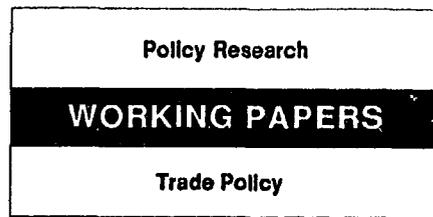


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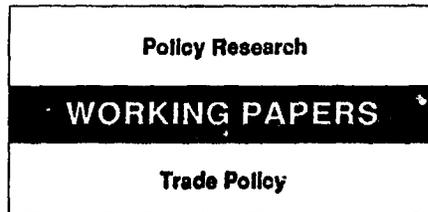
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Liberalizing Indian Agriculture

An Agenda for Reform

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and
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India's incentive system heavily favors manufacturing and discriminates against agriculture. This proposed reform agenda would remove major policies that distort agricultural imports, exports, inputs, and domestic markets. It would protect low-income groups against necessary increases in food prices.



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In July 1991, India embarked on a program of economic decontrol that greatly speeded the previously slow process of liberalizing trade and domestic regulatory controls begun in 1978. But the focus of reform has been on manufacturing. Reform has barely touched agriculture, which accounts for two-thirds of employment in India and about 30 percent of India's GDP.

Although some crops (notably oilseeds) receive heavy protection, the net effect of interventions to date is to heavily favor manufacturing over agriculture. In this agenda for reform, Pursell and Gulati recommend:

- Removing all quantitative export and import controls on agriculture, except for special treatment (such as export taxes) when Indian exports would be substantial enough to depress world prices (most likely with rice).
- Further reducing protection on manufacturing, rather than bringing protection for agriculture up to the same level.
- As a transitional measure, considering the use of variable tariffs based on weighted averages of past international prices as a way to partly insulate domestic prices from extreme fluctuations in world prices.
- Initially, allowing the export only of high-quality, high-priced varieties of such commodities as cotton and rice, to limit upward pressures on domestic prices of lower-quality varieties, which are important to consumption in low-income Indian households.
- Liberalizing fertilizer imports and deregulating domestic manufacturing and the distribution of fertilizers.
- Removing subsidies on irrigation, electricity, and credit (and creating conditions to facilitate the trading of canal irrigation water rights).
- Deregulating the wheat, rice, sugar, cotton, and edible oil and oilseed industries, and abolishing compulsory government acquisition at below-market prices of sugar, molasses, and milled rice.
- Reforming the food security system to protect low-income groups from the increase in the general level of food prices required by the liberalization of agriculture. This would involve better targeting of food subsidies and associated reforms of the public distribution system, or even its eventual replacement by a food stamp system.

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LIBERALISING INDIAN AGRICULTURE: AN AGENDA FOR REFORM

by

Garry Pursell and Ashok Gulati

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The findings, interpretations and conclusions of this paper are the authors' own, and should be used and cited accordingly. They should not be attributed to the National Council of Applied Economic Research or to the World Bank, its Board of Directors, its management, or any of its member countries.

A Note

This paper is based on the final chapter of the monograph entitled 'Trade Policy, Incentives and Resource Allocation in Indian Agriculture' by Ashok Gulati and Garry Pursell (1993), which is being prepared for publication.

Abbreviations

CCI	Cotton Corporation of India
EPC	Effective Protection Coefficient
ESC	Effective Protection Coefficient
FCI	Food Corporation of India
FICC	Fertiliser Industry Coordinating Committee
GOI	Government of India
JRY	Jawar Rojgar Yojna
MFA	Multi Fiber Arrangement
MMTC	Minerals and Metals Trading Corporation
NAFED	National Agricultural Cooperative Marketing Federation
NDDB	National Dairy Development Board
NPC	Nominal Protection Coefficient
O&M	Operation & Maintenance
PDS	Public Distribution System
QRs	Quantitative restrictions
RPS	Retention Price Scheme
SEB	State Electricity Board
SSI	Small scale industry
STC	State Trading Corporation
TMO	Technology Mission on Oilseeds
UP	Uttar Pradesh

Glossary

Crore	10,000,000
Lakh	100,000
Quintal	100 kilos

Exchange Rates

Financial year averages (April 1 to March 31): Rs/\$US

1985/86	12.2
1986/87	12.8
1987/88	13.0
1988/89	14.5
1989/90	16.6
1990/91	17.9
1991/92	24.5
1992/93*	30.3

* Jan. to Dec. 1992

CONTENTS

Introduction

- I. The Existing Controls and their Impact on Cultivators' Incentives
 - I.1 External trade policies
 - I.2 Domestic regulatory policies
 - I.3 Impact on the level and structure of incentives before the 1991 devaluation
 - I.4 The structure of incentives after the July 1991 devaluation
- II. Policy Reform: Objectives for the Medium or Long Term and Tactics for the Short Term
 - II.1 Removing anti-agriculture bias and creating more neutral incentives within agriculture
 - (i) Removing anti-agriculture bias
 - (ii) Creating more neutral incentives
 - (iii) Short term tactics
 - II.2 Special treatment of commodities in which the potential Indian supply or demand may appreciably affect world prices in the long run
 - II.3 Dealing with unstable world prices and fluctuations in domestic production
 - II.4 Removing import controls, high tariffs and domestic regulatory controls from tradeable inputs used in agriculture
 - II.5 Removing large subsidies on non-traded inputs: canal irrigation, electricity and credit
 - II.6 Removing controls and distortions associated with the "food security" complex
 - (i) Food Stamps
 - (ii) Reforming the PDS system
 - II.7 Removing other domestic regulatory controls and distortions
- III. Policy Reforms: Some General Suggestions
- IV. Likely Implications and Safety Nets

LIBERALISING INDIAN AGRICULTURE: AN AGENDA FOR REFORM

Introduction

Beginning in July 1991, the Indian government embarked on a program of economic decontrol which greatly speeded up the slow process of economic liberalisation that had been under way since about 1978. The stabilisation program adopted at the same time, and particularly the devaluation and floating of the Rupee, has had indirect effects on the whole economy including agriculture. But the focus of the specific reforms has been almost entirely on manufacturing, with the abolition of most of the stifling system of industrial licensing, the removal of import licensing from nearly all manufactured intermediate goods and capital goods, tariff reductions and the relaxation of the rules regulating foreign investment. By contrast, very little of the reform effort has so far been directed towards agriculture, even though the agricultural sector in India is quite large, accounting for two thirds of the employed population and about 30 percent of GDP. As we believe that extending the liberalisation process to Indian agriculture has the potential to greatly increase the efficiency and the growth momentum of the economy (as has happened in China), and because there is a widening domestic public debate on the subject in Indian academic journals and in the media, we have thought it worthwhile to set out our ideas in the form of a reform agenda.

To this end, the paper first briefly summarises previous research on the nature and degree of government interventions in agricultural markets, and what impact these interventions had on the overall incentives for agricultural production and on the relative effective incentives for the cultivation of different crops during the 1980s (section I). It also suggests what has probably happened to these incentives as a result of recent policy changes, particularly the devaluation of July 1991 and the associated and continuing liberalising reforms which have so far principally affected manufacturing. Section II delineates the broad direction in which agricultural policy reforms need to move in the medium to long run so that the system becomes more transparent and promotes both allocative and technical efficiency in the use of scarce resources. In this section we also attempt to chalk out details of a strategy that we feel might be politically feasible in the current environment. Based on the experience of other countries and India's experience so far with policy reforms affecting manufacturing, Section III makes some suggestions of a general nature on the tactics of reform which we hope might be useful for policy makers. And finally, in section IV, we discuss some of the likely implications of this reform agenda, and suggest what could be done to minimize its possible adverse effects on the poor.

I. The Existing Controls and their Impact on Cultivators' Incentives

I.1 External Trade Policies

All except a few agricultural imports and exports are subject to non-tariff controls of one kind or another, including import and export licensing, "canalisation" in which only one specified parastatal is allowed to import or export the commodity, and the use of minimum export prices.¹ On the import side the only exception is pulses, which are imported by private traders over a low tariff (at present 10%). Agriculture was not included in the trade liberalisation measures taken during 1991 and 1992, except for the relaxation of some export controls which in most cases left other controls on the same commodities in place. At the end of 1992 about 60 agricultural and livestock products were subject to some form of export control, as well as about 46 manufactured products, most of which were processed primary commodities. In April 1993 a further range of products was removed from this list, but most products which are actually exported or which have export potential either remain on the list and are subject to various kinds of export control, or were removed from the list but are now subject to ad hoc export controls to be announced in public notices.

The 1991/92 reforms reduced the share of internationally tradeable GDP subject to some form of quantitative import restriction from about 93 per cent at the end of 1990 to about 75 per cent in May 1992. But practically all of this change was in manufacturing, for which the share of value added subject to QRs fell from 90 per cent to about 46 per cent. By contrast the share of agricultural and livestock GDP subject to QRs barely changed, from 94 per cent before the reforms to 93 per cent in May 1992.²

I.2 Domestic Regulatory Policies

For the most part domestic trade in agricultural commodities within India is not physically restricted. Most products are traded and transported nationally. There is excellent and up to date information on prices nation wide, and private markets operate remarkably efficiently considering the very considerable communication, transport (notably the numerous municipal road tax- "octroi"-points) and other handicaps they face.

Nevertheless, there are a number of physical constraints on the free movement of agricultural commodities and regulatory and other interventions which seriously distort domestic markets. There was no liberalisation of these controls during 1991 and 1992 when regulatory controls over manufacturing were significantly reduced. These include:

- The periodic physical bottling up of the wheat surpluses in the north west (Punjab, Haryana and western Uttar Pradesh) in order to allow the Food Corporation of India (FCI) to procure its requirements at the official procurement price.

-The "levy price" (compulsory acquisition) systems for rice and sugar which are used to obtain the estimated government requirements for the public distribution system (PDS)³ and for buffer stocking, and which seriously distort these two markets.

-The operations of the FCI and the PDS and the associated regulatory controls implemented by the Department of Food and the Department of Civil Supplies. These distort the normal regional and seasonal variations of commodity prices, prevent or constrain efficient private trading operations, and distort production decisions by farmers as regards both timing and location. In particular, because of procurement prices which are the same throughout the year, very large grain deliveries by farmers in the surplus north west are concentrated in a highly wasteful manner into just a few weeks. There is also a great deal of waste, inefficiency and overemployment and large scale rent seeking (e.g. about a third of all the wheat, rice and sugar, and over half the edible oils are estimated to be diverted from the PDS).

-Periodic controls on the movement of groundnuts and groundnut oil out of Gujarat.

-Some state level controls, e.g., monopsonistic purchases of rice by the government in the Thanjavur district of Tamil Nadu and of cotton by the Maharashtra Federation (often referred to as monopoly procurement schemes).

-The pervasive controls on the operations of private traders, including (i) the general ban (with a few minor exceptions) on futures trading (ii) inventory controls (iii) credit controls.

-Discrimination by Indian Railways against private traders in favor of parastatals such as FCI.

-The regulatory and other activities of the various commodity-specific boards or other government organisations, e.g., the Cotton Corporation of India, the Ministry of Textiles, the National Dairy Development Board, the Jute Corporation of India, the Tea, Coffee, and Tobacco Boards etc.

-Extremely detailed and highly distortive regulation of the sugar industry, both by the central government and by the governments of the main sugar producing states.

-Price and other regulatory controls over the processing of primary commodities which seriously inhibit the efficiency of the "modern" sectors of these industries while allowing the continued existence and/or further development of inefficient, high cost small-scale processors which are free of all controls and taxes. Examples: sugar mill controls and khandsari units in UP²; price controls on cotton ginning; controls over edible oil processing; controls (the levy system) on rice milling, etc.

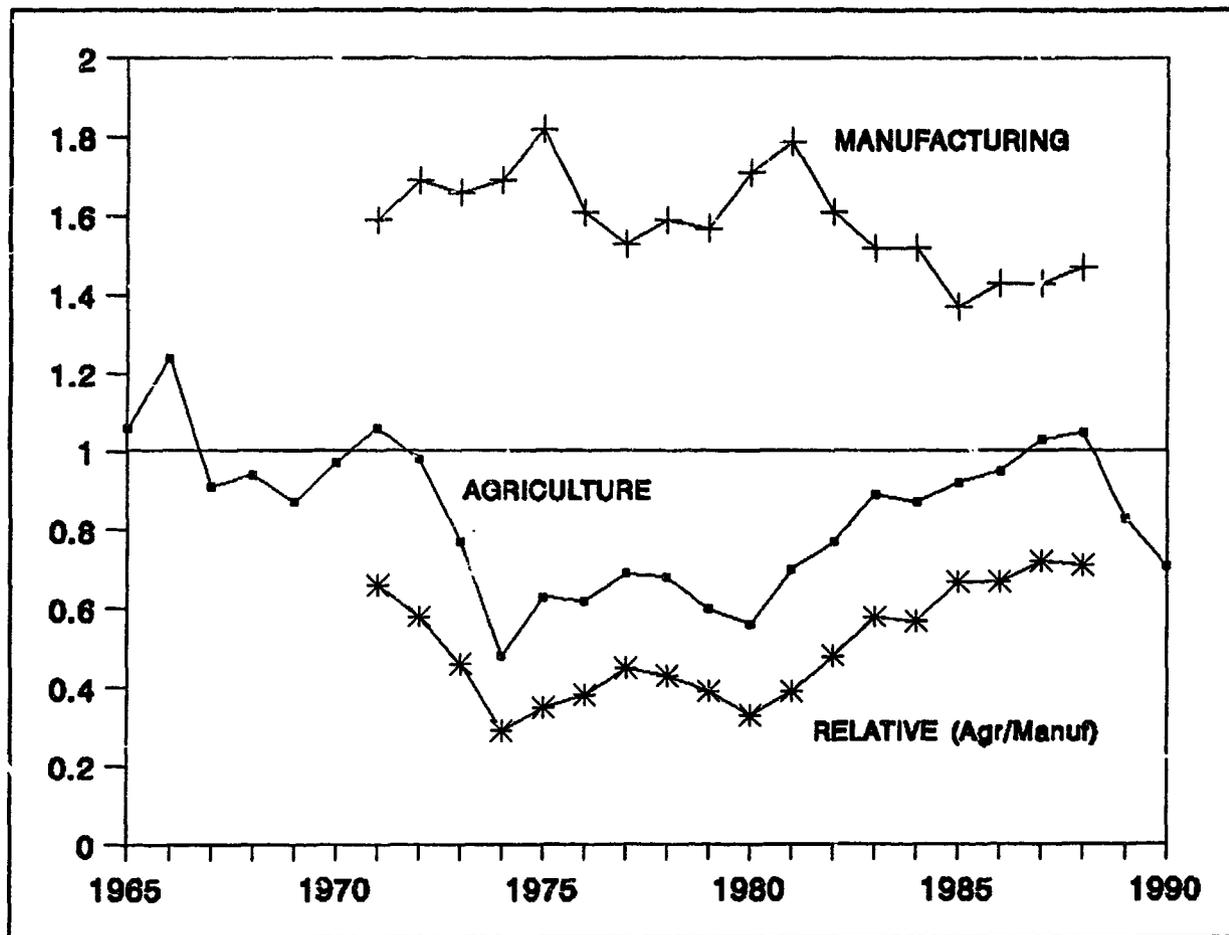
-Subsidies to farmer cooperative trading and processing organisations which make it difficult or impossible for private traders or processors to compete. Examples: sugar milling in Maharashtra, subsidised edible oil mills supported by the National Dairy Development Board (NDDB). Many "cooperatives" (e.g., in UP) are in practice state government controlled and managed, and highly politicized.

I.3 Impact on the Level and Structure of Incentives Before the 1991 Deva'uation⁶

Before 1991, on the basis of measured nominal protection (i.e., comparing domestic and world prices), in the aggregate Indian agriculture was heavily discriminated against relative to

manufacturing. This is shown in Fig. 1, which graphs estimates of the weighted average nominal protection coefficients for agriculture as a whole for the 25 years 1964/65 to 1989/90; estimates of the weighted average NPCs of manufacturing for the 17 years 1970/71 to 1987/88; and the relative NPCs of agriculture for the 1970/71 to 1987/88 period obtained by dividing the coefficients of agriculture by those of manufacturing.⁷ On average, during the 17 years for which the comparison has been made, the protection level for agriculture was about half the protection level for manufacturing. The gap widened in the early 1970s as agricultural protection declined steeply while manufacturing protection increased, and during the rest of the 1970s the anti-agriculture bias was particularly pronounced, with the average agriculture NPC only about a third of the average NPC for manufacturing. During the 1980s until 1987/88 there was a pronounced trend in the opposite direction, with the average NPC of agriculture rising steadily and a substantial decline in manufacturing protection. The decline in manufacturing nominal protection presumably reflects the easing of import controls and the liberalisation of domestic industrial licensing and other controls on manufacturing during this period, as well as the slight real appreciation of the Rupee between 1978/79 and 1983/84. Even so, in 1987/88 a big gap remained, with a nominal protection rate of just above zero for agriculture and almost 50 percent for manufacturing. After this the average NPC of agriculture declined along with the Rupee devaluation which accelerated after 1988, and an increasing trend in world commodity prices. A corresponding post 1987/88 series for manufacturing is not available, but in all likelihood, owing to the Rupee devaluation, manufacturing prices would have also declined relative to Rupee denominated world prices. Whether, compared with 1987/88, the anti-agriculture bias of the system would have increased or declined would largely depend on the speed and extent of the upward movement of domestic agricultural prices compared to the upward movement of domestic manufactured goods prices in response to the devaluing Rupee.

FIG 1: AGGREGATE NOMINAL PROTECTION COEFFICIENTS FOR AGRICULTURE AND MANUFACTURING



Nominal Protection Coefficient = $\frac{\text{value of output in domestic prices}}{\text{value of output in reference prices}}$

Note: References prices are world prices adjusted for port costs and domestic transport and marketing costs to the point at which the Indian products do or would compete internationally. The aggregation for agriculture treats all the aggregated commodities as import substitutes i.e. it is made on the importable hypothesis.

This finding of a marked and continuing anti-agricultural bias in the incentive system holds up after allowing for the effects of protection on the cost of tradeable inputs used in agriculture, the subsidies to agriculture's principal non-tradeable inputs, and the exemption of agricultural activities from corporation and income taxes. As shown in Table I :

Table I : Indicators of Incentives to Agriculture and Manufacturing

	<u>NPC</u> <u>Output</u>	<u>NPC</u> <u>tradeable</u> <u>Inputs</u>	<u>EPC</u>	<u>ESC</u>	<u>N P C</u> <u>Output</u> <u>(adj. for ag.</u> <u>tax exemp.)⁸</u>
Agriculture (1980/81 to 86/87)	0.88	0.97	0.86	0.97 to 1.07*	0.90
Manufacturing (1986/87)	1.42	1.44	1.34	n.a.	1.41
Ratio Ag/Manuf.	0.62	0.67	0.64	n.a.	0.64

Source: Gulati and Pursell (1993).

Notes: NPC=Nominal protection coefficient

EPC=Effective protection coefficient

ESC=Effective subsidy coefficient

* The ESC for agriculture ranges from about 0.97 to about 1.07 depending upon the definition of the canal irrigation subsidy i.e., whether the cost of canal irrigation includes operating and maintenance (O&M) expenses only or the estimated annualised capital cost of all irrigation schemes, as the cost to be recovered from the farmers.

-Allowing for the protection of tradeable inputs reduces anti-agricultural bias (in this case measured by the ratio of the aggregate effective protection coefficient of agriculture to the aggregate effective protection coefficient of manufacturing) by a negligible amount. For agriculture, the principal tradeable inputs are fertilisers, farm machinery, seeds and pesticides. On average, agriculture obtained its internationally tradeable inputs at less than world prices. This was entirely due to fertiliser, which in most years was supplied to farmers at prices well below the border price plus estimated delivery costs to the farm. The nominal protection of farm machinery was low to moderate by Indian standards (there is a relatively efficient domestic tractor and farm machinery industry) but nominal protection of pesticides was high.

-Subsidies to non traded agricultural inputs viz. canal irrigation, electricity, and credit are substantial and are reflected in an aggregate effective subsidy coefficient (ranging from 0.97 to 1.07,

depending upon the definition of the irrigation subsidy adopted) which is well above the aggregate effective protection coefficient (0.86). Even so, without allowing for any subsidies for manufacturing and simply comparing the agriculture ESC above with the EPC estimate for manufacturing, the ratio (0.72 to 0.80) still indicates substantial anti-agricultural bias. The comparison would be less favorable for agriculture if allowance were made for the subsidy equivalent of the various forms of government support for the large number of "sick" manufacturing firms, and for loss-making public enterprises which can only continue to operate with such support even though they may not be officially defined as sick.

-The exemption of agriculture from income and corporate taxation increases aggregate incentives for agriculture relative to aggregate incentives for manufacturing to a very minor extent by comparison with the anti-agricultural bias resulting from trade policies.

During the 1980s, the excess of the free trade exchange rate over the official rate increased from about 30 percent at the beginning of the decade to about 40 to 50 percent towards the end. The increasing premium reflected the substantial increase in import duty rates over the period and the growing trade deficit⁹. The discrimination against agriculture from the overvalued exchange rate was therefore substantial, a finding which is consistent with the findings of the Krueger-Schiff-Valdes country studies.¹⁰

Within agriculture, there were large differences in net incentives between crops. At the official exchange rate, as measured by the effective subsidy indicator (which allows for the protection of output, tradeable inputs and subsidies on non traded inputs) the Gulati-Purse'll et al research classifies the main crops broadly as follows:

Negative incentives

Rice
Cotton

Zero or low incentives

Wheat
Coarse grains
Pulses
Tobacco

High incentives

Oilseeds incl. coconut/copra
Rubber
Sugarcane

The following crops not included in the research probably have negative or low incentives

:

Coffee
Tea
Cocoa
Jute
Spices
Fruit and vegetables

There are no quantitative incentive estimates for livestock and fishing but net incentives are probably low. (Wool is imported without restriction over a 10 per cent tariff; there are export controls on the exports of hides and skins. On the other hand the import of meat and dairy products is banned, except for small regulated imports of powdered milk).

Because of international and domestic transport and marketing costs, the measured incentive level of a crop can be considerably affected according to whether it is treated as an importable or an exportable. For example, the classification above is based on wheat as an import substitute, but in the 1980s the net incentive to wheat production was quite high if wheat is considered as an exportable. Treating wheat and rice as exportables raises the aggregated incentive level for agriculture as a whole, but even with this adjustment it is still well below aggregate incentives for manufacturing.

As noted, these classifications are in relation to world prices converted at the official exchange rate. If the incentives are considered in relation to average manufacturing incentives or to the estimated free trade exchange rate, the crops with zero to low positive incentives are strongly discriminated against, and the net incentives to the oilseeds, sugar and rubber are lowered. The incentives for oilseeds and sugar in most years were nevertheless high, even by comparison with some of the most highly protected manufacturing industries.

I.4. The Structure of Incentives after the July 1991 Devaluation

For this period, there is no comprehensive empirical work on manufacturing protection and only some limited nominal protection estimates for agriculture. But it is unlikely that the basic structure of relative incentives for agriculture will have changed very much.

The overall anti-agriculture bias is certainly still in place for the following reasons :

-Measured manufacturing protection will have come down owing to (i) the removal of QRs on most manufactured intermediate goods and most capital goods (ii) the reduction in the maximum tariff to 110 % in 1992 and to 85 % in 1993 (iii) the large number of effectively non traded manufactured products resulting from continuing import bans (e.g., on all consumer goods) or from redundant tariffs. The domestic prices of the latter are delinked from world prices and most of them have probably not risen by the full amount of the devaluation. But in agriculture the domestic prices of wheat, rice and coarse grains have also risen by much less than the devaluation, so that the average price level of agriculture has also fallen relative to world prices. Other agriculture prices (e.g. oilseeds, pulses, cotton) have moved up more or less in line with the devaluation, but the main grains dominate agricultural GDP.

The big dispersions of incentives within agriculture are basically unchanged and may have increased in some respects.

Following the devaluation up to about February 1992, border prices of wheat and rice were about double domestic prices. For the first time in many years market prices of wheat in Punjab were consistently well below (about 40 percent) estimated export parity prices, i.e., estimated fob prices minus transport costs to Bombay from Punjab minus Bombay port costs. The domestic prices of common rice were even lower than this in relation to export parity prices. Punjab prices remain

well below export parity prices despite substantial increases in the government's procurement prices for the 1992/93 season. This situation can only be maintained by the continuing export controls. On the other hand domestic edible oil prices rose substantially and remained at more or less the 1980s level (two or three times as high) in relation to import prices. If maintained, this disparity will increase the substitution of oilseeds for wheat and other grains and maintain about the same pull of resources from pulses and other crops whose prices have risen more or less in line with the devaluation.

Relative to border prices, the cost of traded inputs for agriculture has probably declined slightly.

Fertiliser prices have increased , but overall by not as much as the devaluation (see later discussion). The costs of farm machinery, pesticides and minor tradeable inputs have also probably gone up less than the devaluation.

The non tradeable input subsidies to agriculture will have declined in real terms but are still substantial and highly distortionary.

As long as the devaluation remains a real one, i.e., is not erased by increases in the prices of non tradeables, the subsidies on the non tradeables will represent less in terms of the world prices of the agricultural commodities. However, this effect may be offset to some extent by increases in the default rate on agricultural loans resulting from a politically motivated government program in 1990 which waived repayments of agricultural loans. The overall level of input subsidies is also probably higher in budgetary terms.

II. Policy Reform: Objectives for the Medium or Long Term and Tactics for the Short Term

This section suggests objectives for the medium or longer run, and some ideas on what might be feasible start in the present environment. The next section makes some general suggestions on the tactics of reform.

II.1 Removing anti-agriculture bias and creating more neutral incentives within agriculture

(i) Removing anti- agricultural bias

The main instrument for this should be the continued reduction of protection to manufacturing. The government has stated that it intends to continue removing QRs applied to manufactured goods i.e to manufactured consumer goods , since most intermediate and capital goods are already freed from import licensing. In 1992 it made a small beginning by allowing certain exporters to use part of their foreign exchange earnings to import a number of specified consumer goods, and in 1993 the "baggage allowance " for Indians returning from abroad was relaxed. It has also announced that tariffs (present maximum 85 percent) will be reduced to about 20 or 30 percent in two to three years. (This was originally stated as the target for the maximum tariff, but since then

there appears to have been some backsliding in that the latest statements refer to this as the target for average tariffs). The reduction of manufacturing protection should be accompanied by whatever devaluations of the real exchange rate are needed to keep the trade deficit under control. It would be a major mistake - and in any case impractical- to attempt to offset the high protection of manufacturing with high protection for agriculture. Agricultural tariffs should be zero or at least kept down to a maximum of say, 10%.

But for the above process to improve relative incentives for agriculture, it will be essential to allow the devalued exchange rate to feed through to the prices of agricultural commodities. The best way for this to occur naturally and smoothly is to remove the quantitative controls on agricultural imports and exports and marketing board and other interventions which affect domestic prices, so that domestic prices are linked directly to world prices. The removal of agricultural QRs and of prohibitive import tariffs will involve:

- Abolishing the present export controls, including canalisation (i.e parastatal export monopolies), export licensing and quotas, minimum export prices etc. This could be done more or less immediately without much difficulty. A clean sweep should be made of all these export restrictions, with the onus on those who want to phase some of them out more gradually to make a convincing case. A case for some form of more permanent special treatment (export taxes ?) could perhaps be made for common rice, sugar, tea and jute. There may also be a case for partial insulation of the domestic prices of wheat, rice and sugar from the larger fluctuations in international prices, at least as a transitional measure. These last two points are discussed below.

- Abolishing import canalisation (i.e., parastatal import monopolies) and other quantitative import controls and setting zero or low import duties. These reforms will have to be accompanied by far reaching reforms of the activities of the parastatal organisations and marketing boards (e.g. FCI, the State Trading Corporation, the Cotton Corporation, the Rubber Board etc) and of domestic regulatory policies, and are likely to be difficult and politically highly sensitive. A major task in designing a feasible reform strategy will be deciding how, in what order, and over what time period this should be done.

In liberalising import and export controls and reducing tariffs, the considerable potential for trade with India's neighbours should not be forgotten. Recently India has started importing short and medium staple cotton from Pakistan. Provided political problems can be overcome, there is a very considerable potential for greatly expanded trade in agricultural products with all the neighbours, especially Pakistan, Bangladesh and Sri Lanka.

(ii) Creating more neutral incentives within agriculture

This involves:

- Removing export controls which depress domestic prices below export prices. Particularly important: the controls on the export of cotton, wheat and common rice.

- Removing import controls and setting zero or low tariffs on highly protected commodities. Particularly important: edible oils and oilseeds, sugar and rubber.

- Removing regulatory and other domestic controls which would otherwise impede the transmission of world price signals to farmers.

These reforms should apply to the commodities in their processed and unprocessed forms. International trade is often mainly in the processed commodities, e.g., edible oils and oilmeals versus oilseeds; sugar and molasses versus sugarcane. When both the primary commodity and the processed versions are internationally traded, liberalising one will require liberalising the others. For example, the removal of export controls from cotton will need to be accompanied by the removal of export quotas from cotton yarn (except the country-specific quotas required by the MFA).

(iii) Short term tactics

Both the above objectives i.e, removing anti-agriculture bias and creating more neutral incentives within agriculture, can be achieved by removing impediments to imports and exports and thus linking domestic prices to world prices. But in view of the long past history of controls on international trade and the need to take account of the likely reactions of politically powerful groups and to avoid exposing low income groups to sudden adverse price changes, in some cases this may have to be done gradually in order to ensure a smooth transition.

As regards exports, the prevailing philosophy has been to treat the export markets of most agricultural commodities as 'residual' markets, i.e. , exports are only allowed if the country has a surplus after meeting domestic needs, even if domestic prices are much lower than export prices and the exports would be both privately and economically profitable. A classic example of this philosophy in action is cotton, which has been subjected to export quotas and minimum export prices that are haltingly announced against a background of intense lobbying and bargaining between the textile industry, the handloom industry, and the cotton growers and traders. This results in the sporadic appearance of Indian cotton in export markets, basically in years when there is an overall surplus in the domestic market. The uncertainty which this has created for both Indian exporters and foreign importers has discouraged them from investing in long term marketing facilities and relationships and has contributed to Indian cotton varieties being exported at substantial discounts from equivalent varieties exported from other countries. Furthermore, by periodically depressing the domestic prices of the various varieties below world prices in arbitrary ways, it has contributed to an unpredictable and inefficient structure of effective protection for cotton yarn production and has led to the wasteful use of high quality long staple cottons in the production of low and medium count yarns for sale in the domestic market. The philosophy illustrated by the treatment of cotton exports clearly has to change if Indian agriculture is to be integrated into global markets. Policies should cease discriminating against exportables such as cotton so that India can emerge as a regular and reliable exporter of those commodities in which it has a comparative advantage.

For most agricultural products it should be possible to immediately remove all the remaining export controls, including minimum export prices.¹¹ A number of these are in any case basically importable with domestic prices exceeding world prices (e.g. oilseeds and edible oils) so that the abolition of export controls would have little overall impact on these industries or on consumers. Nevertheless it is possible that the controls may prevent exports in some circumstances e.g. temporary surpluses in areas where transport costs and delivery times would make it more profitable to supply neighbouring countries rather than more distant parts of India. In the case of pulses, export controls are preventing exports of particular varieties of processed and unprocessed pulses for which there is a substantial foreign demand (particularly among Indian communities in the Middle East and elsewhere) even though the substantial unrestricted Indian imports of different types of pulses from Turkey, Australia and other countries can assure adequate supplies to the domestic market.

However for the reasons given above, it may be better to move more slowly with some especially "sensitive" commodities. We have in mind in particular rice, wheat, cotton, and sugar,

and there may be others. For rice, wheat and cotton we would suggest a "selective variety approach" in which, as a transitional measure, only the export of particular higher valued varieties which are not generally consumed by lower income consumers would be allowed initially. In the case of rice, this has already been implemented for some time by allowing exports of basmati rice, and in early 1993 quota restrictions were removed from exports of superfine long grain rice. This could be extended to fine varieties. In the case of wheat, the same principle could be applied by initially allowing exports of the durum varieties. In the case of cotton, export controls initially could be removed from longer staple cottons, say beyond a staple length of 30mm. In order to moderate the upward pull that would be exerted on the prices of the lower quality varieties of these products, or at least to provide a ceiling, imports of lower quality varieties could be allowed. In the case of sugar, controls could initially be removed from exports of sugar in raw form (brown sugar), for which there is so far little domestic demand, and whose production should be encouraged. We recognise the administrative problems that this 'selective variety approach' may pose, and therefore suggest it only as a short term transition towards fully opening up the exports of these commodities.

In addition to removing explicit export controls, other regulations and controls should be investigated and if necessary changed if it turns out that they are impeding exports. There is probably considerable potential, in particular, for greatly expanded exports of unprocessed and processed fruit and vegetables, cut flowers, and fresh and processed seafood. The traditional export industries subject to commodity board interventions- tobacco, tea, coffee, spices (particularly chillies and black pepper)- should also be looked at from this perspective. As an example, the Coffee Board keeps domestic prices below export prices by a mechanism involving compulsory purchase of all coffee production and the allocation of the acquired coffee to separate auctions for domestic and export sales. In 1993 the system was liberalised to some extent by allowing up to 30 percent of plantation production to be sold directly in the internal market. It is difficult to see the rationale for these interventions, since India, with a world market share of about 2 to 3 percent, has no significant power to influence world prices, and the international coffee agreement which set export quotas, has been inoperative since 1989. Furthermore, coffee is hardly an important item of consumption by low income Indian consumers.¹² If quantitative export controls are ever needed again in the future as a result of new international agreements, the most straightforward way to implement them would be to auction export licences corresponding to the agreed quantity of exports.

In some cases controls on the export of the commodity in its primary or raw form are imposed in order to indirectly subsidise its export in processed/packaged form. In order to avoid an excessively abrupt removal of such subsidies, in some cases the export controls could be temporarily replaced by an export tax. But the aim should be to remove these export taxes over a reasonably short period, so that the form in which the products are exported are not artificially distorted.¹³

In other cases the export controls may have been introduced in the hope that the net return to the industry could be increased by restricting Indian supply and raising export prices. The potential for this kind of benefit is often vastly overestimated, in particular by failure to predict the speed and extent of the development of alternative sources of supply in the world market, and similar underestimates of the extent of substitution away from the product by consumers. Allowance is also seldom made for the fact that the overvaluation of the exchange rate inherent in the general system of import controls and tariffs is already restricting export supply even when there are no explicit export restrictions or taxes. Finally, even if there are benefits from export restriction over and above the restriction due to the overvalued exchange rate, account has to be taken of the economic costs of the administration of the restrictions and the rent seeking which is likely to accompany them, especially if they consist of export licensing or some other discretionary controls, rather than export

taxes. For these reasons, we believe that it will seldom be possible to make a convincing case for the terms-of-trade argument for export taxes or restrictions: a few possible exceptions (rice, tea, sugar and jute) for which some kind of special treatment such as export taxes might be justified, are discussed below.

On the imports front, the extent of the Rupee devaluation over the past three years has meant that at present, if they were imported, the landed costs of most major commodities would considerably exceed domestic prices. This provides an excellent opportunity for decanalising and otherwise removing non-tariff controls from imports of products such as wheat, rice, coarse cereals and cotton, without disturbing domestic markets to any significant extent. The present extent of the devaluation would also facilitate the removal of quantitative controls from imports of rubber and sugar, which on average have been highly protected in the past. The general principle would be to replace the physical controls with tariffs. In most cases these should be zero from the beginning, but in others they could start at higher levels and could be reduced over time, preferably according to a pre-announced timetable. If need be, particularly if there are signs of deliberate dumping by some supplier for the very short run (as may happen in the case of sugar), temporary anti-dumping duties could be introduced to safeguard the interests of the domestic producers. Care needs to be taken, however, that anti-dumping measures do not simply become a means for reintroducing arbitrary, ad hoc and lobby-prone protection by the back door¹⁴. As a transitional measure, to alleviate concerns about excessive fluctuations in world prices, consideration could also be given to variable tariff schemes which link domestic prices to a moving average of world prices (see discussion below).

In freeing up imports, there is need for special caution in dealing with edible oils. Most of these have protection levels equivalent to two or three times world prices, and even more in the case of copra and coconut oil.¹⁵ Suddenly opening up edible oil imports over low tariffs would seriously damage the large investments that have gone into this sector over the past three or four years as a consequence of the 'success' of the Technology Mission on Oilseeds.¹⁶ Nevertheless, the message should be conveyed in no uncertain terms to the edible oil industry as also to the oilseed producers that given the level of technology and of prices in world markets, it is not advantageous for India to increase its production through price hikes culminating in area shifts. Edible oil imports should be decanalised and subject to whatever is the current maximum import duty rate (presently 85 percent) in the first year, to be reduced to say 60, 40, 20 and 10 or zero percent in subsequent years. As a transitional measure, it has also been suggested that India could arrange a short term bilateral contract (for say three years) with a country like Malaysia for the import of palm oil against exports of rice. The main argument for this is that it could help sell the initial stages of the required reduction in oilseed protection, by providing an easily visible counterbalancing benefit. But there are many dangers in this type of strategy, and we believe the potential costs outweigh the benefits. If a process of non-discriminatory import liberalisation is at all feasible, it would be much preferable even if the rate of tariff reduction is relatively slow.¹⁷

II.3 Special treatment of commodities in which the potential Indian supply or demand may appreciably affect world prices in the long run.

While sudden changes in Indian imports (e.g., in STC's imports of edible oils) or exports may cause temporary blips in world prices in the short run, the only major agricultural commodities in which India probably has some significant long run market power are rice, sugar, tea and jute. Some kind of special treatment (e.g., export taxes or import duties) may be justified in these cases, bearing in mind that - as noted above- exports are already taxed by the overvaluation of the exchange

rate resulting from import protection, mainly to manufacturing. Although India and Bangladesh dominate world production of jute, their individual and combined market power is probably limited owing to substitute synthetics. The main efficiency gains would be from opening up trade in both raw jute and jute products across the border with Bangladesh.

High quality basmati rice is exported, but some limited exports of common (non basmati) rice began to be allowed for the first time only in 1991. In 1993 larger exports of superfine rice were permitted subject to a minimum export price. These liberalisation measures should be continued and expanded. Doing so will not fully raise domestic prices to the present level of world prices, since world prices will be depressed by Indian exports on any substantial scale. Furthermore, export markets demand high quality rice with low broken percentages which substitutes imperfectly for the predominant poorer quality rice (mainly about 20% broken) sold in domestic markets. The optimum export tax and the optimum level of exports will depend on this price depressing effect (i.e., the elasticity of excess demand), the extent of the exchange rate overvaluation, and the level of the non traded subsidies (irrigation, electricity and credit) to rice growing. Substantial export earnings (say \$1 billion for 3 million tons?) should be easily achievable in a short time with a moderate increase in domestic prices (say 10% to 20% ?).

Apart from these major commodities, Indian exports constitute a fairly large share of the world market in the case of cardamom, black pepper and processed cashew nuts. For all these, the supply from other countries is likely to be quite elastic. Unless a convincing case can be made, we would not recommend any measures such as export taxes that would restrict supply more than the restriction already brought about by the overvaluation of the exchange rate.

II.4 Dealing with unstable world prices and fluctuations in domestic production

Until now, the insulation of the domestic markets from world market conditions and the government's buffer stocking policies in the case of foodgrains, have meant that the domestic prices of most agricultural commodities have been considerably more stable than international prices. An exception is cotton, for which during the 1980s domestic prices have actually been less stable in important respects than world prices, in large measure because of the erratic application of export controls. Other exceptions are pulses and wool, whose domestic prices have moved broadly in line with import prices after the freeing of imports in the early 1980s. Freeing imports and exports of wheat and rice and the other commodities from canalisation, licensing and other controls will mean that domestic prices will move up and down with international prices. At the same time, the monsoons and other conditions will continue to cause fluctuations in domestic production. Is this a problem, and if so, how should it be dealt with?

In the long run, there are strong arguments for allowing domestic prices to be directly linked to international prices. Most importantly, this means that production and consumption decisions will constantly take account of India's comparative advantage without the lags and other disturbances in the price signals which result from trade-intervening measures. Provided households below the poverty line can be protected from fluctuating prices by an efficient targeted system of food subsidies (see later discussion) the remaining consumers (say 70% of households) should be able to adjust without difficulty to the somewhat greater movements in food prices that would occur. Secondly, as regards fluctuations in domestic production, India's present self-sufficiency in grain despite the strong anti-agricultural bias of the incentive system suggests that a more neutral structure of incentives could lead India to become a permanent, relatively large grain exporter. Despite continuing growth of the very large population, land scarcity and environmental problems, this also

seems plausible because of the very large productivity differences between grain production in the north-west and elsewhere. In such a scenario, in which there would be substantial exports of wheat but in which rice exports would be taxed in order to take account of the narrowness of the world rice market, domestic prices will be determined by export prices (minus the export tax in the case of rice) and all or most of the impact of poor monsoons would automatically be absorbed by declining exports. If imports are needed, the ceiling for domestic prices would be cif prices plus transport and other costs to the point at which imported and domestic grains compete. As an indication of the scope that this would allow for weather related price fluctuations in wheat and rice, between 1985 and 1987 the estimated cif-fob margin (as a percentage of the cif price) averaged about 5% in the case of rice and 17% in the case of wheat. Domestic port, transport and marketing costs widened these margins considerably, however. For example, for rice, the average estimated pre-fob price at Calcutta (i.e. the price before loading onto ships) was about 20% lower than the estimated landed cost of imported rice. The price difference in the Punjab (the main surplus area for rice) was about 25%. The corresponding differences for wheat were 36% at the port (assumed to be Bombay) and 43% in Punjab.¹⁸

Although allowing domestic wheat and rice prices to fluctuate with world prices as described above should be the long term objective, we recognise that it may not be desirable or politically feasible to move to such a system in the short run, especially in view of the deficiencies of the present safety net for poor households and the time probably required to reform it. In that event the government could consider a system of variable import and export taxes and subsidies which would be based on a moving average of past international prices. If properly implemented such a system can smooth out the effects of short and medium term fluctuations in world prices on domestic prices while ensuring that they move with world prices in the longer run. At the same time no discretionary, quantitative controls on trade are required and imports and exports can be made by private traders without restriction, subject only to the payment of the current variable export or import tax, or receipt of the current variable import or export subsidy. There would be no need for a government buffer stock: inventories would be held by private agents, including private firms in other countries with an interest in supplying or buying from India. Based on their assessment of the probability of a bad monsoon, it would also pay private traders to hold inventories over from one harvest season to the next, to take advantage of any potential movement of domestic prices upward from the fob levels towards or to cif levels. If the monsoon in fact turns out to be poor, like a government buffer stock this will reduce the required volume of imports.

There is a lot of experience with moving-average price band schemes in other countries which should be studied carefully.¹⁹ From our reading of this experience, our preliminary suggestions for India are that:

-The government should be willing to commit itself to pay out import subsidies when current international prices go above the calculated moving average target price. Failure to do this and the consequent failure to protect consumers against high international prices has been a major deficiency of other schemes. A symmetric scheme which both taxes and subsidises imports and exports is similar to a stabilisation fund which could hedge its risks in international commodity futures markets.²⁰

- The period covered by the moving average should not be too long. Say weekly average prices for the previous four or so years?

-The prices used in the moving average formula should preferably be taken from some international source (e.g., Chicago Board of Trade prices for wheat), not from records of Indian import or export prices which the firms affected by the application of the formula can influence. The moving average price would then be adjusted in a transparent way for transport and other costs to give the desired price band; for example the difference between the calculated moving average cif import price and the calculated moving average fob export price.

- The formula is used to calculate the percentage difference between the moving average price and the transport-cost adjusted current price, also calculated from the price at the international market center. If the current price exceeds the upper level of the band, this is announced as the ad valorem export tax rate for exports from India for the coming period (say a week?) and as the ad valorem import subsidy rate for the same period. If the adjusted current price lies within the band, there are no export taxes or subsidies. If the adjusted current price is less than the lower level of the band, the percentage difference becomes the ad valorem export subsidy and import duty respectively.

- The formula and the data on which it based are made public so that participants in the trade can accurately predict the duty or subsidy rate which will be applied to their imports or exports in the near term and hedge their risks in futures markets when planning further ahead. For obvious reasons, it will also be vital to stick to a formula once it is agreed and to resist pressures to make ad hoc changes.

-Moving average schemes in other countries have usually been applied to imported commodities only and have included a band around the moving average (say plus or minus 10 percent) within which import prices are allowed to vary before attracting the special import tax. (As noted above, probably reflecting the greater bargaining power of farm lobbies compared to the lobbying power of consumers, import subsidies have not been paid in practice). In India, there is a concern that the potential fluctuation of domestic prices between fob and cif limits is already excessive (owing to unpredictable monsoons and both rice and wheat shifting from being exportables to being importable from year to year). For this reason, such a scheme could start without any additional scope for price variation other than the fob/cif gap. Margins for further variation could be introduced if the commodities become firmly established as exportables or as importable despite substantial variations in weather conditions. Alternatively, if the potential for domestic price fluctuations resulting from the fob/cif gap is considered to be excessive (as for wheat?) the allowable price band could be narrowed.

Given the objective of reducing the exposure of Indian producers and consumers to fluctuations in world prices, moving- average price band schemes have important advantages over government buffer stock schemes which involve the maintenance of quantitative controls over imports and exports, and most likely the maintenance of controls over private traders to prevent them from accumulating or running down stocks and offsetting the activities of the buffer stock organisation. But like buffer stock arrangements, the schemes also introduce distortions of various kinds, both directly into the markets of the products to which the schemes apply and indirectly into markets of substitutes. For example, an export tax on wheat required by the scheme's formula may prevent or limit wheat exports even though domestic production costs may be lower than world prices. Again, if wheat exports are taxed under the scheme but coarse grains are not covered by it, coarse grain might be exported even though the economic return from exporting wheat would be higher. There are also potential complications with downstream products. For example, if wheat

imports are taxed but no such special import tax is applied to flour or flour products, domestic producers of the latter are likely to be squeezed. Effects of these kinds are also likely to lead to pressures which have the potential to greatly complicate and undermine the transparency of the schemes and to generate a lot of lobbying. For these reasons there is much to be said for treating the schemes as transitional devices and phasing them out over some defined period. This could be done, for example, by pre-announced increases in the price bands to the point where intervention would only occur in the event of extreme peaks or troughs in world commodity prices of the order of magnitude of those experienced at the time of the first oil- price shock.

II.5 Removing import controls, high tariffs and domestic regulatory controls from tradeable inputs used in agriculture

The most important things to do here concern fertilisers. Except for some recently deregulated phosphatic and potassic fertilisers, the industry is controlled by a combination of an import monopoly by MMTC, a fixed single nationwide wholesale price for each fertiliser, a cost-plus pricing system for each individual fertiliser plant, and large subsidies provided by the central government. The pervasive distortions on both the production and distribution sides of the fertiliser industry are well known and well documented. Our analysis of the subsidies, based on comparisons of domestic and international prices during the 1980s, revealed that roughly half of the budgeted subsidy supported high cost fertiliser producers (Gulati, 1990; Gulati and Kalra, 1992). Consequently the entire burden of the removal of fertiliser subsidies would not fall on farmers: a significant part would require the rationalisation of fertiliser production.

The key element in price control is the Retention Price Scheme (RPS), under which a normative cost-plus pricing formula is applied to each individual plant. Reflecting differing feedstock prices, technologies, locations and operating efficiencies, there are large differences in retention prices as between fertiliser plants. The situation is further distorted by the fact that there is no systematic link between the controlled prices of the various feedstocks (naphtha, fuel oil, natural gas and coal) and their international prices. Given these distortions and the absence of import competition, the location of fertiliser plants is also suboptimal. On top of all this, the Joint Parliamentary Committee on Fertiliser Pricing (GOI, 1992) noted that the cost figures supplied by various fertiliser factories were seldom cross checked by the Fertiliser Industry Coordination Committee (FICC), which administers the RPS. This indicates the existence of considerable scope for exaggerating the normative cost both directly and by understating capacity.

In July 1991 a start was made on moving away from the pervasive regulation of the industry, by increasing controlled wholesale selling prices by 40 percent, decontrolling the prices of low analysis nitrogenous fertilisers, and setting a ceiling on the subsidy for Single Super Phosphate (SSP). This was a sensible attempt to begin reversing a trend of increasing subsidies under which nominal farmer prices had been virtually unchanged for ten years and the total budgetary subsidy had grown to more than half of central government spending on agriculture and to about one percent of GDP. Subsequent policy changes have been halting and contradictory, however, and in some important ways have worsened resource allocation. They are recounted below in order to illustrate the importance of obtaining agreement on clear objectives for policy reform, especially when politically powerful groups are significantly affected. In summary:

August 1991. Previous increase in controlled fertiliser prices of 40 percent rolled back to 30 percent, and small and marginal farmers exempted from the increase altogether.

March 1992. Rock phosphate and sulphur imports (inputs for phosphate fertiliser plants) decanalised (i.e. the import monopoly of MMTC was removed and private imports allowed).

August 1992. Controlled prices of urea (accounting for about half of all fertiliser sales) reduced by a further 10 percent.

Price controls reintroduced on low analysis nitrogenous fertilisers.

Prices of phosphatic and potassic fertilisers decontrolled.

September 1992. Farmer subsidy of Rs 1000/ton introduced for di-ammonium phosphate (DAP) and MOP (muriate of potash) : equivalent to price reduction of about 13 percent.

DAP imports decanalised i.e. MMTC import monopoly removed and private imports allowed.

Controlled naphtha and fuel oil feedstock prices to fertiliser plants increased.

June 1993. DAP subsidy of Rs 1000/ton continued for domestically produced DAP but discontinued for imported DAP.

New subsidy depending on phosphate content introduced for domestically produced complex phosphatic fertilisers but not for imports of the same fertilisers.

The effect of these changes was to keep the controlled farmer prices of nitrogenous fertilisers (of which by far the most important is urea) well below border prices while continuing to pay large subsidies on imported fertilisers and to the nitrogenous fertiliser manufacturers equivalent to the difference between these prices and their production costs. By contrast, when the prices but not the imports of phosphatic and potassic fertilisers were initially decontrolled, their prices suddenly doubled or more than doubled, and in the case of DAP they went from about 20 percent below international prices to about 50 percent above. The freeing of DAP imports then brought DAP prices down to about the cif level plus port and domestic transport and marketing costs, but this was reported to have caused the closure of 8 out of 11 DAP manufacturing plants. Attempts were made to respond to the resulting political pressures, first by a general fixed subsidy paid on both imported and domestic fertilisers which aimed to reduce the prices paid by farmers, but subsequently by limiting the subsidies to domestic fertilisers with the aim of protecting the local manufacturers and enabling them to reopen.

Apart from generating a great deal of uncertainty for all market participants, especially farmers, the net effect of these changes was to send a signal to farmers to increase urea consumption but to cut down on the consumption of DAP and MOP. Already the relative consumption ratios were not favourable from an agronomic point of view, and these price signals made the situation even worse. As expected, during the rabi season of the 1992-93 crop, while the sales of DAP dropped by about 30 per cent, and of MOP by about 50 per cent (compared to the previous rabi crop), urea sales went up by more than 20 per cent and in some areas it was being sold at a premium.

Halting and contradictory attempts of this kind to liberalise the production and distribution of fertilisers should be avoided. As an example of a possible approach, in the 1993-94 season, the controlled farmer price of urea could be raised by about 15 to 20 per cent, while the subsidy on DAP and MOP could be reduced to, say, Rs 600 per tonne. The subsidy on nitrogenous fertilisers (urea) could be limited to a maximum of Rs 1000 per tonne. Taking account of projected future world urea prices, the government could then announce a package which would include increases of future urea prices for farmers, limits on the per ton subsidy to industry, and the liberalisation of fertiliser imports. Changes such as these would help with dismantling the retention price scheme in due course and with the other far reaching reforms which are needed.

In summary, the longer term reform objectives in the fertiliser sector should be to:

-Decanalise fertiliser imports, i.e., remove the MMTC import monopoly and allow private imports;

- Set low to moderate tariffs (say 10 % or 15% ?);
- Abolish the retention price scheme for fertiliser plants;
- Abolish the fixed subsidised domestic fertiliser price to farmers and the uniform nationwide pricing which goes with it;
- Abolish the fertiliser subsidy as regards both farmers and producers;
- Adjust feedstock prices for fertiliser plants to reflect their opportunity costs.

India probably has little long run market power in nitrogeous fertilisers, but conceivably could have some in phosphatic fertilisers. Special treatment of some kind (an above average import tax?) might be justified for the latter.

Imports of seeds, pesticides, farm machinery, plastic piping and other farm inputs are subject to import licensing &/or high tariffs (for example, tractor imports are effectively blocked by a tariff of 80 %). A beginning on freeing up these controls was made in April 1993 by allowing agro-industries which export 50 percent or more of their output ("Export Oriented Units") to import their inputs duty free, and to import capital equipment at concessional import duty rates. This initiative should be extended and all agricultural and agro-industrial inputs and to agricultural machinery, which should be freed from non-tariff controls and subject to low to moderate import tariffs. The prices of the domestic producers of these products in many cases are well below duty - inclusive import prices, so the overall cost of these inputs to farmers would probably not be reduced by much. Nevertheless, such a reform will make all kinds of technologies available which at present are not found in India, and will shake up the domestic manufacturers.²¹

In 1991, tractors , combine harvesters and rice transplanters were included in the list of products for which there is now automatic approval of foreign technology agreements and of foreign equity of up to 51% .However most agricultural implements and other farm inputs such as plastic piping and sheeting are reserved for production by small scale firms²². By preventing small firms from growing and larger firms from competing, small scale industry (SSI) reservation adversely affects the quality, technological level and marketing of these inputs. SSI reservation creates similar problems for the efficiency of agricultural processing industries such as rice milling, cotton ginning and oilseed crushing. It also prevents direct investment by foreign firms in the production of the reserved products. While SSI reservation is a general problem affecting the whole manufacturing sector in India, it has a particularly marked negative impact on the efficiency of farming and of the agro processing industries. For this reason , special attention should be paid to removing agricultural and agro-processing inputs from the small scale industry reservation lists. At the same time, other regulatory impediments (e.g. excessive red tape and delays in obtaining environmental clearances, registering land etc) to competition and to direct investment by foreign firms in the agricultural input industries, should also be removed.

The overall combined impact of these changes will be to increase the average cost of tradeable inputs to farmers, because the freeing up of fertiliser prices and the phasing out of fertiliser subsidies will dominate reductions in the prices of the other inputs. On the other hand better quality inputs embodying later technologies and more varieties of inputs will become available, and also better and more efficient distribution, provided inventory and other controls on private traders are

eliminated. As with the removal of irrigation, electricity and credit subsidies, to help defuse farmer opposition, the fertiliser reforms should be accompanied by the actions discussed previously to remove the discrimination against agriculture on the output side.

II.6 Removing large subsidies on non traded inputs: canal irrigation, electricity and credit

The serious distortions resulting from subsidised charges for these services are well known. Reform involves major and far reaching changes in the organisation and operations of the irrigation commands, state electricity boards, and the banking system. As with fertilisers, instituting prices for these services which reflect opportunity costs will be more acceptable if it is seen by farmers to be accompanied by measures which increase relative agricultural incentives on the output side, as also increased efficiency in the delivery of these inputs. But it will still be politically difficult in regions or for crops (e.g., rice in some parts of the north west) in which the size of the input price increases may outweigh any feasible or desirable increases in output prices. Likewise, it will be politically difficult for those portions of highly protected crops which are irrigated (notably oilseeds and sugarcane in most years) which should face declining output prices despite the general increase in the price level of all or most other crops. Substitution into the more profitable crops (to the extent that it is possible) will frequently not offset the loss of the large economic rents inherent in the present system of input subsidies.

As regards the subsidy on canal waters, the situation is extremely serious. But since irrigation is a state subject, and the form of subsidy is somewhat different, it does not create much 'noise' in the central budget or in the corridors of the Ministry of Finance, as does the fertiliser subsidy. The nation has spent more than Rs 600 billion (\$US 36 billion) at 1988-89 prices on canal networks during the last forty years, adding an irrigation potential of more than 22 million hectares (Gulati, 1993). Today, the direct recovery from farmers towards the cost of canal waters is only a small fraction of operational and maintenance expenses, not to speak of capital costs. The low cost recovery (in most states the rates have not been revised during the last 10 years or so) is starving state exchequers and irrigation departments. As a result, minimum essential repairs remain neglected and in many cases the continued existence of the systems is at stake. In 1972 the Irrigation Commission recommended that the price of canal waters should account for about 5 per cent of the gross revenue of farmers in the case of foodgrains while for cash crops it should be near 12 per cent. The present reality, however, is that water charges probably average only around one per cent of the gross revenue of irrigated farms.²³

Recently, an Expert Committee on Pricing of Irrigation Waters (GOI, 1992)²⁴ examined the financial position of the irrigation sector in great detail, and recommended an increase of more than six times in water charges collections (from existing levels of Rs 50 per hectare to Rs 310 per hectare) through a two part tariff structure. According to the Committee's calculations, this would amount to about 6 per cent of the gross revenue of an average farm. It would, however, cover operation and maintenance (O&M) costs and 1 per cent of capital costs (calculated at historical prices without taking care of the gestation lag factor). In addition, the Committee recommended that the irrigation commands should limit themselves to wholesale distribution of water with volumetric pricing to farmer groups who would be responsible for the subsequent water distribution and management of the system over areas of up to about 500 hectares. While we strongly agree that such reforms -if implementable -would constitute major improvements on the present situation, we wonder why the Committee has suggested that only one per cent of capital costs should be recovered. That might be a strategic compromise, but we feel that basic principles should not be

relegated to the background, and that full recovery of the relevant capital costs (after allowing for urban beneficiaries and public good externalities such as flood control etc) should be the long run target. Secondly, we suggest that experiments should begin to make project authorities/irrigation departments financially and operationally autonomous. This could be combined with initiatives to make the farmers co-owners of the irrigation systems by issuing 'water bonds' to the tune of -say - five per cent of the equity of the system. This could be made somewhat compulsory in the sense that water would be supplied on a priority basis (or only) to those who 'own' the system through equity participation. This would help recover some part of the capital cost, and also contribute to farmers feeling that the irrigation system which supplies them also in part belongs to them, thereby inducing them to take greater interest in its management.

The institution of arrangements under which farmers pay for the cost of canal water delivered to them will reduce the wasteful use of water, contribute to better water allocation within irrigation commands, provide funds for improved operation and maintenance ²⁵, and somewhat reduce the rent seeking activity generated by the present administrative methods by which water is allocated in most systems. However, on its own, this reform cannot efficiently allocate water between different users, and mechanisms need to be found by which the supply of water to farmers and other users is responsive to the value it has to them. By far the most promising method for achieving this aim would be to create conditions which would allow the existence of efficient markets in tradeable water rights. A convincing case for tradeable water rights is made, and the extensive literature on the subject surveyed, in a recent paper by Rosegrant and Binswanger (1993). If rights to the delivery of water can be freely bought and sold, farmers with new crops or in new areas will be able to obtain water provided they are willing to pay more than its value to existing users, and established users will take account of its sale value in deciding on what and how much to produce. In this way there is great potential for mitigating some of the pervasive problems of Indian irrigation commands, for example the "tail ender" problem where farmers at the top ends of the canal systems obtain ample water to cultivate water intensive crops such as rice and sugar cane, while down-canal farmers are starved of water even though its marginal value to them may greatly exceed its value to the up-canal users. Ideally, the creation of a market for water should be accompanied by reforms which charge users for the marginal cost of delivery i.e marginal operation and maintenance costs for deliveries within established networks, and marginal operation and delivery costs plus incremental capital costs if new investment is needed. In this way farmers (and non-farm users) will be obliged to take these costs into account in making their trades. However, the institution of tradeable water rights will lead to a very substantially improved - if not fully optimal - allocation of water, even in the absence of proper recovery of marginal delivery costs. In India, as elsewhere, it may be politically extremely difficult, or even impossible, to fully recover these costs, since farmers strenuously resist increases in water charges, which amounts to the expropriation of economic rents built into land values. While we believe that strong and continuing attempts should nevertheless be made, at the same time the government should push the reforms needed to establish water markets e.g. the conditions and institutions required for contract monitoring and enforcement, reliable water delivery and measurement, mechanisms for internalising or otherwise taking account of the interests of third parties etc²⁶

The electricity subsidy to the rural sector has already crossed Rs 40 billion (\$US 1.3 billion) per annum. The pricing of electricity for rural areas is one of the major reasons that most state electricity boards (SEBs) are in the red, and it is becoming increasingly difficult to sustain this financial burden. With the rapid energisation of Indian agriculture, coupled with the existence of a flat rate tariff for electric pumpsets in most states, this subsidy increased especially rapidly during the 1980s. The flat rate system means that the marginal cost of additional electricity use falls to almost zero, which provides an incentive to go for water heavy crops based on groundwater reserves

even in areas of low rainfall. The widespread emergence of paddy in the Punjab-Haryana belt is a case in point. While the annual rainfall of this region is about 60 cms, irrigated paddy requires more than 200 cms, although its consumptive use is less. This requirement for irrigation water is primarily being met through groundwater tube wells running on electricity. In a country where electricity is a very scarce resource, and its opportunity cost is not below Rs 2/kwh²⁷, agriculture gets this resource at throw-away prices. In Punjab, for example, the average revenue from farmers is less than 7 paise/kwh against an average state wide cost of generation and distribution of more than 110 paise/kwh. The story is not very different in other states (Gulati and Katula, 1992). Tamil Nadu in fact supplies power to its farmers totally free. Populist measures of this kind are clearly incompatible with the efficient use of this scarce resource.²⁸

We have three suggestions for reforms in the provision of power to the rural sector. First, the state electricity boards should be made more accountable to consumers as regards their costs of operation and generation. Their costs should be scrutinised by agencies which incorporate representatives of consumer groups, including farmers. The structure of electricity tariffs and tariff increases should be debated in public and the relevant cost and demand data should be made publicly available. This would help induce the SEBs to economise on their costs of generation and distribution. Second, the flat rate system for pumpsets should be replaced by volumetric pricing by installing meters. The early argument that the cost of installing meters and administering volumetric pricing would not justify the benefits is no longer valid (if it ever was) in view of the manifold increase in the level of electricity consumption by Indian agriculture in recent years. Third, the distribution of electricity should be increasingly transferred to the private sector on an attractive commission basis, especially the distribution to agriculture. Some farmers' cooperatives might be particularly suited to this task. While the government has stated that electricity generation is now open to the private sector,²⁹ higher priority should be given to private sector participation in electricity distribution and in the collection of dues.

The ability to subsidise farmers through rural credit is an ace card with the politicians. It is therefore not surprising that there has been pervasive political interference culminating in the extremely damaging loan waiver scheme which was a direct outcome of the 1989 elections. At present the farming sector is starved of funds, and the whole process of rural lending is in jeopardy. The annual subsidy to farmers through concessional rates of interest and bad debts is in excess of Rs 30 billion (\$US 1 billion), the amount depending upon the definition used to measure it (Katula and Gulati, 1992). Although the required reforms of rural credit involve far reaching and difficult reforms of the whole banking and financial system³⁰, in present circumstances we feel that three reforms could be carried out without generating a great deal of opposition. First, the concessions on rates of interest for rural loans should be reduced and then abolished, while increasing the availability of credit. Secondly, efforts should be made to evolve group lending in rural areas, where members of the group act as sureties for each other. In case of default by any member, the entire group may be sued and banned from further loans. Thirdly, defaults with a two to three year history should be treated severely under present laws, perhaps through special tribunals. Unless financial reforms along these lines are initiated, the process of recycling deposits, loans and recoveries will continue to be disrupted and an inflexible rural credit system is likely to slow down the response of agriculture to the kinds of trade policy, regulatory and other changes that are urgently needed.

As emphasised later, the required reforms of fertiliser pricing and distribution, canal irrigation, electricity and rural credit are likely to be politically extremely difficult. To increase the chance that they will be implemented, it is important that they are perceived to be part of a reform

package in which farmers gain from reforms on the output side which on average involve real price increases for agricultural products, while paying higher prices for these inputs. If the output and input reforms are not tied together, and efforts to remove the input subsidies are delayed, the gains from the output price reforms are likely to be pocketed by the farmers with little or no action on the input side.

II.7 Removing controls and distortions associated with the "food security" complex.

This is the source of the largest and most pervasive distortions and inefficiencies in domestic agricultural markets, including the two-price systems for major commodities both at procurement (levy prices etc.) and distribution, and the associated rent seeking. The Essential Commodities Act is also an important source of distortions and rent seeking.³¹ Apart from the powerful groups with vested interests in the system as it now functions, the main stumbling blocks to reform are the need to retain some way of permanently reaching low income and deprived groups and dealing promptly with drought and other emergencies, both local and nationwide. Various approaches are possible. The most far reaching would rely on food stamps: a second less radical reform would keep the fair price shops but drastically change other aspects of the present system.

(i) **Food stamps.** The main elements of a reform based on food stamps would be:

-Food stamps would be issued to low income households based on income/wealth criteria and used to buy from private retailers according to the type of food stamp system adopted. They could be administered by the states and reimbursed (according to a variety of formulas) by the central government. The food stamp system would replace the PDS, which would be abolished.

-The central government would be responsible for policies (for example, variable export and import duties and subsidies related to a moving average of world prices, as discussed previously, or, failing that, a buffer stock system) aimed at preventing excessive peaks and troughs in domestic prices. However, it would be important not to inhibit normal seasonal and regional price variations which reflect carrying, marketing and transport costs. Insofar as overall stabilisation continues to involve direct government interventions, purchases and sales would only be made in major wholesale markets. Storage and transport of buffer/emergency stocks could be subcontracted out to the private sector.

-The periodic imposition of physical and other controls on traders to prevent the movement of grain out of the surplus north west region would cease.

-As at present, the Centre in combination with the states would intervene in regions affected by drought or other emergencies, by emergency work programs (including food-for-work programs), sales in local wholesale markets, etc. Some of FCI's storage facilities in drought prone areas could be retained for this purpose, although again these functions could also be subcontracted out to the private sector.

-FCI and NAFED would get out of the business of physically handling grains and other primary commodities. Taking delivery, storage and arranging shipment would all be done by the private sector.

-The levy price systems for rice, sugar and molasses would be abolished.

-Imports and exports of wheat, coarse grains, and edible oils would be freely made by the private sector without restriction. Exports and imports of rice and sugar would be freely made by the private sector, but subject to special tariff/export tax treatment as mentioned earlier.

(ii) Reforming the PDS system. If the reform program were based (at least in its initial stages) on keeping the fair price shops and ration cards rather than on a food stamp system, it would still be possible to do this while keeping most of the reforms mentioned above. One approach would be to decentralise procurement for the fair price shops and for emergency stocks down to some regional level. That is, a regional organisation with storage capability (preferably subcontracted out to the private sector) would take bids for the delivery of the grains needed for a network of fair price shops for which it would be responsible. In order to support low income targeting the grains purchased would be at the low end of the quality spectrum. They could be purchased from anywhere (locally, from the surplus north west areas, imported), from anyone, and delivered to whatever time schedule corresponded best with the demand from the regional FPS network. The organisation would be reimbursed for the difference between its purchases and other costs and its receipts from the FPS network sales. Emergency stocks and expenses would be accounted for and subsidised separately. Incentives would have to be established for the management of the organisation to optimise its purchases in the light of the demand.

In order to concentrate the benefits on low income households, it would be highly desirable to restrict the issue of ration cards on the basis of whatever information is available on income and wealth (as is now being done in seven states). This would have the further advantage of reducing leakage from the system back to the open market and perhaps to the regional procurement organisation.

If this or any other version of the present PDS, edible oils and sugar should be removed from the system, which would handle only rice, wheat and coarse grains (and perhaps gur/khandasari instead of sugar). PDS wheat and rice should be at the low end of the quality spectrum in order to introduce some measure of self targeting.

Edible oils should be removed from the PDS for two reasons. First, PDS prices have consistently been maintained and remain at approximately double border prices: liberalising edible oil imports (see discussion below) will make much cheaper edible oil available to everyone, including low income consumers not reached by the PDS. Secondly, more than half of the edible oil allocated to the PDS is diverted (much of it in bulk to edible oil refineries well before reaching the fair price shops), and only about one fifth actually reaches consumers in the bottom 40 per cent of the income distribution.

Sugar should be removed for similar reasons. Firstly, it is a small share of the budgets of low income households. Secondly, removing it and abolishing the levy on sugar mills will bring down free market prices substantially, since the levy share of total sugar sales is normally high (currently 45%). Thirdly, on average domestic sugar prices have been well above world prices and can be expected to decline with trade liberalisation, even though sugar is one of the commodities which qualifies for special treatment of some kind owing to the narrowness of the world market in relation to Indian demand and supply. Fourthly, about a third of the sugar supplied to PDS is estimated to be diverted. Fifth, it has been suggested that in some regions gur and low quality

khandsari could be distributed through fair price shops in place of sugar, on the argument that this would automatically target the consumption to low income groups. Finally, the removal of sugar is likely to reduce the attractiveness of the PDS to middle and higher income households and thus facilitate targeting.

II.8 Removing Other Domestic Regulatory Controls and Distortions:

These can be roughly classified under four main headings, although there is considerable overlapping among the first three.

(i) Removing controls on markets, traders and processors and subsidies to cooperatives:

These affect the markets for all agricultural products, although their application is often commodity specific. They are the responsibility of the Central government, but there may be some additional state controls and subsidies. Reform would involve:

- Abolishing the Essential Commodities Act;
- Abolishing the general ban on futures trading;
- Abolishing inventory controls;
- Abolishing selective credit controls on inventory financing;
- Removing the discrimination of Indian Railways in favor of shipments by parastatals;
- Treating farmer cooperatives on an equal footing with the private sector, i.e., removing their preferential access to subsidised credit, their preferential tax treatment, their exemption from various regulatory rules applied to private firms, and direct subsidies.

A general problem will be that the inventory and credit controls are perceived as techniques for preventing the private sector from offsetting inventory accumulation or decumulation by parastatals such as FCI, NAFED, the Cotton Corporation of India, etc.

(ii) Abolishing state-implemented movement controls:

These include:

- The Maharashtra monopoly procurement scheme for cotton;
- The isolation of Thanjavur district in Tamil Nadu for rice procurement;
- Gujarat's periodic movement controls on groundnuts and groundnut oil.

It is possible that other state-implemented movement controls exist. Because of the obvious local political sensitivity, removal of the controls would probably have to be accompanied by some offsetting benefits (e.g. would a substantial long term improvement in cotton prices resulting from open trade in cotton be sufficient to offset the perceived benefits of the Maharashtra cotton scheme?)

(iii) Removing commodity-specific controls:

There are large numbers of regulatory controls (which affect farming, marketing, distribution and processing) implemented by commodity boards and by central and state government departments,

which reduce economic efficiency in the industries to which they are applied. For example, the Tobacco Board attempts to set annual production quotas for each one of more than 10,000 individual growers of Virginia tobacco. Controls of this kind, which are clearly inefficient, largely unenforceable or both, should be identified and abolished. At the same time the roles of each of the commodity boards or of other intervening agencies should be assessed and specific reform programs (which may involve their abolition or substantial changes in their functions) should be developed.

By way of illustration, we make some suggestions below for removing domestic controls from from five major commodities -wheat, rice, sugar, cotton, and oilseeds .

(a)As regards wheat, informal movement restrictions have often been imposed on the surplus states of Punjab, Haryana and on western Uttar Pradesh so that the government's requirements for the PDS and for buffer stocks can be purchased at the official procurement price. In his February 1993 budget speech, the Finance Minister announced a welcome general policy change, under which there would be no further administrative restrictions on movements of agricultural products within the country. It should be made clear that the new policy will also mean that the government will no longer pressure private traders to shun the primary grain markets, as was done in the marketing season of 1992.³² The government should also announce and commit itself to support prices (covering say the bulk line paid out costs³³ of the farmers), while procurement should be done at market prices in competition with the private trade in the open market. Farmers should have the right to sell to anyone offering better prices. This is important because informal controls on either the movement of wheat or on the participation of the private trade in the market, lead to all sorts of corruption within each state and at state borders, and undercut the support of this politically important farmer group for any general program of agricultural reforms. Furthermore, the uncertainty and transaction costs involved reduce the attractiveness of wheat production and contribute to farmers switching to other crops that do not face the same movement controls, such as oilseeds.³⁴

(b)In the case of rice, rice millers in the three major surplus states are at present subject to a levy (i.e. compulsory acquisition at fixed prices) of 75 per cent of their production in Haryana and Punjab and 50 per cent in Andhra Pradesh.³⁵ A visit to these rice mills easily reveals how they try to evade this levy, and how they succeed in avoiding the minimum quality control and supply the poorest quality rice to the procurement agencies, all at the cost of the exchequer. The economic rents in this system are largely appropriated by the millers and by the inspectors and other employees of the procurement agencies. The levy system should be eliminated e.g. in Punjab and Haryana, by reducing the levy percentage from 75% to 50% in the first year, to 25% in the second year, and fully withdrawing it in the third year. As long as the PDS remains the chief means of providing food to low income groups, to meet its procurement targets, the government should invite tenders from rice mills and procure from the lowest bidders. If the PDS is decentralized as suggested previously, these bids could be for delivery to the location served by the regional or state agency requiring the rice. At the same time, as for wheat, the government should provide a support price for paddy based on the bulk line paid out costs of the farmers. With the market determining the prices of milled rice, there would be an incentive for millers to upgrade their technology and to reduce the breakage ratio. At present, the signals are in fact in the opposite direction. Many millers also install small inefficient hullers, which are exempt from the levy, and in recent years the number of such hullers has increased in the northern belt. Furthermore, rice milling is reserved for the small scale sector, which deters larger modernising investments. It should be removed from this reserved list.

These measures would increase the prices the mills would be willing to pay for superior rice varieties, and thereby would increase the incentive of farmers to produce them.

(c) In the case of sugar, the established mills have to deliver a fixed proportion (currently 45 per cent) of their production to the government at a fixed levy price which generally does not cover their full production costs. They are expected to compensate this from open market sales of sugar. But even in the open market, sales of sugar are regulated by a system of releases which allocates a centrally determined sales quota to each one of the approximately 386 sugar mills each month. In addition, they are subject to controlled minimum prices for their purchases of sugar cane and a variety of other controls, including compulsory crushing quotas and mandatory crushing periods during seasons of excess cane production. Furthermore molasses (the principal by-product of sugar milling) is under a 100 percent levy at prices which are generally less than a quarter of open market prices. By contrast with established mills, new sugar mills and expansions in the capacity of existing mills are exempt from the sugar levy for periods of from 5 to 10 years, depending on where they located. Together with the other controls, this artificial incentive to the establishment of new mills and new capacity is an important reason for persistent excess capacity and widespread "industrial sickness" (i.e. bankrupt and loss making mills) in this industry.³⁶ Given the poor financial condition of many sugar mills³⁷, and the large scale evasion of the molasses levy, we suggest that molasses should be decontrolled immediately ³⁸. It is difficult to think of a justification for subsidising the consumers of alcohol at the expense of consumers of sugar. Next, the sugar levy should be removed. This could be done by reducing it in the first year from 45 percent to say 20 percent, and withdrawing it totally in the following year. For reasons given earlier, it would be better to remove sugar from the PDS. If the government wishes to continue subsidising sugar consumers through the PDS, it should be procured by competitive tendering from the sugar mills, as recommended for rice. Storage could also be arranged by competitive tendering in which the mills would doubtless participate in order to use the storage capacity they have built to store government owned sugar under the present system.³⁹ Elsewhere (see Bhide and Gulati, 1992), we have also argued for delicensing of the sugar industry. Among other things, this would help to circumvent the problems created by the fact that the states often set much higher minimum prices for sugar cane than the minimum prices recommended by the Commission on Agricultural Costs and Prices and announced by the central government.

(d) As regards cotton, monopsonistic purchases by the Maharashtra State Cotton Marketing Federation (often referred to as monopoly procurement of cotton in Maharashtra) distorts the national cotton market. It often leads to "smuggling" of cotton between Maharashtra and adjoining states whenever the prices in these states are higher or lower than the buying prices of the Maharashtra Federation. The Cotton Corporation of India already provides a nationwide set of floor prices for cotton as insurance against any drastic collapse of market prices, and it is difficult to see the rationale for the continued monopoly procurement operations of the Federation. A second urgently needed reform is the removal of state government controls over ginning margins, which is a serious impediment to the badly needed modernisation of this industry.

(e) As regards edible oils and oilseeds, the suggestions made earlier for trade policy reforms, in particular removing STC's import monopoly of edible oils and progressively lowering import tariffs, would be incompatible with the price maintenance and buffer stocking scheme at present managed by the National Dairy Development Board. This scheme should be abolished. In July 1991 the processing of oilseeds was liberalised in a significant way by the fact that the vanaspati industry and the solvent extraction industry were among the many industries freed from industrial

licensing. However two major reforms are still needed. Firstly, the detailed regulatory controls which the Ministry of Food and Civil Supplies applies to the vanaspati industry should be removed. These include informal price controls, controls on the processes which can be used, controls on the kinds and quantities of crude oil inputs, and a complicated system of differential excise tax rebates aimed at encouraging the use of oils from ricebran and minor oilseeds. Secondly, the reservation of oilseed crushing for small scale industry should be abolished, as it creates an artificial barrier between activities which in other countries are predominantly carried on by integrated firms. It is also a deterrent to direct investment by foreign firms in the oilseed processing industry, which the government's general liberalisation of the foreign equity and technology rules (also in 1991) was intended to encourage.

Especially for the above mentioned five commodities, which account for more than half of India's gross cropped area and value of crop output, we feel that the time has come to allow and to promote futures trading. Futures trading had been banned for many years on the argument that it encourages speculation, and during years of acute shortage, exploits consumers. Conditions have dramatically changed since these arguments had some popular appeal. While some varieties of cotton have been opened up for futures trading lately, after a gap of more than 25 years, these reforms for cotton should be broadened and extended to other commodities. Futures markets have an important role to play in stabilising commodity markets. Their existence will be particularly important for domestic food industries such as oilseed processing to be internationally competitive, since they are critical for dealing with risk and uncertainty in the face of constantly fluctuating prices and fine margins between the various processing stages.

(iv) Removing agriculture's exemption from income tax:

Under the Indian constitution, income tax on agricultural incomes is a state subject, but only seven states actually levy such a tax, and the revenue from it is very low to negligible. For the purposes of the central government income tax, agricultural income is supposed to be combined with non- agricultural income in determining marginal tax rates on non- agricultural income. However, as a result of the way this provision is worded the reported additional tax collections are negligible, and the provision has not effectively prevented large scale evasion of income taxes by individuals who arrange their affairs to show that most of their income is from agriculture (Gupta, 1991). As shown previously, this de facto exemption of agricultural incomes from taxation does not amount to much in the aggregate when compared to the trade related measures and the non-traded subsidies affecting agricultural incentives. Nevertheless, it distorts choices between agricultural and non agricultural activities, and the extent of the distortion will grow as income taxes become more important sources of government revenue, as is normally the case in the course of economic development. Since the overall effects of the reforms we are suggesting will be to significantly improve real farm incomes, we believe that this would be an appropriate time for the states to reconsider their present policies and to introduce taxes on farm incomes at somewhere about the levels of the central government income taxes on non-farm incomes. Because the central exemption levels ensure that only relatively high incomes are subject to any tax, this would not affect marginal and small farmers. At the same time, it would make a badly needed contribution to state government revenues and would remove an important avenue for the evasion of the central government income tax. It could be made more palatable to farmers if it were used to help finance increased state expenditure on rural infrastructure.

III. Policy Reforms : Some General Suggestions

The broad objectives of reforms in the medium or long term, and the tactics for the short run suggested above, are comprehensive and ambitious. In order to get reform under way, experience from Indian manufacturing and agriculture, and liberalisation episodes in other countries suggest that the following would be useful:

- Include at an early stage a "demonstration liberalisation", i.e., the liberalisation of an industry which is likely to have an early and readily apparent favorable, positive impact as regards output and employment.

- As far as possible, combine reforms with a contractionary impact with reforms which are likely to be expansionary, either with regard to the same crops, or crops to which the adversely affected farmers can switch.

- Do not allow the reform process to become hung up on attempts to retain price stability over time and territorial price uniformity. Commodity prices are inherently unstable; to have any chance of implementing substantive liberalising reforms with an appropriate role for private intermediaries and processors, this needs to be recognised.

-Do not build up overoptimistic expectations that the reforms will necessarily lead immediately to a noticeable increase in the growth of the farm sector and in rural incomes and employment. Although some farming activities and regions are likely to gain in the short run, others are likely to lose or at least face a difficult period of adjustment. It may take several years before higher growth in the whole farm sector becomes apparent, and even that may be delayed or even prevented altogether by a variety of factors. It is better to be realistic about possible future problems and prospects. Disappointed, overoptimistic popular expectations can easily lead to policy reversals.

- Studies of the various kinds will be needed , but it is vital that they be clearly focussed on the issues at hand in the reform process. Broad, unfocused studies can muddy the issues, drag on for too long, and just serve as an excuse for delaying effective action.

As regards a "demonstration liberalisation ", the Indian debate on many of the issues is highly ideological. For historical and other reasons there is in particular a deep seated distrust of private traders and processors and private markets in general, not only in the ministries and parastatals but amongst economists who work on agricultural subjects. The resulting interventions and regulatory controls emasculate or distort the operations of the private sector and expand the scope for rent seeking and black economy activities, which reinforces the prevailing conviction that it is inherently deficient as well as corrupt. In order to help break down this self fulfilling process of distrust and control, it would be helpful at an early stage to have a successful "demonstration liberalisation". The evident and widely recognised success of the deregulation of the cement industry in the early 1980s greatly helped in mobilising support for the broader deregulation of manufacturing which came later.

In our opinion the cotton industry would be an excellent candidate for such a "demonstration liberalisation" for the rest of agriculture, although a start should be made on other fronts at the same time. The case for an early concentration on cotton is that, because of India's comparative

advantage in the production of longer staple , labor intensive cottons , the removal of export controls (including minimum export prices) is likely to lead to a substantial increase in the export of these varieties and to a corresponding increases in production and employment . Furthermore , unlike cotton yarns and fabrics, the international market for cotton is relatively open and in particular is not restricted by the multi-fiber arrangement which creates difficulties for exports of textiles to developed country markets. Simultaneously with the removal of export controls, imports should also be allowed without import licensing or other controls and with a zero tariff. While domestic prices are well below international prices as at present, there will be no or few imports, but allowing imports without any restriction will ensure that the textile industry is not injured as a result of future shortages due to drought or other events, especially shortages of coarser cottons in the production of which India has less of an advantage. As noted earlier, as a by-product, by aligning domestic and world prices ,the opening of cotton exports and imports would also contribute to greater economic efficiency in the textile industry. As well as these trade reforms, a policy reform package for the industry would also include the domestic regulatory reforms referred to earlier, namely:

-Removal of the export quota allocations to the CCI, the Maharashtra Federation and similar organisations and the creation of conditions for effective export marketing by the private sector. The present regulatory functions of the Ministry of Textiles over the cotton industry would be abolished.

-Removal of the general export controls on cotton yarn (except for the controls required by the multi-fiber arrangement).

-General permission for futures trading, which in the case of the cotton industry could be rapidly and effectively implemented.

-Removal of inventory controls from cotton traders and textile firms.

- Reviews of the roles of CCI and the Maharashtra Federation and ensuing reforms which ensure that they do not impede or distort trade in cotton.

-Removal of the state ginning margin controls and the creation of conditions which would make investment in the modernisation of cotton ginning attractive to private industry.

We believe that this reform package would encourage new investment and increased competition at all stages in the production and distribution of cotton, and in particular would improve the quality of Indian cottons and its marketing both domestically and in export markets.

There are obvious advantages in reform packages which include expansionary reforms which would partly or fully offset contractionary reforms. A few examples:

-Reductions in the non-traded subsidies (canal irrigation, electricity and credit) should be accompanied by increases in the selling prices of grains and cotton, which in turn would follow from the removal of export controls and from general trade and domestic deregulation in the markets for these products. In particular, abolition of the compulsory levy prices for sugar and rice would benefit these farmers in a clear way which would be apparent to them and everyone else. This change could be included in a reform package involving increased charges for inputs.

- Decontrol of grains and cotton, leading to higher prices, could help offset decontrol and reduced protection for oilseeds and sugar.

-In the south, decontrol and higher prices for rice, spices coffee and tea could help offset lower protection and reduced prices for rubber and coconut/copra.

As regards price stability and territorial price uniformity, seasonal variations and differences which reflect local conditions and transport costs are necessary for the efficient timing and location of production. With the agricultural economy open to international trade, local prices

should also reflect these trading opportunities. It may be economically efficient, for example, to import a commodity during part of the year and export it during another part of the year (especially in regions bordering neighbouring countries). Likewise, it may be economically efficient to import a commodity in one part of the country while exporting the same commodity from another location. Efficient resource allocation may also require substantial price variations from year to year and over longer periods. Excessive preoccupation with stability over time and with geographical uniformity could make any substantive liberalisation of the present controls very difficult to achieve. In this regard, a few general comments are worth making. First, as is well known, price stability is not the same as income stability for farmers. Secondly, insulation from or only partial exposure to world markets does not of itself guarantee stable prices: for example, in certain respects domestic cotton prices have been less stable than they would have been if they had been directly linked to world cotton prices. Thirdly, Indian farmers in this and other industries (e.g., pulse farmers, whose prices have been principally determined by import prices since the early 1980s) have lived with unstable prices without disastrous consequences, even though regulatory controls have greatly inhibited the extent to which they themselves &/or private intermediaries have been able to deal with the price risk. Fourthly, as a reform strategy, farmers (including farmers producing the major grains) may be willing to trade off less price stability for a higher general level of prices.

As regards the need to avoid building up overoptimistic expectations, even if a thoroughgoing reform program were implemented, it is important to recognise that the supply response of agriculture as a whole is likely to be quite low in the short run, even if the longer run impact is substantial. Whereas increases in incentives for individual crops can elicit large increases in production in the course of a season as farmers switch from other crops, the aggregate short and even medium term (say over three or four years) response of the whole farming sector is limited by the supply of agricultural land and by the time required for new on-farm, off-farm and especially infrastructure investment to take place.⁴⁰ The short term response could also be delayed for a variety of other reasons. For one thing, the impact of reforms will be muted if they are incomplete or delayed: for example, if, for political reasons the excessive protection of the edible oil sector is not tackled, or if reforms are made on the output side, but the major input subsidies and inefficiencies are not touched. Secondly, the response to the reforms may be held back by delays in or inattention to required infrastructure investments. In fact, this is already emerging as a problem as a result of the budgetary squeeze on central and especially state government spending associated with the stabilisation program put in place to deal with the 1991 macroeconomic crisis. Thirdly, the response of agriculture could be reduced by difficulties or delays in introducing complementary reforms in such things as agricultural credit, land tenure etc. Fourthly, if the government continues to follow its stated intention and reduces manufacturing protection, we have argued that agriculture -and particularly agricultural exports - will benefit substantially if the real exchange rate is devalued to keep the trade deficit under control. But in some Latin American countries the early stages of trade liberalisation has been accompanied by substantial capital inflows which have allowed imports to increase with a smaller devaluation than would otherwise have been required, or even with a strengthening of the exchange rate. Especially because of the window for short term capital inflows resulting from India's schemes for borrowing from non-resident Indians, this possibility cannot be precluded and could reduce the short or even medium term output responses of all the tradeable sectors, including agriculture. However, for various reasons it is less likely to do so in the longer run.⁴¹

As regards economic studies, there is an extensive empirical economic literature in India, some of high quality. Some studies provide a directly relevant background for a reform program, in particular the Gulati-Pursell et al studies which describe and provide quantitative estimates of the

incentives provided by the trade regime and other interventions for most but not all major crops. But most of the Indian literature takes the present policy environment (e.g. food self sufficiency, controls over private traders, managed trade, role of PDS and FCI etc) for granted, and there are many gaps in what is known on subjects which are highly relevant if one is considering policy reforms of the kind suggested above. For example, the likely impact on handloom weavers is inevitably cited as a reason for not decontrolling exports of cotton, yet to our knowledge there is no good empirical economic study of exactly how these controls benefit the weavers or how these benefits (assuming some exist) would stack up against the broader economic benefits of decontrol. In the absence of objective studies, policy makers shy away from reform in the face of vociferous objections from the handloom lobby as well as from the textile industry which also objects to losing the implicit subsidy on cotton. As another example, as far as we know, there is no thoroughgoing study of the economic efficiency of the procurement, storage and transport operations of FCI, even though periodic comments by knowledgeable people and some work relying on published data suggests that there are major problems. Likewise, there is no economic study of the edible oil importing and distribution operations of STC or of the fertiliser importing and distribution operations of MMTC. As far as we know, there are also no good up-to-date analytic studies of the rationale for and operations of the various commodity boards and the policy environments of the coffee, tea, cocoa, jute and spices industries.

There are also serious gaps in what is known about the combined expenditures of the central and of the state governments and of relevant central and state enterprises on investments in infrastructure which underpin agricultural development. As noted previously, public infrastructure inadequacies could seriously impede the adjustment of agriculture to the kinds of reforms we have been proposing e.g. deficiencies in irrigation systems, agricultural research, electricity supply, roads, railways, ports, telecommunications, and even more fundamentally, in things such as basic health care and primary education in rural areas.

Although the state of knowledge is quite adequate for getting a reform process started, in some areas studies on topics such as those mentioned above will be needed to support the process or to prepare the way for some reforms. If well focussed on directly relevant issues, in many cases there should be no need for extensive, time consuming research which might seriously delay the introduction and implementation of reforms. Short reports or briefs summarising the relevant existing literature or involving only the systematic collection of basic knowledge which is or should be easily available (the cooperation of the ministries and parastatals involved will usually be needed, however), good economic analysis and common sense should usually suffice.

However in other areas there is a need for longer term research which could proceed in the background of the reform process without delaying it. In particular, as noted above, there is a need for systematic studies of the efficiency and appropriateness of government expenditures and of ways of financing it. It would also be useful to update the Gulati-Pursell et al incentive studies and to extend them to crops not so far covered. General equilibrium simulations of the effects of trade and other liberalising reforms would also be useful in order to get some idea of the broad effects on production, exports, imports, employment, etc of various reform packages. But as with all studies involving computer modelling, it will be essential to ensure that the underlying mechanisms of the models are transparent and easily understood, that the results make intuitive good sense, and that the many guessed or guesstimated parameters which such models usually incorporate are realistic and made explicit. Otherwise the simulations of "black box" models are likely to be discounted by policy makers and they may do more harm than good to the process of policy reform.

IV. Likely Implications and Safety Nets

Based on comparisons of domestic and world prices prevailing in 1992/93, the net effect of implementing the reform agenda we have suggested in this paper would probably be to raise the overall level of agricultural prices by about 15 to 20 per cent.⁴² Cereal prices would possibly increase by somewhat more than this, but oilseed prices (including copra and coconut oil) would fall substantially. Rubber prices would also fall. The prices of pulses would not change very much. Based on the rather atypical relationship between domestic and world prices in this year, sugar prices would also remain about the same, but would fall substantially if more normal relationships had prevailed. Cotton prices could go up by about 20 per cent.

This is likely to be the broad scenario assuming no major changes take place in the global policies influencing international agricultural markets. But agricultural protection and subsidy policies are being actively discussed around the world, particularly in the context of the GATT Uruguay round negotiations and as part of the trade liberalisation process which is under way in many individual developing countries. The most optimistic outcome for the liberalisation of agricultural trade in the GATT negotiations would be implementation of the Dunkel draft proposals, which would require tariffication of import barriers, a reduction of 36% in average import tariff equivalents, the same percentage reduction in export subsidies, and a reduction of 20% in domestic support measures. This would apply to developed countries and to developing country members of GATT, except that the reductions by the latter would be only two thirds of the reductions in OECD countries. Least developed countries, however, are not required to make any reductions, and there is no proposal for the removal of negative protection, which remains the predominant pattern in developing countries.

The effects on world prices of implementing the Dunkel proposals have been comprehensively modelled by Brandao and Martin (1993), and they have also considered the effects of two other plausible reforms, notably reductions in the US land set aside programs, and reductions in negative protection.⁴³ The results of all these exercises are that international prices increase, but by not very much, from the baseline levels (1985-87) used in the models. For example: wheat, +1% to +6%; rice, -5% to +2%; coarse grains +2% to +4%; sugar +6% to +12%; oilseeds and pulses +1% to +5%; cotton +1% to +4%. These changes are much smaller than the changes predicted by earlier studies, and are more realistic in assuming partial liberalisation only, compared to complete liberalisation assumed in most of the earlier models.⁴⁴ Their relevance for India is that if it liberalises its own agricultural trade, liberalisation in the rest of the world is likely to give only a very modest further upward push to the general level of its domestic agricultural prices, and in fact world prices of rice would fall slightly. The resulting changes in relative world prices would have a negligible effect on India's comparative advantage in different crops as indicated by the differences between domestic prices and world prices during the 1980s and now.

Even though this suggests that independent changes in policies of other countries affecting world agricultural markets are not likely to affect India very much, the impact of the domestic reform agenda for India's own trade, regulatory and other policies affecting agriculture would be very substantial. This raises some fundamental questions; for example, what would be the impact of the reforms on vulnerable, low income groups, on employment conditions, on farm incomes and on regional imbalances, etc.? Satisfactory answers to these pertinent questions requires much more rigorous analysis than has been attempted by us. Nevertheless, the broad effects are fairly clear. Indicating them may help in thinking about what needs to be known in more detail, and what precautionary measures might be taken to preempt adverse fall outs of the reforms.

Cotton producers and most farmers with marketable surpluses of grains will gain despite having to pay higher prices for their inputs. The oilseed belt of India, particularly Gujarat, will face structural adjustments in its cropping patterns and edible oil industry, and the substitution of coarse

cereals and pulses for oilseeds is likely to reduce farmer incomes. However the expansion of cotton production could compensate or more than compensate for this loss. In the south , notably in Kerala, incomes derived from rubber and from coconut/copra production will decline, but will be offset by higher returns from rice and from spices, tea and coffee.

In the aggregate, agriculture will be more remunerative than at present, attracting investment by farmers as well as by industrialists (particularly in processing activities). Rising exports and easier access to imported inputs can be expected to induce innovations in production processes and to increase yields. Exportable agricultural crops derive their comparative advantage primarily from their high labour intensity and the fact that they have experienced technological break-throughs (cotton, rice, tobacco, fruits and vegetables, fisheries, etc). and in general agriculture is more employment intensive than manufacturing. For these reasons the switching of resources from manufacturing to agriculture will increase the economywide rate of growth of employment. The labor intensity of agriculture and of the general economy will increase further if credit subsidies are reduced and especially if electricity and canal water are priced so as to reflect their opportunity costs, or if efficient systems for trading water rights are established. If not offset by increases in output prices, these changes will induce farmers to cut back the cultivation of particularly water intensive crops such as sugar cane. This will indirectly reduce the demand for investment in electricity production and distribution and in irrigation , and free up resources for other uses including the completion and better maintenance of existing irrigation commands and other badly needed more productive investments in rural areas.

There are potentially difficult adjustment problems, however, for vulnerable low income groups with incomes below the poverty line who will be hurt by increased food prices and for subsistence farmers who will be squeezed by higher prices for inputs such as water, electricity and fertiliser but who will not benefit from the higher prices for marketable production. High priority will have to be given to these problems if the reforms in agriculture are to succeed.

In this regard, as discussed previously, the present methods of distributing subsidised food through the PDS need to be drastically changed and eventually even replaced altogether by a food stamp system. It is well known that the existing system suffers from large leakages, and that ration cards are available to the whole population regardless of income, thereby providing large subsidies to middle and high income households for which there is no conceivable justification, while large portions of the really poor are served inadequately or not at all (Ahluwalia, 1992; Howes and Jha, 1992). As a first step towards targeting, the government has recently initiated an 'area approach' in which 1700 poor blocks have been identified in which a revamped PDS is being run. We feel that this is a step in the right direction. But one obvious and easily implementable reform has not yet been introduced i.e the removal of easily identifiable wealthy, middle income and not-so-poor people from the system. One easy way to identify such people would be through their expenditure patterns or possessions ,such as those having telephones and/or petrol driven vehicles which are registered in some place. The food subsidy saved on account of these people could be put back into the system to reach a larger proportion of the real poverty groups and to increase the extent to which they are subsidised.

A second safety net for vulnerable groups, and in particular for marginal subsistence farmers⁴⁵ who will be squeezed by the reforms we have proposed, are rural employment programs like the Maharashtra employment guarantee scheme and the central government's Jawar Rojgar Yojna (JRY) program. Besides providing employment, these can be used to build badly needed rural infrastructure. The JRY received a substantial increase in its funding in the 1993/94 budget, but drastic reforms to cut leakages and a substantial further expansion would be needed if it is to have a noticeable nation-wide impact. The principle on which these programs ought to operate is to be self selecting as safety nets by offering work at somewhat below the prevailing rural wage. Various

proposals have been made for their reform and expansion, including an idea for a very large "contractual land army" which would organise unemployed workers and farmers from uneconomic plots into platoon size bands which would construct roads, canals, buildings etc in rural areas.⁴⁶ It has been suggested that the financing of such a scheme could come from the contraction of schemes such as the integrated rural development program, which are replete with well known problems, and from the revenues which would become available with the gradual reduction of input subsidies in the rural sector.

The concept of schemes such as these is attractive while there is unemployment and distress in country areas, but they suffer from the serious disadvantage that the beneficiaries of the infrastructure they create do not pay, or do not fully pay for it. From this perspective it would be better to find ways of providing construction funds to local authorities and for them to choose the projects and pay for it to be done by private contractors. In this way employment is provided and there is a better link between the work and its usefulness to the local people. There would still be a need for safety net employment schemes, but their required scope would be less. However, if the resources are mobilised by the central government, it would have to be willing to channel them through state governments to local jurisdictions and to give up detailed control on how the money is spent. This raises issues of the relations between central government, state and local finances which go well beyond the scope of this paper.⁴⁷

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ENDNOTES

1. For a discussion of India's trade policies up to 1990 see Pursell (1992). A more detailed summary of the current controls over agricultural imports and exports is given in Gulati and Sharma (1991).

2. The 46% of manufacturing value added still protected by non-tariff barriers is mainly due to the continuing ban on the import of manufactured consumer goods. The estimates are based on GDP weights calculated from the 1985/86 national accounts and the 1985/86 Annual Survey of Industries. Estimated tradeable GDP is about 50 percent of total GDP, after excluding the major non-tradeable sectors from GDP as well as non-tradeable activities within generally tradeable sectors (for example, repair services were excluded from manufacturing GDP). The pre-reform share of manufacturing value-added protected by non-tariff barriers is based on an estimate of production potentially subject to competition from "OGL" (Open General License) imports. In practice various other restrictions applied to such imports (e.g. the "Actual User" condition) which limited potential import competition in varying degrees. On the other hand, allowance was not made for imports under special import licences used by exporters (replenishment and advance licences) which permitted limited import competition for some manufacturers. No allowance was made for Reserve Bank of India foreign exchange restrictions which were introduced to deal with the foreign payments crisis which began in 1990. These had been removed by April 1992.

3. The public distribution system uses ration cards to distribute rice, wheat, sugar and edible oils at subsidised prices through about 350,000 "fair price shops". For a recent discussion see Ahluwalia (1993).

4. See Ahluwalia (1993).

5. In UP, the levy system applied to modern sugar mills and other detailed controls, including low controlled selling prices of molasses and price and other controls applied to their purchases of sugar cane, have permitted the existence of large numbers of small, high cost producers of "khandsari" (an inferior type of sugar). The khandsari units are in practice free of all taxes and regulatory controls, including the labor laws.

6. This section summarises some of the research results described in Gulati with Hanson and Pursell (1990), Gulati and P.K. Sharma (1991) and Gulati and Pursell (1992).

7. The average NPCs are weighted by production at world prices. They are taken from Gulati and Pursell (1992). The NPC estimates for manufacturing are in turn from unpublished research by Pursell and Pursell and Kishor. The NPCs for agriculture are on the importable hypothesis i.e. for all the commodities included in the aggregation, domestic prices at the farm are compared with estimates of what those prices would have been had domestic production been competing with imports. The products included are wheat, rice, sugarcane, groundnut, rapeseed/mustard, sunflowerseed, soyabeans, gram, rubber and cotton. These account for about 60 percent of the value of Indian agricultural production. The principal products omitted are coarse grains, other oilseeds including coconut/copra, other pulses, jute, coffee, tea, cocoa, spices, tobacco and fruit and vegetables. On average, the nominal protection of the omitted products was probably about zero: hence their inclusion would probably increase the average for agricultural as a whole, but only slightly.

8. Since the NPC is defined as P_d/P_r , the numerator is adjusted by the price equivalent of the tax or subsidy. Thus the adjusted NPC is $P_d(1-t)/P_r$. P_d , P_r , and t are respectively the domestic price, the reference (adjusted border) price, and the net income and corporate tax paid per unit of output. The latter was calculated as the difference between the estimated economy-wide ratio of income plus corporate taxes to GDP, and the ratio of these taxes to value added in manufacturing and agriculture respectively. Since the taxes were not paid by agriculture, the difference was treated as a subsidy and added to the numerator. The tax rate for manufacturing was higher than the economywide average and was deducted from the numerator.

9. These are the broad results of as yet unpublished research by Nalin Kishor. According to this, between 1980/81 and 1987/88 the free trade exchange rate was generally about half way between the black market rate reported in the World Currency Yearbook (Pick's) and the exchange rate implied by the difference between the London and the Bombay price of gold. His estimate of the free trade exchange rate assumes a sustainable current account deficit of 1% of GNP and simulates the abolition of QRs on imports and exports as well as the abolition of import duties and export taxes and subsidies. The estimates are of course sensitive to the assumptions on export and import demand elasticities.

10. The results of these 18 studies are summarised in Schiff and Valdes (1992).

11. The export controls referred to here are given in the official Export and Import Policy volume (Ministry of Commerce) for the period April 1 1992 to March 31 1997, as amended up to March 31, 1993. A large number of products were removed from the various restricted lists in 1993, but the most important of these in terms of actual exports or export potential were "allowed freely subject to the terms and conditions specified in the Public Notice". While cutting the apparent size of the published restricted lists, this has reduced the transparency of the control system and could have increased or reduced the restrictiveness of export controls, depending on the conditions written into the public notices.

12. The origins and functions of the Coffee Board are discussed in a study by Ramachandran and Ray (1991). According to them, the controls which it implements were introduced in 1942 as a temporary wartime measure of market support, but "much after the original purpose ceased to exist, the provisions got distorted so as to provide for a virtual monopoly for the marketing of the produce of the industry ... perhaps to sustain the bureaucratic edifice which was built around the original purpose". They argue that the system greatly reduces net returns to coffee growers, removes incentives for quality improvement, and impedes the development of effective marketing both in export markets and in the domestic market. Among other things, the controls were used to manage India's export quotas under the various international coffee agreements, and also the "Rupee trade" with the Soviet Union and with various East European countries. Neither of these functions required compulsory monopoly procurement by the Coffee Board, however. In any event, the latest international coffee agreement was suspended in July 1989, and the Rupee trade has now disappeared.

13. As an example, complex and potentially highly distortionary export controls and export taxes are applied to exports of hides and skins and leathers with the aim of subsidising the export of the more highly processed products in this processing chain. Decisions on whether to export the intermediate product (e.g. tanned leather) or a product involving further processing (e.g. shoe uppers) should be on the basis of processing and other costs in relation to export prices and should

not be artificially skewed in favor of further processing. Among other things, with export controls and/or export taxes which decline according to the degree of processing, there is a serious danger that the net foreign exchange earned by exporting some of the processed products in the chain will be negative or at least very low in relation to processing, marketing and other costs.

14. Apart from agricultural protection, anti-dumping actions have become the major protectionist device in developed countries in recent years, and are being used with increasing frequency in developing countries which have removed or reduced explicit quantitative import controls and tariffs. See Finger (1993).

15. For the three year period ending 1991-92, the average nominal protection coefficient (NPC) for groundnut oil was 1.80, for rapeseed-mustard oil 2.72, for sunflower seed oil 2.66, and for soyabean oil 2.66. The protection levels would be much higher if the domestic prices of these oils were compared with the price of imported palm oil (see Gulati and Sharma, 1993).

16. In 1986, India was importing about 30 per cent of its requirements of edible oils. In that year the government set up the Technology Mission on Oilseeds (TMO) with the aim of achieving self-sufficiency in edible oils by 1990. The TMO in turn formed four "micro-missions" to assault the problem from all directions, including seed technology, processing, marketing and pricing. But by the end of 1988, the TMO was nowhere near its goal of self sufficiency. So in January 1989, it persuaded the government to steeply increase the prices of edible oils and oilseeds. The basic means for achieving this was by cutting back on imports of edible oils by STC (the canalising agency). This started taking away area from other crops, even on irrigated lands. By the end of 1992, India became almost self sufficient in edible oils. The import bill came down from more than Rs 1000 crores (about \$US 800 million) in the mid 1980s to less than Rs 100 crores (\$US 3 million) in 1992-93. But this was at the expense of cereal production, which stagnated or even declined. In 1992-93, this forced the government to import three million tonnes of wheat at a price much higher than the procurement price offered to Indian farmers.

17. A bilateral preferential arrangement of this kind would narrow international markets in both rice and edible oils. The mechanisms to ensure the agreed bilateral exchanges (continued canalisation, import and export licensing, preferential tariffs etc.) are highly distortionary. Above all, there is a serious danger that arrangements of this kind that are intended to be temporary will build constituencies which will make them difficult to remove, so that they become permanent obstacles to further liberalisation.

18. These margins are estimates only, since during the 1980s there were no exports and in most years no imports of wheat and common (non-basmati) rice. The low percentage cif/fob gap for rice results from the assumption that imported rice would have come the relatively short distance from Bangkok while exports would have gone to Asian markets at fob prices equal to fob prices in Bangkok for equivalent quality rice. By contrast, imported wheat was assumed to come from the U.S. gulf, while it was assumed that exported Indian wheat would have competed with US wheat in the Middle East at fob prices in Bombay equal to U.S. gulf fob prices. Another more general explanation is that the per ton international prices for rice are considerably higher than the per ton international prices of wheat, and so freight rates and Indian port and domestic transport costs tend to be lower in relation to prices. The estimated price gaps in Punjab are made on the assumption that if rice and wheat were imported, the prices in Punjab would be determined by the landed prices

in the ports minus transport and other costs to the ports. This estimated import reference price is obviously sensitive to where the competition between imported and Punjab wheat would take place. See Gulati, Hanson and Pursell (1990).

19. The Chilean experience with price bands for wheat, sugar and oilseeds between 1977 and 1980 and since 1983 is particularly pertinent. See Valdes (1992). See also the simulations of the effects different schemes would have had in Venezuela (Coleman and Larson, 1991) and the discussion of a proposal for a price band for Mexican maize (Larson 1993).

20. This possibility is discussed in Larson and Coleman (1991).

21. The importance for agricultural productivity in developing countries of freeing up the import and deregulating the domestic production of agricultural inputs is emphasised by Gisselquist (1993).

22. Under India's small scale industry reservation policy, about 830 product groups are reserved for production by small scale firms, currently defined as firms with assets of less than Rs 6 million (\$US 195,000 approximately). Small firms are also supported in other ways, including by exemption from excise taxes.

23. The Vaidyanathan Committee Report (Report on the Pricing of Irrigation Water. Government of India, 1992) gives the following state average percentages of water charges to the gross revenues of irrigated farms:

West Bengal	0.1
Tamil Nadu	0.1
Andhra Pradesh	0.4
Karnataka	0.8
Punjab	0.9
Bihar	1.1
Haryana	1.6
Orissa	1.7
Maharashtra	1.9
Gujarat	2.2
Madhya Pradesh	2.6
Rajasthan	2.7
Uttar Pradesh	2.9

24. The report of this committee has not yet been published. Its main recommendations have been summarised, however, by its chairman, A.Vaidyanathan (1993).

25. This would require that the receipts from water charges go directly to the irrigation authority. At present, a major problem is that water charges go to the general state revenue, and so there is no direct connection between improved efficiency in collecting water rates and the availability of funds to improve the operation of the irrigation systems. This undermines both the motive of farmers to pay water charges, and the interest of the irrigation command staff to collect them.

26. These conditions are discussed in Rosegrant and Binswanger (1993).

27. The long-run marginal cost of power generation and distribution is currently estimated at about Rs 2/kwh, and is higher than this in rural areas owing to the higher cost of distributing there. But the true opportunity cost of electricity is best indicated by the cost of generation from the standby generators used by practically all large and medium Indian manufacturing firms. This is usually well in excess of the marginal cost of supplies from the grid. Even if farmers run their pumpsets in off-peak hours at night, actual charges are a small fraction of opportunity costs.

28. In April 1992 the State Power Ministers agreed that they would all try to fix the rural power tariff at a minimum of 50 paise/kwh by March 1993. But this was actually done only in four states-Rajasthan, West Bengal, Orissa and Haryana.

29. As regards private sector participation in generation, it is reported that the government has agreed to guarantee a 16 per cent rate of return to private investors (in foreign exchange to foreign investors) using a normative cost-plus formula. There are many problems with cost-plus formulas of this kind, as is illustrated by the experience in the fertiliser industry.

30. A comprehensive discussion of the long run reforms needed in the rural credit system is given in Nickel and Khan (1993).

31. The 1955 Essential Commodities Act provides the legal basis for the central government's extensive powers to control the prices of "essential commodities", which are defined to include practically all agricultural commodities. It is also the basis for related powers, such as movement controls, stock limits, the power to requisition trader's stocks, the licencing of traders by state governments, and even production controls. The economic conditions and policies which were followed during and after the time the Act was introduced are discussed in Rath and Patvardhan (1967).

32. During the marketing season of 1992-93, informal restrictions were imposed on the shipment of wheat out of Punjab and Haryana. As in past years, this was done by instructing Indian Railways to reduce the wagons provided for wheat shipments by private traders, and by police roadblocks which prevented or hindered wheat shipments by truck. In addition, under the implied threat that they might otherwise risk losing their licenses, private traders were 'advised' not to bid in the primary markets. In response, the Bhartiya Kisan Union (BKU) organised a one week farmers' boycott of mandis (i.e. markets) as a protest against these coercive measures aimed at depressing open market prices. Many farmers held back their produce with the hope of selling in the lean season, while many traders tried to 'smuggle' wheat to markets in Delhi by bribing the enforcement agencies at state borders. As a result, the overall procurement of wheat dropped from 11 million tonnes in 1991-92 to 6.35 million tonnes in 1992-93, despite the fact that wheat production was more or less the same in both years.

33. The "bulk line paid out cost" is the marginal out-of-pocket cost of producing the bulk of the wheat. That is, if all wheat producers are ranked in ascending order of out-of-pocket costs per quintal, the bulk-line-paid out cost might be the paid out cost of the farm at the 70th percentile in terms of total production. Since this cost excludes the imputed costs of owned factors of production such as land, labour and capital, the bulk line paid out cost is significantly lower than the cost C3, which is presently calculated by the Directorate of Economics and Statistics in the Ministry of Agriculture and is one of the bases for fixing procurement prices.

34. Farmers in Punjab and Haryana, where previously sunflower had not been cultivated at all, are rapidly moving into this and other crops that offer high returns. In Punjab, for instance, the area under sunflower is expected to be 150,000 ha. in 1992-93 against about 80,000 ha in 1991-92, mainly at the cost of late sowing wheat in the cotton belt.

35. A levy on rice mills has also recently been introduced in Karnataka and Maharashtra.

36. The very large difference between the levy and free market prices leads to large scale evasion and corruption and has induced many sugar mills to set up their own alcohol distilleries in order to use their molasses output, even though the distilleries would be unprofitable if they could sell the molasses at the free market price.

37. In 1992, in the aggregate, sugar mills made losses of about Rs 700 crores (approximately \$US 25 million) and payments arrears to sugar cane growers were Rs 500 crores (about \$US 18 million).

38. Since this was written, it has been reported that the molasses levy has been abolished (Economic Times, June 10, 1993).

39. In 1993 the government raised the issue price of sugar from Rs 6.90/kg to Rs 8.30/kg. At going open market prices, this increase was about sufficient to eliminate most of the subsidy element to consumers of PDS sugar, and was likely to divert many consumers from the PDS network. This situation provides an opportunity to eliminate sugar from the PDS altogether.

40. For a discussion of the aggregate supply response of agriculture to policy changes, see Schiff and Valdes (1992) Chapter 4, and Binswanger (1989).

41. If the capital inflow is a portfolio adjustment by investors who have previously withdrawn their money or more generally have been deterred from investing in the country, normal capital inflows at a reduced rate would be expected to resume once the adjustment is complete. If the capital inflow is a speculative move to take advantage of high interest rates in the liberalising country, it will eventually move out and in the process precipitate a devaluation once the high interest rates decline. Finally, if the liberalisation indeed attracts a permanent and significant increase in capital inflow, the capital inflow itself is likely to directly or indirectly increase the savings available for investment in the economy, including investment in agriculture. This could offset, or partly offset the contractionary effect on agriculture of the stronger local currency that such a permanent inflow would support.

42. This is a rough estimate based on the nominal protection coefficients of these crops in the year 1992-93. It takes no account of the likely effects of changes in the Indian net export supply or net import demand on the world prices of rice and sugar. It also does not allow for general equilibrium effects in production and demand which would determine whether cif import prices or fob export prices would determine domestic prices.

43. There has been substantial progress in reducing negative protection in many developing countries (including China) in the course of trade reform programs implemented over the past ten years or so. Whereas the reduction of positive protection tends to increase world prices, reducing negative protection increases supply and reduces world prices. For example, the reduction of rice protection in countries such as Japan, Korea and Indonesia would increase world prices, but reducing the

substantial discrimination against rice production in China and India would reduce world prices. In most of the Brandao and Martin simulations, as well as in earlier models, this effect predominates as regards rice.

44. The results of some of the earlier models are reported in Gulati and Sharma (1992) and are also summarised by Brandao and Martin (1993).

45. According to the land holding census of 1985-86, the number of marginal and small holdings (below 2 hectares) are three quarters of the total number of holdings in India, but only account for one quarter of the total area held. Many of these small holdings are economically unviable and vulnerable to changes in the rural economy, including increases in input prices as proposed in this paper. Safety net programs, including rural employment schemes are needed for the people who rely on them.

46. The labour employed on a contractual basis would be given training on army lines for the construction of roads, buildings, canals, etc. This army of construction workers could be organised in bands of 25 each, with two persons running the kitchen. The construction activities undertaken would be chosen from requests by district or block authorities, and the army workers would move in at specified times to do the jobs. They would be given minimum wages with subsidised food, and allowed to visit their families for say a month in a year (Gulati, 1989).

47. The financing aspects of employment programs are discussed in Mundle (1992).

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