

Indian Agriculture: Recent Performance and Prospects in the Wake of Globalization

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Introduction

Following macroeconomic reforms introduced in the Indian economy in the early 1990s, and the reforms in the multilateral trading order brought about in the wake of GATT negotiations and the setting up of the WTO, the Indian agriculture has entered into the phase of globalization and diversification. It is expected that the combined effect of the reforms in the domestic policies and international trade reforms would result in a much larger integration of the Indian economy with the rest of the world, and such a scenario would bring about substantial benefits to the Indian farmers. The reforms undertaken so far have, however, failed to bring about the expected gains to Indian farmers. The process of reforms is still continuing and it is hoped that once the negotiations on reforms conclude and the envisaged reforms are implemented in letter and spirit, the gains to Indian agriculture would be positive and substantial.

To realize the expected gains from trade liberalization, apart from improvement in infrastructure, the Indian agriculture would need to become more competitive. The recent deceleration of growth in Indian agriculture - both in production as well as in crop productivity - has however been a cause of worry. Unless this trend is reversed, India may not be able to take on the opportunities that may be made available to it in the wake of globalization.

Based on some of the available literature on the subject, the present paper attempts to present a brief review of the recent growth performance of Indian agriculture and some of the agricultural support policies that have a major impact on agriculture. The paper provides a brief description of the status of WTO negotiations in agriculture and the Indian stand on some of these issues under negotiation. In the light of this discussion the paper then gives a brief review of some of the recently conducted studies on the potential impacts of these negotiations on agricultural prices, trade, production and welfare.

Performance of Indian Agriculture

India is the second largest producer of food in the world, its share being more than 200 million tonnes of food grains, 150 million tonnes of fruits and vegetables, 91 million tonnes of milk, 1.6 million tonnes of poultry meat, 417 million livestock, and 6.05 million tonnes of

fish and fish products. The Indian agriculture has made great strides over the years. The US\$ food grain production has increased more than four fold - from 51 million tonnes in 1950-51 to 212 million tonnes during 2003-04 growing at an annual average rate of more than 2.4 % per annum (Tables 1 and 2). The recent trends in the performance of Indian agricultural production, however, present a dismal picture. During the 1990s, there has been a deceleration in the production of all the principal crops. The growth in production of 'all principal crops' decelerated from 3.19 % per annum during the decade of 1980s to 2.29 % per annum during the decade of 1990s. During the first 4 years of the current decade the growth rate so far has been a mere 0.70 %. It is not only the growth at the aggregated level that has decelerated, similar pattern has been observed in the case of growth rates of almost all the crops. While the growth in production of food grains has fallen from 2.85 % in 1980s to 2.02 % in 1990s and a mere 0.27 % in the current decade so far, the growth of non food grains during the corresponding periods has declined from 3.77 % to 2.69 % to 1.35 %. The growth in the yields of principal crops notably rice and wheat has also decelerated. The overall growth

Table 1. Annual production of important crops during selected periods (million tonnes).

TE ending	Food grains	Rice	Wheat	Coarse cereals	Total pulses	Oilseeds	Cotton	Sugarcane
1980-81	123.73	49.91	34.55	31.24	10.46	7.95	7.95	144.91
1990-91	172.45	72.78	53.03	53.03	13.66	8.42	8.42	223.22
2000-01	203.41	86.91	72.45	72.45	13.14	6.88	6.88	294.67
2003-04	199.70	84.33	69.98	69.98	13.25	6.57	6.57	271.65

Table 2. Compound growth rates of production and yield of important crops. (Base TE 1981-82=100) (% Per annum.)

Crop	Production			Yield		
	1980-81 to 1989-90	1990-91 to 1999-00	2000-01 to 2003-04	1980-81 to 1989-90	1990-91 to 1999-00	2000-01 to 2003-04
Rice	3.62	2.02	-1.47	3.19	1.34	0.88
Wheat	3.57	3.57	-0.12	3.10	1.83	-0.53
Coarse cereals	0.40	-0.02	3.48	1.62	1.82	3.54
Total cereals	3.03	-0.02	-0.53	2.90	1.59	0.85
Total pulses	1.52	0.59	8.01	1.61	0.93	3.22
Food grains	2.85	2.02	0.27	2.74	1.52	0.94
Sugarcane	2.70	2.73	-6.79	1.24	1.05	-5.01
Oilseeds	5.20	1.63	5.17	2.43	1.15	5.02
Cotton	2.80	2.29	10.22	4.10	-0.41	15.9
Non food grains	3.77	2.69	1.35	2.31	1.09	2.40
All principal crops	3.19	2.29	0.70	2.56	1.33	1.53

Source: Government of India 2004

rate of the yield of all the principal crops has decelerated from 2.56 % in 1980s to 1.33 % in 1990s and has recovered slightly to 1.53 % during the 4 years of the current decade. While the growth in food grain production during the 1990s has managed to be just equal to population growth rate (2.02 % versus 2.16 %), the preliminary data for the more recent years indicate a food grain production growth rate far behind the population growth rate. In fact, the underlying trend of rice and wheat production was already less than population growth by the end of the Ninth Plan. The official data show that the net per capita availability of food grains in the country came down from 471 gram per capita per day during the TE ending 1990 to 456 gram per capita per day during the TE ending 2000.

Apart from occasional poor monsoons and some demand-related problems, the long-term trend of agricultural production in India can largely be attributed to a variety of factors such as declining public investment; failure to carry out essential reforms to conserve water and soil; unabated degradation of natural resources, and weakened support systems due to financial problems of state governments. While reversing the trend of declining investment in agriculture, often cited as the most important factor for deceleration in growth, especially during the 1990s, could contribute significantly to reversing the observed deceleration in the growth of agriculture, it will not, however, be prudent to expect that investment alone will reverse this trend. In order to make investment in agricultural infrastructure yield the desired results in terms of higher productivity and production, it would be imperative to pursue reforms vigorously in many areas such as agricultural research, extension, credit, marketing, etc., since these reforms collectively would determine the reduction in cost of production and profitability of agriculture. It is the profitability that would ultimately drive the engine of innovation, entrepreneurship and growth.

India's Agricultural Trade: Some Recent Trends

Exports

India has been both an importer and exporter of agricultural commodities for a very long time. India's agricultural exports after growing at a rate of only 0.78 % per annum during the period from 1961 to 1971, registered a steep hike and during the period 1971 to 1981 increased at an annual average growth rate of 18.36 %. During the decade of 1980s the growth rate of exports again plummeted to 2.24 % per annum. The economic liberalization and trade reforms introduced in 1991, helped India accelerate the growth rate of exports to 7.42 % per annum (Bhalla 2004). While during the first half of the 1990s India's agricultural exports performed extremely well, however since 1995-96 these have shown extreme fluctuations. Although the World Trade Organization (WTO) Agreement on Agriculture in 1995 was expected to improve India's agricultural exports, this does not seem to have happened. There have recently been some signs of a turnaround during 2002-03 and it is expected that this trend will continue. Bhalla 2004, however, opines that this sudden surge in Indian exports has to some extent been the result of the existence of large stocks and transport subsidy made available to exporters.

Examined from another angle, the share of agricultural exports, which constituted more than 30 % of the total exports from the country during 1970-71 and 1980-81, have of late been declining consistently, more so in recent years. The declining trend is more noticeable in the

post liberalization and post WTO periods. In 1990-91 agricultural exports constituted about 18 % of the total exports which in 2000-01 went down to 14 %. In 2003-04 agricultural exports constituted only 12.4 % of all exports (Table 3). Although the relative share of agriculture in total exports has been falling over time and is also lower than that of some other developing countries, the share of agricultural products in total export earnings is still substantial. While the declining share of agricultural exports in total exports is explained primarily in terms of the relatively faster growth in the volume of merchandise exports, it appears that there are other and more fundamental reasons which underlie the sluggishness of agri-exports from India. Further, not only the share of agricultural exports in the total merchandise exports came down steadily over the years but the share of agricultural exports (including processed food) in agricultural GDP also declined from 7.6 % in 1995-96 to 6.3 % in 2001-02 and recovered marginally to 6.9 % in 2003-04.

Table 3. Exports of agricultural commodities from India
(value in million US\$).

Year	Total exports	Agricultural exports	Agr exports as % Total exports
1960-61	1,348	596	44.21
1970-71	2,031	644	31.71
1980-81	8,484	2,600	30.64
1990-91	18,145	3,354	18.49
1991-92	17,865	3,203	17.93
1992-93	1,537	3,136	16.92
1993-94	22,238	4,028	18.11
1994-95	26,331	4,226	16.05
1995-96	31,795	6,082	19.13
1996-97	33,470	6,863	20.50
1997-98	35,006	6,626	18.93
1998-99	33,219	6,035	18.17
1999-00	36,822	5,773	15.68
2000-01	44,560	6,256	14.04
2001-02	43,827	6,146	14.03
2002-03	52,719	6,962	13.21
2003-04	63,843	7,888	12.36

The experience of India since 1971 confirms that growth of agricultural exports from India is highly correlated with the growth rate of international trade in agricultural commodities. The recent slow down in Indian exports since mid-1990s can also be attributed to a slow down in international trade in the latter half of the 1990s. A complementary factor for rapid growth of agricultural products during the early 1990s was the high prices of agricultural commodities prevailing in the international markets during that period and steep devaluation of the Indian rupee. The deceleration in growth after mid-1990s was also on

account of the fall in international prices for most of the commodities and simultaneous steep increase in domestic administrative prices making Indian products noncompetitive.

An examination of trends in the exports of various commodities during recent years suggest that many commodities like rice, meat products, processed foods, fish, fruits and vegetables registered very high growth rates during the 1990s. On the other hand some traditional exports like tea and cotton were not able to sustain their growth rates after the liberalization. Marine products were the largest export earner while oil meals were also a major item in early 1990s. Recently oilmeal exports have suffered and cotton exports have collapsed. (Bhalla 2004).

Imports

India's agricultural imports have displayed extreme fluctuations, with a sudden surge in imports during the mid-1990s. In the post 1995-1996 period, the fluctuations in imports varied in the range of 58 % to 29 % (Table 4). The percentage share of agricultural imports in total imports also has shown very high volatility, having moved in the range of 28 % to less than 2 % during the same period. There was, in fact, a negative growth of 29 % in 2000-01 but since then, agricultural imports grew at a relatively high rate of about 23 %, 22 % and 27 % in 2001-02, 2002-03 and 2003-04, respectively. In recent years, imports of only two items, namely, pulses and edible oils have recorded consistently high volumes. Import of pulses, which used to vary in the range of 3-6 lakh tonnes in recent years except in 1997-98, when over 1 million tonnes was imported, surged to over 2 million tonnes in 2001-02 and has been close to that level since then, essentially reflecting

Table 4. India's imports of selected agricultural commodities 1990-91 to 2001-02 (million US\$).

	1990-91	1991-92	1993-94	1994-95	1998-99	1999-00	2000-01	2001-02
Rice		4	18	3	0	6	3	2
Wheat		0	40	0	266	179	2	1
Cereals and prep	102	66	35	26	25	222	19	18
Pulses	268	121	186	199	322	82	109	663
Sugar	5	0	0	727	127	256	7	7
Fruits and nuts	41	41	69	100	155	136	176	158
Milk/cream	3	3	5	2	1	25	2	2
Cashew nuts	75	108	154	220	207	276	211	90
Crude rubber	126	74	109	118	160	143	152	174
Wool raw	102	80	119	112	161	114	100	131
Cotton raw	0	2	6	161	22	289	259	430
Jute raw	11	2	11	20	14	32	18	20
Vegetable oils	182	101	53	199	745	1,857	1,334	1,356
Pulp and paper	255	121	151	202	284	256	282	295
Agri. imports	915	598	805	1,884	3,292	3,432	2,388	3,049
Agri. exports	3,354	3,203	4,028	4,226	6,626	5,773	6,256	6,154
Total imports	24,075	19,411	23,306	28,654	41,484	49,671	50,536	51,413
Total exports	18,143	17,865	22,238	26,330	35,006	36,822	44,560	43,827

the shortage of domestic production. Similarly, import of edible oils surged from 1 million tonnes in 1995-96 to over 4 million tonnes in 1999-2000 and has since been moving in the range of 4.2 to 5.3 million tonnes per year, accounting for about half of domestic consumption. As in the case of agricultural export items, concerted efforts are required to raise the productivity and production of both pulses and oilseeds in the domestic sector.

Thus on balance, while after 1996 there was a deceleration in export growth, the agricultural imports have shown an increase. In fact the gap between agricultural exports and imports has been narrowing down in recent years. Although India abolished its quantitative restrictions (QRs) in 2001, this has not resulted in any surge of agricultural imports (Table 4). There is an increase in growth but this is mainly because of large imports of edible oils. Recently there has also been a sharp increase in the imports of cotton, raw wool and rubber.

India has a large potential to increase its agricultural exports in a liberalized world provided it can diversify a significant part of its agriculture into high-value crops and in agro-processing. This would depend first on undertaking large infrastructure investment in agricultural and agro-processing as also in rural infrastructure and research and development. India has not only to create export surplus but also to become competitive through increased efficiency of production in agriculture. The potential for exports would also depend on freeing of agricultural markets by the developed countries.

Agricultural Support Policies

India, like most of the other countries including developed countries, employs a variety of instruments to both protect and support its agriculture. These instruments can broadly be clubbed into three categories: domestic policies, import policies and export policies. The domestic policies comprise a wide range of policy instruments like input subsidies on fertilizers, power, irrigation water, public investment in development of water resources – surface and groundwater, government intervention in markets, direct payment to farmers (such as those in the form of deficiency payments, insurance and disaster payments, stabilization payments, and also some compensatory payments), price support for major crops, general services (such as government transfers to agricultural research and development, extension services, training and agricultural infrastructure etc.), other support (comprising such measures like certain tax concessions specific to agriculture or local or substantial level funding for agriculture etc.). Import policies refer essentially to border protection through trade barriers such as quantitative restrictions, quotas and tariffs on imports, which in the process create a wedge between domestic and world market prices. Export policies include those that either promote export (through instruments like subsidies and marketing arrangements that make exportables of a country more competitive) or those policies that constrain exports (often through canalization and restriction of exports and export taxes etc.). Usually, however, import policies are discussed in the context of trade policies rather than support to agriculture *per se*. Domestic support and export policies are often intermingled - export subsidies are more often than not a fallout of domestic support policies that maintain domestic prices of agricultural products within a country at levels higher than international prices. Of the different types of domestic support to agriculture, however, the most important have been through subsidization of input prices and subsidization through payment of higher prices of crop output than that would prevail in a free trade scenario.

Impact of Domestic Agricultural Support Policies

The measure of domestic support is often discussed in terms of two parameters - the Aggregate Measure of Support (AMS) and the Producer Support Estimate (PSE). In terms of both the measures, despite heavy input subsidies, the aggregate impact of the whole gamut of domestic support policies, when viewed in an international trading context, indicate that when all commodities were treated as imports, aggregate farm output was taxed by this policy regime during 1986-2002. Outlays on price support and input subsidies are large, but the impacts of these measures have typically been more than offset by relatively low domestic farm gate prices that prevail due to quantitative import and export restrictions and high marketing costs. More recent protection estimates show that through a combination of rising budgetary subsidies and smaller gaps between domestic and world prices, the taxation of Indian agriculture has declined significantly. When the major commodities are treated as exportables - and relative prices are compared at the border rather than the farm gate - protection even turns positive for 2001 and 2002 (Landes and Gulati 2004; Gulati and Narayanan 2003; Gulati and Kelly 1999).

WTO Agreements and Agriculture: An Overview and Current Status of Negotiations

After the Uruguay Round negotiations, agriculture trade is now firmly within the multilateral trading system. The WTO Agriculture Agreement, together with individual countries' commitments to reduce export subsidies, domestic support and import duties on agricultural products formed a significant first step towards reforming the agricultural trade.

The Uruguay Round agreement had set up a framework of rules and started reductions in protection and trade-distorting support. But this was only the first phase of the reform. Article 20 of the Agriculture Agreement committed members to start negotiations on continuing the reform at the end of 1999 (or beginning of 2000). Those negotiations, currently underway, began using Article 20 as their basis. The November 2001 Doha Ministerial Declaration set a new mandate by making the objectives more explicit, building on the work carried out thus far, and setting deadlines. The negotiations have been difficult because of the wide range of views and interests among member governments.

The prominent issues in the negotiations mandated under Article 20 have been referred to as a 'tripod' whose three legs are export subsidies, domestic support, and market access (more commonly called 'the three pillars' of agricultural trade reform). Non-trade concerns and special and differential treatment for developing countries would be taken into account as appropriate. The negotiations are now in their fifth year. Negotiators missed the March 31, 2003 deadline for producing numerical targets, formulas and other 'modalities' for countries' commitments. A revised draft 'modalities' paper was put up in March 2003 and although it was not agreed, it was used to discuss technical details in subsequent months. A number of 'framework' proposals dealing with main points of the modalities were submitted and discussed before and during the Fifth Ministerial Conference in Cancun, Mexico, September 2003, but it was not until August 1, 2004 that a 'framework' was agreed on. The next stage now is to agree on full 'modalities', which will in turn be used to work out the final agreement on revised rules, and individual countries' commitments. The Doha Declaration had envisaged that countries would submit comprehensive

draft commitments, based on the ‘modalities’ by the Cancun Ministerial Conference — but without modalities, this target was not met either. Meanwhile, the final deadline for completing the negotiations, January 1, 2005, was officially postponed on August 1, 2004, without a new date set, though unofficially it was set for December 2006.

August 2004 Agreed Framework: Salient Features

On Domestic Support

All developed countries will make substantial reductions in distorting supports, and those with higher levels are to make deeper cuts from ‘bound’ rates (the actual levels of support could be lower than the bound levels). The way to achieve this will include reductions both in overall current ceilings (bound levels), and in two components — Amber Box and de minimis supports. The third component, Blue Box supports, will be capped; at the moment the Blue Box has no limits. The fine print contains a number of details but also stresses that these have to meet the long-term objective of ‘substantial reductions’.

All of these reduction commitments and caps will apply. However, the new WTO ceiling at the end of the implementation period will be the lower of the value of trade-distorting support resulting from (i) the overall cut and (ii) the sum of the reductions/caps of the three components. In other words, countries would have to make the required reductions in Amber Box and de minimis support, and be within the capped limit of the Blue Box. Then, if they are still above the overall limit, they will have to make additional cuts in at least one of the three components in order to match the ceiling set by the overall cut.

Developing countries will be allowed gentler cuts over longer periods, and will continue to be allowed exemptions under Article 6.2 of the Agriculture Agreement (they can give investment and input subsidies that are generally available and are integral parts of development programs, and provide domestic support to help farmers shift away from producing illicit crops).

On Export Subsidies and Competition:

The framework states clearly that all forms of export subsidies will be eliminated by a ‘credible’ date. The elimination will work in parallel for all types of subsidies, including those in government-supported export credit, food aid, and state-sanctioned exporting monopolies. The negotiations will also develop disciplines on all export measures whose effects are equivalent to subsidies.

On Market Access

The framework commits members to ‘substantial improvements in market access for all products’. Three or four key points emerged in the bargaining over the framework: the type of tariff reduction formula that would produce the agreed result of ‘substantial improvements in market access’; how all countries’ sensitive products might be treated; how developing countries might be given further flexibility for their ‘special products’ and be able to use ‘special safeguard’ actions to deal with surges in imports or falls in prices; how to deal with conflicting interests among developing countries over preferential access to developed countries’ markets; and how to provide market access for tropical products and crops grown as alternatives to illicit narcotics. Also discussed was a possible trade-off between cuts in some developed countries’ subsidies and improved market access in developing countries.

WTO Negotiations on Agriculture: India's Stand

India has been active in WTO negotiations both as a sovereign nation and also collectively as a principal member of G20 and G33 groups of nations. While conforming to the substance of framework agreement these countries have emphasized that the reforms in all three pillars form an interconnected whole and must be approached in a balanced and equitable manner. These countries have individually and collectively suggested:

On Domestic Support

In order to fulfill the mandate of 'substantial reductions in trade-distorting domestic support', negotiations should determine base periods and initial and final numbers for the overall trade-distorting domestic support in a technically consistent and politically credible manner. Any change in the Blue Box (Article 6.5 of the Agreement on Agriculture) is contingent upon agreement on additional criteria in order to make it substantially less trade-distorting than it is now. It should be ensured that in the Green Box no, or at most minimal, trade-distorting effects or effects on production will be generated by any direct payments claimed to be exempt from reduction commitments. Green Box should be reviewed and clarified to include specific provisions designed to accommodate genuine agriculture and rural development program of developing countries aimed at alleviating poverty, promoting agrarian reform and settlement policies, and ensuring food security and addressing livelihood security needs. Further, for facilitating implementation of Green Box measures in developing countries, their special circumstances would also need to be taken into account. Further, given that de minimis support is the only form of support available to farmers in most developing countries, any attempt to reduce de minimis support in developing countries would negatively affect the programs benefiting subsistence and resource poor farmers.

On Export Competition

In the export competition pillar, a key decision to be taken is the date of elimination of all forms of export subsidies. They have urged countries that apply such instruments to eliminate them in a period no longer than 5 years and with a front-loading of commitments. An early agreement would inject new momentum to the agriculture negotiations and make progress easier in other fronts. They stressed the need to develop new disciplines on export credits, export credit guarantees and insurance programs and food aid so that these instruments are not used so as to displace exports or to promote surplus disposal. They have also recalled the need for making operative the 'July Framework' provisions for special and differential treatment including State Trading Enterprises and the concerns of Net Food Importing Developing Countries (NFIDCs) as provided in the Marrakesh Decision.

On Market Access

On market access, the crucial importance of conversion into ad valorem equivalents (AVEs) for the completion of the core modality – the tariff reduction formula has been emphasized. The treatment of non-ad valorem (NAV)s duties should clearly spell out the methodologies used for conversion so that the verification process does not become cumbersome. The long

held view that the tariff reduction formula is the main component of the market access pillar and should be negotiated before addressing the issue of flexibilities has been reaffirmed. It has been underlined that the tariff reduction formula must contain: (i) progressiveness – deeper cuts to higher bound tariffs; (ii) proportionality – developing countries making lesser reduction commitments than developed countries and neutrality in respect of tariff structures; and (iii) flexibility – to take account of the sensitive nature of some products without undermining the overall objective of the reduction formula and ensuring substantial improvement in market access for all products. It has been strongly stressed that special and differential treatment for developing countries must constitute an integral part of all elements with a view to preserving food security, rural development and livelihood concerns of millions of people that depend on the agriculture sector. The concepts of Special Products and Special Safeguard Mechanism are integral elements of special and differential treatment for developing countries. The elimination of tariff escalation is important for developing countries, as it would allow them to diversify and increase their export revenues by adding value to their agricultural production. A serious concern about the increasing use of Non-Tariff Barriers by developed countries, which acts as impediments to the exports of products of interest to developing countries, has also been raised.

Globalization and Domestic Policy Reforms

The importance of domestic reforms in an environment of increased global integration has been widely acknowledged. It has been asserted that large-scale welfare gains from multilateral agricultural liberalization are contingent on well-functioning domestic economies and that if factor markets were inflexible or public infrastructures were in poor shape only a fraction of the gains from trade reforms would be realized (Anderson 2003). The Reserve Bank of India (RBI) observed in its 2001 Annual Report that “...the pace of progress in liberalization of external trade in agriculture warrants a sense of urgency and priority to institutional reform in agriculture.”(RBI 2001). While stressing the importance of public investment in basic infrastructure the RBI stressed the importance of effective supply chain arrangements that encompassed storage, processing and trading. It also noted a major concern of regulating intermediaries. There is a strong perception that inadequate regulation of intermediaries in agricultural trade acutely affects farmers on account of low farm gate prices. Policy constraints such as restrictions on movement of agricultural commodities and *ad hocism* in export policy have been cited as a major source of regulatory problems (Government of Kerala 2003). The Government of India removed several statutory restrictions in its 2002 National Agricultural Policy. In early 2004 the government liberalized procurement of food grains for the export market; exporters are now permitted to procure rice and wheat from farmers at market-determined rates. Food grain market policy in India has tended to be highly interventionist with the central and state governments actively involved in grain storage and restrictions on the movement of food grains across states (Jha and Srinivasan 2004). Transport costs are also extremely high in India. It has been estimated that comprehensive reform and infrastructure intervention consisting of rationalization of internal movement controls, reduction of transport costs by 50 % and decentralization of public procurement and the PDS would have the effect of increasing welfare by about US\$2 billion. The efficacy of India’s Public Distribution System (PDS) in ensuring food security to the poor has been a subject of extensive criticism. Implementation of modified PDS programs, such as the targeted public distribution system (TPDS), has also proven difficult

in India as a result of weak administrative capacity and resource constraints at the local level. The Planning Commission's mid-term review acknowledges that the minimum support policy (MSP) policy has been ineffective, farm incomes declined in regions subject to the MSP, and in 2001 it was decided to lower stocks by lowering sales prices and increasing food for work. Nearly a third of the growth in the unirrigated regions since the mid-1990s has been through crop diversification, especially to horticultural products. Support price policy, particularly for wheat and rice, has remained delinked from domestic and international market realities, creating significant budgetary costs and market distortion. Although initial upward adjustments in domestic prices may have been justified due to the prevailing negative support to cereals, policy was unable to adjust with market conditions. The inability to reform price policy and certain input subsidies has led to a decline in public investment in agriculture at a time when investment in new infrastructure and institutions is needed. Although the incentives and climate for private investment have improved, it may not be able to fully substitute for weak public investment. Reforms at the border, when they have been implemented, have typically exposed inefficiencies in the domestic market that limit competitiveness. These weaknesses limit the benefits of border reform and, at least in India's case, will require significant investment in transport and marketing infrastructure and institutional capacities to overcome.

As a result of commitments under the Uruguay Round, India has bound all the tariff lines in agriculture. India had bound its tariffs at 100 % for primary products, 150 % for processed products and 300 % for edible oils, except for certain items (comprising about 119 tariff lines), which were historically bound at a lower level in the earlier negotiations. The applied rates have been much lower than the bound rates. In India the product-specific support is negative, while the non-product specific support i.e., subsidies on agricultural inputs, such as power, irrigation and fertilizers is well below the permissible level of 10 % of the value of agricultural output. Therefore, India is under no obligation to reduce domestic support currently extended to the agricultural sector. Export subsidies of the kind listed in the Agreement on Agriculture, which attract reduction commitments, are not extended in India. Also, developing countries are free to provide certain subsidies, such as for export marketing costs, internal and international transport and freight charges etc.

India: Effects of Past Liberalization

Trade liberalization primarily causes changes in producer and consumer surplus and the net effects of this liberalization depend on which of the two effects is stronger. Several researchers have attempted to quantify the effects of trade liberalization. The available results point to mixed evidence of the effects of trade liberalization. A study by Ramesh Chand 1999 attempted to quantify the impact of globalization of agriculture on producer surplus, consumer surplus and net social welfare in the case of four crops, namely, paddy (rice), maize, chickpea and rapeseed-mustard. The study concluded that in the case of studied crops, free trade is likely to have sharp positive impact on net return from production of exportables like maize and rice, whereas, it is likely to have small negative impact on net return from the importables like rapeseed-mustard. In rice where level of input subsidy is high, free trade would not be sufficient to counter the adverse impact on income due to withdrawal of subsidies.

In a recent study Jayati Ghosh, examined the impact and policies strategies with special reference to India, however, opined that more liberal external trade has not, in general, had a beneficial impact on cultivators in India. This has been partly because of the patterns in world

trade which have led to volatile and declining crop prices internationally. But it also has a great deal to do with internal macroeconomic and sectoral policies which have reduced protection to cultivators, caused input prices to rise sharply, made marketing of crops more difficult and exploitative for the direct producers and reduced the flow of institutional credit. The critical question, therefore, in the current context is how to manage trade liberalization and domestic policies so as to ensure the viability of small cultivators and food security in the countryside.

In some products, such as edible oils, international prices on account of subsidies have consistently been lower than domestic prices. Analysts addressing this issue have consistently shown that Indian edible oils do not compete well with imports (Gulati and Sharma 1998). Comparing the ratio of domestic and international prices of oilseeds and oil, Chand 2002 shows that oilseed production, particularly in rapeseed-mustard and soybean, is fairly competitive. This is also shown by a World Bank 1997 study. It is in oils that India is on shaky grounds (Chand 2002). Inefficiencies in the oil-processing sector is one reason; the other factor is the subsidy-driven ability of foreign producers to sell cheap oil. These and other findings indicate that oilseed production in the country faces a threat due to inefficiency of processing and marketing and also due to the transmission of volatility in world prices to the domestic market. India liberalized its, soybean and soy oil import policy in August 1999. This led to dumping of subsidized imports of soybeans on the Indian market. These imports totaled 3 million tonnes in one year (a 60 % rise compared to earlier years) and cost nearly US\$1 billion. Within one growing season, prices crashed by more than two-thirds, and millions of oilseed-producing farmers had lost their market, unable even to recover what they had spent on cultivation. While the declining prices have hurt producers, consumers have gained considerably. This would require the government to balance the competing interests of producers and consumers and perhaps lean towards poor and small-scale producers (Chand et al 2004). In another study on oilseeds, as a result of successive lowering of tariffs on edible oils – first from 65 to 30 %, and then to 15 % in 1998- and lifting of non-tariff restrictions, imports soared, and India went full circle from self-sufficiency to the world's largest importer in only 5 years. As a result of which, thousands of Indian farmers lost their livelihoods (Mark Fried 2004).

In the case of pulses, Sathe and Agarwal 2004 examined the issues related to the opening up of the Indian pulses sector. The study shows that pulses (lentils) imports have not augmented supply to such an extent that there would be a strong, negative relationship between prices and imports of pulses. Though the import duties on pulses have been generally low the result of our import regime has been such that it has not depressed prices in a substantial way.

Liberalization of imports may have a negative effect on the Indian agrarian economy mainly on account of the huge subsidization of agriculture by most of the developed countries, which implies that imports are sold below the cost of production in India, the imperfect nature of world agricultural markets and also on account of higher volatility of agricultural prices in international markets which in turn gets transmitted to the domestic markets.

A study by Sekhar 2004 attempts to assess the implications for food security of the poor through transmission of international price volatility into domestic markets which arises on account of globalization in agriculture. The commodities selected for study are wheat, rice, groundnut oil, soybean oil, coconut oil, sugar, cotton and coffee. His study shows that extreme volatility in commodity prices, particularly of food commodities, adversely affects poor agricultural laborers and those engaged in the unorganized sector because their wages are not index-linked. For exporters, price volatility increases cash-flow variability and reduces

collateral value of inventories. In order to understand the implications of trade liberalization, particularly import liberalization, it is essential to examine the long-term movements of domestic and international prices and assess the degree of divergence between the two. A price wedge – percentage difference between the monthly domestic and international prices for 10 years since 1990 – has been calculated for this purpose. His study shows that where bound tariffs are much higher than the observed price wedges, the bound rates may be lowered. He concludes by stating that as short-term variability in agricultural prices in international markets is not found to be higher than domestic markets in India, international trade may be used as a short-term price stabilization strategy in case of supply shocks. At the same time, care should be taken to negotiate appropriate tariff bindings to protect against cheap imports resulting from unfair subsidization in some developed countries.

Potential Impacts of Liberalization

Estimating the potential impacts of liberalization of trade in agricultural and non agricultural commodities in the wake of WTO negotiations on agriculture is complicated and would depend on the outcome of the negotiations currently underway. More specifically it would in large part depend upon the extent to which the developed countries are willing to scale down their domestic support, export subsidies, tariffs, and non-tariff barriers and let increase their market access for the developing and least developed countries. While several proposals are currently on the table in respect of each of these components, agreements have alluded all of them. Several researchers have nevertheless attempted to evaluate, using the scenario analysis approach, the likely impacts of some of the alternative proposals under discussion in one or more of these areas on one or more of the affected variables viz international prices, production, trade and welfare at the global and /or at the level of a region/country. In the following paragraphs we attempt to very briefly give a summary of impacts from a few of the selected recent studies on the subject. It may, however, be important to mention that the results obtained from different studies are not strictly comparable because of the differences in underlying assumptions, the differences in methodology employed, the time frame considered and the nature of impacts analyzed. The results from most of the studies on liberalization of agricultural trade point towards an increase in international prices of a majority of the agricultural commodities, increase in volume of international trade and an increased welfare consequent upon liberalization. The impacts on production of different crops, principally the cereals, however, appear to be marginal.

USDA 2001 has estimated that the full elimination of global agricultural policy distortions would result in an annual world welfare gain of US\$56 billion. Moreover, elimination of agricultural trade and domestic policy distortions could raise world agricultural prices by about 12 %. Evaluating the impacts of comprehensive multilateral liberalization of agricultural trade policies using a CGE model, Cline estimates that the welfare benefits from a free trade in agriculture for India will be to the tune of US\$0.82 billion. Full liberalization of OECD farm policies would boost the volume of global agricultural trade by more than 50 % but would cause real food prices to rise by only 5 % on average (Anderson, 2003). Some models have projected food price rises of about 8 - 12 % (Diao et al. 2002). Another study (Beghin and Aksoy 2003) estimate that world prices are likely to go up by even higher margins:

10-20 % for cotton, 20-40 % for dairy products, 10-20 % for groundnuts, 33-90 % for rice and 20-40 % for sugar. Results of a World Bank study indicate that a removal of agricultural tariffs and subsidies by all WTO countries would generate an increase in developing country exports of 15 % and increase in imports of 12 %. In terms of this study, India would experience an increase in exports of 13 %. World prices of wheat are expected to rise by about 10 % and prices of rice are expected to rise by about 16 %. As a net exporter of both rice and wheat, India, therefore, stands to gain significantly from terms-of-trade improvements.

Babcock et al. 2003 using the FAPRI model have analyzed the impact of liberalizing agricultural markets on world trade flows, prices and market equilibrium. The analysis has been carried out under two possible scenarios - the full trade liberalization scenario and trade-only liberalization scenario. The results obtained suggest that under a full liberalization scenario, the world wheat, rice and cotton prices are estimated to go up by 4.8 %, 10.3 % and 15 %, respectively. Under the trade-only liberalization scenario the corresponding increase in the prices of wheat, rice and cotton are likely to be of the order of 7.6, 10.6 and 3 %, respectively. Because of the removal of export subsidies Indian exports of wheat are estimated to decrease under the full liberalization scenario and India is projected to become a net importer by 2003/04 with trade only scenario. Rice trade increases by 29 % under the full trade scenario and by about 27 % in the trade-only scenario. Most of these exports are captured by China, India and Vietnam followed by Thailand. On an average Indian exports of rice are estimated to grow by over 100 % under the full liberalization and by 56 % under the trade-only scenario. In the case of cotton, under the full liberalization scenario net cotton imports decline by 16 %. In the trade only scenario Indian exports of cotton increase by just 2 %. Thus India is likely to gain much more in the rice and cotton sectors under a scenario of full liberalization. The present exercise, however, does not take in to account the transportation cost when estimating the flow of trade. In the case of wheat, the transportation cost vis-à-vis the US is relatively high, and India is likely to have an advantage when competing with the US in export destinations closer to the former even after elimination of export subsidies.

Evaluating the implications of some of the alternative tariff reduction structures, a study by Vanzetti and Peters 2003 using general equilibrium models, shows that the one tariff-harmonizing Swiss formula component with rather ambitious coefficients of 25 for developed and 50 for developing countries gives overall welfare effects that are not much higher than a continuation of the Uruguay Round approach. Assuming reduction in export subsidies by 45 % and domestic support by 55 % further reduces the global welfare gains.

Another recent World Bank study shows that in terms of potential reform, or the pillars of agriculture negotiations, increased agricultural market access is the key to successful liberalization of merchandise trade, accounting for well over half the potential economic welfare gains to developing countries and the world as a whole from removing all merchandise trade distortions and farm subsidies. Within agriculture, the potential gains from market access are shown to be far more important than those from abolition of domestic support and export subsidies, accounting for 93 % of the gains from total agricultural liberalization (Anderson 2003).

Another study demonstrates how improving market access in the developed countries through lowering of tariffs would be beneficial to India. Domestic support has been viewed as the equivalent of implicitly imposing tariffs. Cline 2003 has estimated the tariff equivalent of all subsidies and added it to tariff rates in the Quad (US, EU, Japan, Canada) to indicate the overall levels of protection provided by the Quad to agriculture. Thus in the case of EU and US if

tariff equivalents of subsidies are taken into account the overall tariff protection rises substantially. Using this approach, it is suggested that unless domestic support is reduced the real tariff reduction effects for India would be only two-thirds of the total gain. This would be particularly the case for the US and the EU whose tariff equivalent of subsidies is far greater than for other countries. In fact, 'tariffication' of the level of subsidies and adding it to the tariff rates is a far more logical way of addressing the effects of subsidies than through notifications of subsidies and targeting reduction commitments on these notifications.

Anderson 2003 has projected that a complete global liberalization of agricultural trade (including the removal of massive agricultural protection by OECD countries) would have the effect of increasing net annual exports of agricultural and food products by US\$2.7 billion from India: a 40 % rise over the current level of agricultural exports. The current annual value of agricultural production in India is close to US\$100 billion. A US\$2.7 billion growth in exports would constitute in itself close to 2.7 % annual growth in value of Gross Domestic Agricultural Product, which equals the current average annual growth rate. This is based on the assumption that all additional exports come from additional domestic agricultural production and is not diverted from domestic consumption. Thus assuming an adequate supply response, growth rates in agriculture production may tend to double on average for the first few years.

UNCTAD using a GTAP - CGE model, has attempted to evaluate the impacts of two agricultural tariff reduction scenarios (1) 3 large band approach I-soft tariff reduction; and (2) 3 small band approach I- hard tariff reduction, on imports, exports, production and welfare in India (UNCTAD 2005). The results obtained suggest that while welfare improves with tariff cuts in the hard scenario the same is not true for other variables. Developed countries as a whole see much larger gains in the soft scenario in comparison with the hard scenario (Table 5). Some products emerge as being sensitive on several counts. Paddy sees a decline in output and employment in the soft scenario, but both exports and imports increase under both scenarios. However, the extent of import increase, from a smaller base, is much larger than the extent of export increase. The study thus suggests that paddy and rice trade should be liberalized cautiously. Vegetables, nuts and fruits also show an output and employment decrease along with an increase in trade. Oilseeds and oil show an output and employment decline accompanied by import increases and minor export increase.

In another major study to analyze the implications of selected scenarios in all the three pillars of agricultural negotiations, UNCTAD using partial equilibrium modeling employed Agricultural Trade Policy Simulation Model (ATPSM) to assess the implications of tariff cuts, export subsidy cut, and domestic subsidy cut on Indian agriculture (UNCTAD 2005).

Table 5. Impact on welfare: welfare gains (in million US\$).

EV	Soft	Hard
India	210.93	331.05
Developed countries	2,036.05	22.11
Developing countries	752.34	42.74
Least developing countries	18.37	4.95

For evaluating the implication of tariff cut, four scenarios were formulated – continuation of Uruguay Round Formula, three band soft approach, three band hard approach and four band hard approach (Table 6). Comparing all the four simulations at an overall level it is easy to observe that the total welfare is highest in the third scenario, which is a hard scenario. However, export and import growth is higher in the case of the four-band simulation. The study suggests that for India the negotiating strategy should be based on maximizing the producer surplus, as the producers of agriculture are generally poor and a pro poor strategy would imply a maximization of the producer surplus. However, it is also to be noted that poor urban consumers are likely to be hit by tariff changes. On balance, however, as a larger share of total population is dependent on agriculture, maximizing producer surplus may be a priority-negotiating objective. On this basis the Uruguay Round Formula or the four-band formula may be the right approach to adopt.

Table 6. Change in key agricultural trade, production and welfare indices for India.

	UR formula	3 band soft	3 band hard	4 band hard
Production (% change)	1.266	1.180	1.333	2.082
Imports (% change)	7.76	6.44	13.90	8.87
Exports (% change)	67.92	62.20	90.14	103.17
Consumer surplus (million USD)	-948	-909	-766	-1,642
Producer surplus (million USD)	970	920	825	1,696
Total welfare (million USD)	73	55	139	112

The change in volume of agricultural production sees the most favorable effect under the Uruguay Round scenario, and what is interesting to observe is that production would increase in response to tariff liberalization in all scenarios except in the four band scenario (Table 7). The distribution of gains in output, however, favors cash crops such as cotton, sugar, tropical fruits, vegetables, roots and tubers, meats and staple grains such as rice and wheat. These would respond favorably to market access gains in other countries. The decline in production can be seen in hides and skins (which in any case has 0 tariffs), coarse grains, milk and livestock. This may indicate substitution in the consumption basket for coarse grains with other grains, as well as import surges in those items thus reducing production. The overall gains on an average in most products can be observed in the UR scenario.

For evaluating the impact of cut in export subsidies by developed countries, partial equilibrium modeling – ATPSM was employed. The simulations involving ATPSM involve eliminating export subsidies given by developed countries – the US, EU, Canada and Norway for agricultural products. The results (Table 8) show that on elimination of export subsidies, India's imports increase by approximately 0.2 % and exports by 12% %. Exports increase mainly in livestock, meat products, butter, barley, tomatoes, apples and sugar. Production increases by 0.1 % and consumption falls by 0.1 %. Welfare for India increases by 12 million dollars. Producer surplus increases by US\$375 million and consumer surplus falls by about US\$362 million. Government revenue increases by a negligible percentage.

Table 7. Change in production.

Product	Based on volume change				Based on value of production change			
	UR formula	3 band soft	3 band hard	4 band hard	UR formula	3 band soft	3 band hard	4 band hard
Livestock	-1.37	-1.10	-2.40	-1.70	-7.4	-6.2	-12.5	-9.2
Bovine meat	0.20	0.15	0.25	0.15	2.3	1.9	13.3	1.9
Sheepmeat	1.28	1.20	2.15	1.75	3.8	4.0	6.7	6.0
Pigmeat	0.53	0.48	0.96	0.75	2.4	2.2	4.2	3.3
Poultry	0.63	0.51	1.03	0.66	2.4	1.9	3.9	2.5
Milk, conc.	-3.04	-3.11	-2.41	-4.03	-0.2	0.6	5.3	0.7
Butter	0.12	0.12	0.06	0.15	4.7	5.0	3.7	6.4
Cheese	0.00	0.00	0.00	0.00	N/A	N/A	N/A	N/A
Wheat	1.02	0.62	1.21	1.64	4.2	2.6	5.1	6.9
Rice	0.37	0.44	0.43	0.75	1.5	1.7	1.8	3.0
Barley	-6.77	-5.22	-8.47	-11.92	-6.7	-5.0	-7.9	-11.6
Maize	-0.15	-0.06	0.19	-0.14	0.6	0.7	2.0	1.6
Sorghum	-1.12	-0.94	-1.24	-1.71	-2.4	-1.9	-2.4	-3.2
Pulses	0.32	0.45	0.54	0.34	1.1	1.6	2.1	1.2
Tomatoes	1.74	1.14	2.03	0.74	3.2	2.1	3.8	1.4
Roots and tubers	0.48	0.31	0.57	0.41	2.1	1.3	2.5	1.8
Apples	1.02	0.63	-1.61	0.65	2.9	1.8	-4.5	1.8
Citrus fruits	1.51	1.00	1.60	1.18	2.6	1.7	2.8	2.0
Bananas	0.00	0.00	0.00	0.00	N/A	N/A	N/A	N/A
Other tropical fruits	0.45	0.36	0.39	0.52	1.4	1.1	1.4	1.6
Sugar, raw	1.09	1.05	1.45	1.98	2.5	2.3	3.2	4.5
Sugar, refined	1.29	1.39	2.25	2.33	3.7	3.9	6.5	6.7
Coffee, green	0.04	0.04	0.09	0.06	0.1	0.1	0.5	0.3
Coffee, proc.	0.36	0.24	0.27	0.25	0.6	0.4	0.7	0.4
Cocoa beans	0.02	0.02	0.02	0.02	0.0	0.0	2.9	0.0
Cocoa, proc.	0.20	0.12	0.12	0.12	0.9	0.5	13.5	0.5
Tea	0.21	0.20	0.39	0.42	1.0	1.0	2.2	2.0
Tobacco leaves	0.29	0.22	0.41	0.51	1.7	1.3	2.5	3.1
Hides and skins	-0.59	-0.69	-1.23	-1.18	0.4	0.2	-0.3	-0.4
Oilseeds, temp.	0.43	0.31	0.66	0.60	2.4	2.0	4.1	3.1
Oilseeds, trop.	0.31	0.31	0.37	0.35	1.8	1.9	2.7	1.9
Rubber	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
Cotton	0.52	0.43	0.43	0.64	1.7	1.4	1.6	2.1
Vegetable oils	0.07	0.02	-0.04	0.18	1.1	0.8	2.5	1.9
Average of volume changes	0.04	0.02	0.01	-0.10	1.3	1.2	1.3	2.1

Table 8. Export and domestic subsidy cut simulation results: impact on production of select commodities.

Commodity	% Change in production due to	
	Export subsidy cut	Domestic subsidy cut
Wheat	0.18	0
Rice	-0.003	0.01
Barley	0.88	-.01
Maize	-0.27	0.003
Pulses	0.0006	0
Cotton	0	0
Raw sugar	0.18	0
Total (all commodities including those not listed above)	0.12	0.001

Partial equilibrium modeling - ATPSM was also employed for evaluating the impact of cut in domestic subsidy. Domestic support expenditure is reported for four countries - EU (US\$31 bn), US (US\$5 bn), Japan (US\$4 bn) and Republic of Korea (US\$8 bn). The expenditure is mainly on bovine meat, pig meat, dairy products, cereals, sugar and oilseed. A cut in domestic support under a specified formula (domestic support cut in the following manner: >US\$25 bn, 20 % cut, US\$12-US\$25, 10 % cut, US\$2-US\$12, 5 % cut and <US\$2, 5 % cut) leads to an export increase of 0.15 %. Export increases are registered mainly in livestock (210 %), butter (40 %), sugar (16 %) and poultry (10 %). Barley and sorghum register falls in exports. This could be because other countries are more competitive producers. Production increases by a negligible percentage of 0.001 % (Table 8). Consumption reduces by 0.002 %. Total welfare improves by a marginal 0.3 million dollars; with government revenue increasing by a small proportion and a positive producer surplus and negative consumer surplus. However, it is to be noted that domestic support only includes AMS cuts, not blue box or de-minimum and, hence, does not provide a comprehensive picture of the total support which may be subject to reduction commitments. It also does not include product-specific caps which would further limit the extent of subsidy. This is why the effects of reductions in domestic support would be minimal.

A comparison of the relative impacts of alternative scenarios analyzed in a partial equilibrium framework indicate that cuts in tariffs would yield higher gains overall for India, rather than domestic support and export subsidy cuts. Moreover, the deeper the tariff cuts the higher are the gains. However, if the number of tariff bands are increased, even with deeper tariff cuts, India's gains would decrease. Asymmetric across the board cuts of the Uruguay Round would yield the most significant gains for India in terms of several parameters, but export gains are modest, and the losses would also be lower than in the three or four band formula. The effects of reduction in domestic subsidy are much lower than the effects of reduction in export subsidy. Thus India should target a negotiating strategy preferably with Uruguay Round cuts. However, if that were not possible, then fewer bands with deeper

progressive cuts would be better for India. However, the welfare gains of tariff liberalization along with domestic subsidy and export subsidy reductions are very significant.

In another comprehensive study on evaluating the impact of two agricultural trade liberalization proposals viz the Swiss Formula and Uruguay Round on India, Kirit Parikh 2004 employed a sequential applied general equilibrium model laying particular emphasis on the impact on welfare. The model has a rich policy structure and provides for tariff policy, trade quotas, stock policy, tax policy and redistributive policy. The alternative scenarios analyzed are: SAM–Reference Scenario (which reproduces the base year SAM as a solution for the year 1997 when the run is with actual 1997 tariffs), FTR- Free Trade Uruguay Round with 50 % cut (all agricultural tariffs cut by 50 %, this is the Uruguay round scenario), and FS1 – Swiss Formulae with $c = 1$. In all the scenarios, the world market prices are kept the same. The scenarios thus reflect a unilateral liberalization by India and also assume that India's trade has little impact on world prices. All the scenarios are run for 4 years starting 1997. The policy changes are introduced in 1998. The impacts on agricultural prices are thus visible only in 1998 and the impacts on output are seen only in 1999 as agricultural output comes with a one-year lag. The simulations show that the welfare impacts are not unambiguous and neither of the two policies can be shown to be superior to the reference policy. It does, however, indicate that after a couple of years, greater trade liberalization is beneficial for a large number of persons indicating that with some safety net policy such as employment guarantee scheme, one may be able to get a win-win outcome.

In general, thus, if the prices of agricultural commodities like rice, cotton, wheat and sugar were to rise, India could generally improve its exports. Developing countries and the agricultural market in general stand to gain major benefits of reducing and eliminating subsidies and domestic support. It is, however, necessary to emphasize that this is only a general equilibrium picture and might be slightly more optimistic than reality,² as certain products of particular interest to India are likely to be liberalized least and there are other competitors who will, because of high trade logistic costs in India, rush to fill the breach.

Will India Be Able to Make Use of the Opportunities: Supply Side Scenario

Various analyses of some of the proposals under discussion at the WTO show that in overall terms India stands to gain from liberalization of trade in agriculture. However, given the recent trend of a slowdown in the growth of agricultural production and increasing domestic demand, will India be able to encash on the opportunities that may be made available to it by a more liberalized trade regime?

The recent mid-term appraisal of the 10th Five-Year Plan, commenting on the supply side scenario notes that agricultural growth has been poor, with productivity growth coming to almost a complete halt in several products. Within the crop sector only fruits, vegetables,

² Critics also point to the many limitations of CGE models and the estimates they generate, and question the extent to which they should be informing trade policy at all.

condiments and spices have grown by over 2.5 % per annum. Output prices have fallen relative to input prices reflecting a fall in profitability in agriculture. On the demand side per capita consumption of all cereals, pulses and edible oils have fallen, with the growth of consumption decelerating for all types of food including milk, vegetables and fruit. This situation implies that there may be a need to focus on production and demand, increasing the scope of the provision of subsidies, through minimum support price in other areas such as the eastern region. Rao 2005, however, opines that the prospects for exports of food grains from India seem real, at least for a decade, if the growth rate in food grains output of around 3 % can be achieved, as the domestic demand for food grains is unlikely to exceed 2.6 % per annum with even 7 % growth rate in GDP. India is unlikely to absorb domestically the whole of food grains output from a growth rate of around 3 % for quite sometimes unless drastic changes in income distribution can be effected.

Conclusion

The evidence available from a number of research studies carried out to ascertain the likely impact of trade liberalization on the Indian agricultural sector suggests mixed results depending upon the assumptions made in the model employed to analyze and the extent to which developed countries cut their subsidies. On balance, the results tend to indicate that India's agricultural markets in general stand to gain from liberalization and derive benefits of reduction in subsidies and domestic support by developed countries. To enable India realize these gains it will need to increase its agricultural production through a step up in crop productivity, which has of late been showing the trend of a slowdown.

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