact on the demand for labour. Joint elasticities with respect to all fixed factors estimated to indicate the scale elasticity of labour demand was found to be less than one for all crops, indicative of crowding out effects due to expansion of scale on human labour employment.

The estimated output supply functions (measuring the response of output to changes in factor/product prices) conformed the hypotheses that output price has a positive effect and factor prices a negative effect on output supplies. Fixed factors (their levels) also showed positive supply responses. However, the magnitude of price elasticities of output were found to be significantly low. Joint elasticities of fixed factors (in terms of levels) exhibited constant returns to scale for cotton, diminishing returns for gram and wheat and marginally increasing returns to scale for paddy. These findings are in conformity with the received view that by manipulating product prices or by increasing the levels of use of fixed factors, it is not possible to achieve the desired increase in agricultural output. It is the diffusion and adoption of modern technology on a large scale that seem to be the answer and a positive price incentive is actually the indirect stimulus for increasing output by encouraging scientific cultivation. The relationship between the use of modern technology and output prices has not received its due attention. The importance of the need to focus empirical attention on the theme arises from the tacit acceptance of a positive relationship at policy levels without definitive evidence in India.

The response of marketed surplus to changes in prices is most important from a policy point of view as it decides the availability of foodgrains for the urban population and gives an idea about the intersectoral resource transfers. While the direct price effects on marketed surplus is determined by the relative strength of positive (reduced consumption) and negative (larger farm income and consequently higher consumption pulls), it is the response of marketed surplus to output changes

as a result of change in output/factor prices which plays a more decisive role.

In the study, the response of marketed surplus of wheat to its price was found to be twice as high as the price response of gross output, and the response of net income was substantially higher than the response of marketed surplus. As the estimated elasticities show, if the objective is to maintain a constant level of marketed surplus, wheat price should be increased by 69 per cent of the rise in factor prices and paddy prices by exactly the extent of the rise in factor prices, and that such adjustments in output prices would increase the nominal farm income by 21.7 per cent for wheat and 31.1 per cent for paddy respectively. The importance of technology is brought out clearly through three scenarios worked out in the study. In the most realistic of these variants, with a 2.2 per cent population growth, and an increase in product prices to the same extent as the increase in factor prices, productivity growth of 1.1 per cent in wheat and 2.0 per cent in paddy is essential to match the increase in marketed surplus with the rise in population.

The study is notable for its incisive depiction of the true nature of the agricultural pricing policy in India. The present pricing policy, as the author finds, (of adjusting product prices to factor costs, cost-plus being one of major approaches followed by the CACP while fixing various procurement prices) has been just sufficient to maintain a constant level of marketed surplus and thus certainly is labour displacing. It is only a full cost pricing that would achieve a constant level of labour employment and this would also mean higher marketed surplus. But in the absence of technological advancement in agriculture and given the highly skewed nature of distribution of income and wealth in India, such a measure would further deepen the existing inequalities.

However, now that technological advancement on a large scale in Indian agriculture appears a remote possibility, the question that arise are: what should be the appropriate pricing strategy and whether the present strategy of "constant marketed surplus" has further intensified the disproportionality in the inter-sectoral resource transfer mechanism. These questions have not been adequately dealt with by Dr.Ramesh Chand. The present pricing policy and the resulting forced commercialisation in Indian agriculture has been criticised for having forcibly increased the marketed surplus of small and marginal farmers (i.e. distress selling in the post harvest period at lower prices to buy subsequently when prices are high) and also for increasing the staying power of large farmers with greater

marketable surplus than actually marketed (and marketed when the prices are high and often to the small and marginal farmers and landless labourers, a substantial chunk of the foodgrains market still being in the informal sector). These, in turn, have set in a vicious circle of perpetual exploitation constituting constant pauperisation of the peasantry and proleterisation of the masses. But these issues are generally grossly neglected. Like most studies on the subject, the distributional implications have also been given a lower priority treatment in this book, which otherwise has exhibited a rare quality of technical excellence on the subject.

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