

# **FREER AGRICULTURAL TRADE IN INDIA - IMPACT ON AGRICULTURAL GROWTH, POVERTY AND PRICES**

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Degree of **Doctor of Philosophy in Agricultural Economics**  
to the Tamil Nadu Agricultural University, Coimbatore

By

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**2001**

## CERTIFICATE

This is to certify that the thesis entitled " **Freer Agricultural Trade in India - Impact on Agricultural Growth, Poverty and Prices**" submitted in part fulfilment of the requirements for the degree of **Doctor of Philosophy** in **Agricultural Economics** to the Tamil Nadu Agricultural University, Coimbatore, is a record of bonafide research work carried out by **Mr. ANIL KURUVILA** under my supervision and guidance and that no part of this thesis has been submitted for the award of any other degree, diploma, fellowship or other similar titles or prizes and that the work has not been published in part or full in any scientific or popular journal or magazine.

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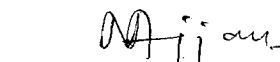
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**ANIL KURUVILA**

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*Abstract*

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## **ABSTRACT**

### **FREER AGRICULTURAL TRADE IN INDIA - IMPACT ON AGRICULTURAL GROWTH, POVERTY AND PRICES**

By  
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Challenges posed by the liberalised agricultural trade have to be addressed on priority basis considering the agricultural exports and growth linkages, changing price scenarios, employment generation, food consumption, poverty and export competitiveness of the agricultural commodities. Now the question is how best the country can develop expertise to increase exports of agricultural commodities with safety considerations and capitalize the comparative advantage in most of the agricultural commodities without affecting the basic objective of food security. This study is contemplated with the objectives namely (i) to assess trade openness of the economy and agricultural trade openness in particular, (ii) to analyze export performance of major agricultural commodities during pre and post reform periods, (iii) to examine the temporal relationship between agricultural exports and agricultural growth, (iv) to analyze the trend in rural poverty and the relationship between agricultural exports, agricultural growth and rural poverty in the context of liberalized agricultural trade, (v) to study the price variability in domestic and world markets and the extent of transmission of world price instability to the domestic market in the pre and post liberalisation periods, and (vi) to assess the export competitiveness of India's agricultural production in the context of liberalised trade.

The study relied on secondary data collected from various published sources. Secondary data pertaining to economic variables were collected for the period between 1970-71 and 2000-2001. The export led growth was tested using Multiple Co integration Framework and the model was estimated using Johansen Maximum

Likelihood Method. A recursive model was employed to assess the relationship between agricultural exports, growth and poverty. Testing of price variability of both international and domestic prices was carried out using the residual trend approach and cross product residual trend was used to know the price transmission, if any. The effect of domestic factors, exchange rate and export unit value on producer's price was attempted using the decomposition frame work in which the variation in producer's price explained by these factors were estimated.

Agricultural trade openness, reflected in the ratio of agricultural exports to agricultural GDP, which was four per cent in 1990–91, increased to a maximum of seven per cent in 1995–96 and thereafter there was a slow down to about five per cent in 1999–2000. The ratio of agricultural imports to total GDP was less and it was around one per cent. During the post reform period agricultural imports grew more exponentially at the rate of 16 per cent in rupee terms and nine per cent in dollar terms, which is not faster than exports. Balance of trade in agriculture at current prices was Rs.1419 crores in 1991 and it increased to a maximum level Rs.9827 in 1996–97 and at present it is Rs.8509 crores.

The results indicated that the variance explained by trade policy dummy variable increased from three per cent in period two to five per cent in time period 12 and the growth was more than that for exports. This established that more than exports trade policy orientation is what determines per capita GDP growth. The variance of per capita agricultural GDP explained by index of agricultural production was less than agricultural exports and trade policy dummy. So to increase per capita GDP, production was not sufficient, but exporting the production and an outward oriented policies are more important for GDP growth. The finding that trade policy and export growth could alter real per capita GDP growth in agriculture to some extent is consistent with the assumptions of exports promotion strategy, though it could not fully establish the export led growth hypothesis. In the case of per capita agricultural GDP, though it is endogenous, it is influenced more by trade policy orientation than by exports.

Export was found to be an important factor determining output growth and the estimated elasticity (0.0658) is statistically significant at 10 per cent level of probability. After allowance is made for the changes in the incidence of rural poverty associated with other variables, there is definite negative relationship between the incidence of rural poverty and agricultural growth in India. Overall, the results

revealed that there is a positive link between trade liberalisation and economic growth and such linkage would help the country to eradicate poverty in the long run.

Variability in both international and domestic prices had declined for most of the commodities during the reform period. From the results it is found that there is no evidence of systematic increase in instability in prices of major agricultural commodities and opening up of Indian agriculture to international trade could have repercussions on the Indian and international prices. There is also no indication that international price would impart instability to domestic prices. NPCs for many of the agricultural commodities are less than one in the reference years indicating the price competitiveness for Indian products.

Potential advantages of agricultural commodities are to be identified and private sector participation should be promoted through contract farming and land leasing arrangements. To capitalize the steady exports, agricultural production technologies are to be reoriented to increase production of exportable crops. It is necessary to implement a politically feasible comprehensive agricultural liberalisation programme to eradicate poverty by promoting exports. Recent fall in prices of agricultural commodities and surge in imports affected the domestic industry. So the Government has to play an active role through domestic intervention, export - import policy and tariff on imports to protect the domestic industry within the framework of WTO.

India has greater advantage of cashing in the opportunities by increasing productivity of pepper through re-plantation, focus on organic cultivation and value addition. There is a need for producing quality chilli free of pesticide residue, which are in demand in US and Europe. To bring about an increase in the availability of cashew to meet the requirement of cashew industry, large tracts of rainfed and marginal lands should be brought under cashew cultivation. With export-oriented unit allowed to import tea for the blends and re-export it as value added the demand South Indian tea was affected. It is suggested that productivity has to be increased in order to reduce cost of production and quality of tea has to be improved to meet both domestic and international market. Appropriate tariff rate has to be imposed, which must be within the level of prescribed rate, so that surge of imports of cheap tea can be curbed. The recent sharp fall in international coffee prices due to surplus coffee supply has adversely affected the Indian coffee exports.

*Introduction*

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## **CHAPTER - I**

### **INTRODUCTION**

#### **1.1. AGRICULTURAL TRADE LIBERALISATION**

Liberalisation in agricultural trade has been sought in the Uruguay Round Agreement to establish a fair and market oriented agricultural trading system so that the comparative advantage that the country enjoys in the production of agricultural commodities can be translated into trade opportunities and there would be improvement in market access. The agreement covers several other areas like public stock holding for food security purposes, trade related intellectual property rights and sanitary and phytosanitary measures. The intellectual property rights aims at extending patent or a patent like protection to agriculture, while sanitary and phytosanitary measures focus on strict health and safety regulations. The agreement has long term objectives such as substantial progressive reduction in agricultural support, correction and prevention of restrictions and distortions in world agricultural markets.

The Agreement on Agriculture (AoA) covers major areas, namely, market access, domestic support and export subsidies. Market access envisages tariffication of all non-tariff barriers and then progressive reduction of tariff levels. Under the reduction commitments on import tariffs, the average cut for all agricultural products is 36 per cent while minimum cut per product line is 15 per cent keeping the base 1986-88 for developed countries and the period stipulated for effecting this is between 1995 and 2000. The reduction commitments for developing countries are 24 per cent for all agricultural products and 10 per cent per product line which are to be implemented between 1995 and 2004. The domestic support to agriculture (Aggregate

Measure of Support-AMS) needs progressive reduction and the exception to the reduction in AMS include green box, blue box and special and differential treatments. For developed countries, the AMS reduction commitment is 20 per cent during the period from 1995 to 2000 and it is 13 per cent for developing countries between the period, 1995 and 2004 keeping 1986-88 as base. Domestic support given to the agricultural sector is to be within the specified *de minimis* level of 10 per cent of the total value of agricultural produce for developing countries and five per cent for developed countries. Export subsidies are also subject to reduction commitments as per the negotiations. The export subsidies in terms of subsidy value should be reduced to 36 per cent within the period of six years (1995-2000) for developed countries and the reduction commitment is 24 per cent for developing countries within the period of 10 years (1995-2004) keeping the base 1986-90. In the case of subsidized quantity the reduction commitment is 21 and 13 per cent respectively for developed and developing countries.

## **1.2. Consequential impact**

Currently, India is in the process of adjusting its own trade regime in the light of the new rules established by the Uruguay Round Agreement on agriculture. Now, agricultural trade in India has been freed in order to comply with the commitments set out by the trade agreement, encourage export-oriented production, improve market access for the agricultural products and create a more competitive environment in the economy as a means to improve the productivity and efficiency. The major trade liberalisation measures were initiated from 1991 onwards, which include decanalisation of the imports of agricultural commodities, removal of quantitative restrictions on all agricultural products and reduction in tariff rates and they aimed at correcting the anti-agriculture bias in trade policies. Several empirical studies

(Gulati, 1998; Chand, 1998) attempted to analyse the impact of these liberalized measures on Indian economy, particularly on agricultural sector.

With many countries embarked in the process of trade liberalisation and domestic policy reforms, there are changes, which will have an impact on the world market, consequently, on the growth of the domestic economy (Mukherjee and Vashishtha, 1996). Potential contribution of trade orientation for economic development of a country has been debated after the emergence of WTO. It was perceived that international trade provides some significant benefits to the farmers of the developing countries as they capitalise the comparative advantage and it also leads to a more efficient use of resources resulting in high productivity and efficiency gains. On the other hand, trade openness in agricultural commodities is likely to have an adverse impact in the developing countries like India on output and employment. It is also pointed out that the characteristic features of developing country like India namely labour intensiveness, deterioration of terms of trade, instability in demand of export and paucity of financial capital hinder export gains. The impact of the liberalized trade has various dimensions and such dimensions are discussed below in consonance with the spelt objectives.

### **1.2.1. Food Security, Employment and Income Issues**

Food security is one of the major concerns under non-trading issues of AoA. Having achieved food self-sufficiency, several concerns were expressed about the effect of AoA on India's food availability and security. In India, a large segment of population is food insecure and any adverse policy will have negative effects on the poor. India, at present, does not have any obligation to remove both product and non product subsidies, as the AMS is less than the prescribed limit of 10 per cent of the

total value of agricultural production. Any step towards removal of subsidies may increase cost of production, which could raise input cost and affect many of the farmers, especially small and marginal farmers, who predominate Indian agriculture. Under such conditions, there could be reduction in production of food, which may lead to increase in prices of food and force many into food insecure range. Consequently, this may also lead to increase in imports of food grains from other countries, which may further reduce farmers' incentives. However, in India, the subsidies form part of green box exemptions and hence the flexibility exists. But, for the reasons of macro economic stability, the pressure on reducing subsidies exist ([www.wto.org](http://www.wto.org)).

Another important concern is diversion of lands from food crops to commercial crops due to better price advantage in the international market and such diversion also lead to food insecurity and degraded environment (Patnaik, 1996). It is well documented that such shift away from food crops, if not compensated adequately to meet the growing food demand through increase in yield level by new technologies, food security will be affected. Large-scale imports of food also affect food-producing farmers due to effect of price transmission and internal prices will go down affecting the profitability of farming. As employment generation ability is different for different crops, the shift will affect rural employment of the agricultural wage earners and income of the rural poor households.

The food security and related issues at present are whether freer trade reduces foodgrains production in the country and what would be the implications for food security if the status of food grain self-sufficiency is lost? Under such condition if the country resorts to imports of food, world prices may increase which will lead to

increase in cost of imports. Similarly, on the export side, if the country exports under freer trade negotiations, such exports would affect internal prices of foodgrains affecting food security. Whether the liberalisation add to volatility in supplies and prices? Whether surplus stock will be reduced? These issues need a thorough and simulated analysis for better exposition of the trade liberalisation.

### 1.2.2. Price Instability and Transmission

An important anticipated benefit accruing from Uruguay Round is reduction in price instability and this is possible through absorption of production shocks and prices would have less work to do. Further, if the industrial countries lower their protection to farmers and eliminate export subsidies, the world prices will turn sharply upwards. There is another concern that there would be output shifts and such shifts from a high cost but stable producing area to a low cost but unstable production area may create price instability. Though tariffication and tariff reduction are expected to stabilize market prices, evidences have shown that they have very little effect on the stability of market prices and indicated that tariff is not only the factor that has a bearing on price stabilization (Sharma *et al.*, 1999).

Another important argument put forth is that freer trade creates high instability in the world prices of agricultural commodities and such instability would be directly transmitted to domestic prices since domestic prices move closer to international prices. These sorts of upheavals affect the stability of export earnings and that lead to deterioration of terms of trade. Domestic relative prices of agricultural commodities in India are quite different from world price relatives and it was argued that dismantling the existing restrictions on international trade would in general worsen the terms of trade.

### **1.2.3. Price Competitiveness of Agricultural Products**

Trade liberalisation has put Indian agriculture into the framework of global competition and rule of global market. These developments have raised the question of competitiveness of Indian agriculture. Competitiveness of the country with respect to individual crops will play an important role in acreage determination. Due to opening up of trade, the shift in cropping pattern would benefit the farmers to realize comparative advantage. It is argued that agricultural growth need not any longer be limited by the dictum of self sufficiency, but it may be benefited from trade by shifting to new activities with favourable domestic and export demand. There exists potentials especially in view of the comparative advantage India enjoys in the production of rice and wheat (Rao, 2001). There is also considerable export potential in cereals, fruits and vegetables. On the export side, India has begun to diversify, partly in order to enjoy the full benefits of increased market access. For instance, fruits, nuts and vegetables have become major foreign exchange earners. Price signals in the world market show that India is placed at advantageous position in the international market to export agricultural commodities (Bhatia, 1994; Vyas 1994). But trade opportunities for India are asymmetric because lower international prices lead to imports but higher international prices do not lead to exports due to quality problems.

### **1.3. Threats and Opportunities in Post WTO**

Trade negotiations have not really brought out trade liberalisations in agriculture to the desired extent and the distortions in agricultural trade have not been reduced as expected and anticipated increase in exports of agricultural produce from developing countries has not been realized due to adoption of trade distorting policies of the developed nations. It was also expected that the contemplated fair trade regime

would help the efficient producers in realizing higher prices for their produce, but prices of most of the commodities are declining in the international market (MCI, 2000). Uruguay Round Agreement was expected to lead to higher world market prices for agricultural products, however, on the other hand it is argued that world prices are artificially low mainly due to adoption of protectionist policies by industrial countries (Valdes, 1999). It was expected that world prices for most staples such as wheat, rice, coarse grains should be increasing but these have dipped below Indian prices in the last few years and volatility of agricultural prices have increased since 1972. Further, it was noticed that cyclical pattern in prices has not been impacted by the WTO regime (Pant, 2001). Few crops have witnessed deterioration in production growth compared to pre liberalisation period and the reasons for such decline is economic rather than climatic. Agricultural trade restrictions and price distortions have reduced incentives for producers and inhibited productive growth. Another important reason in slower growth rate was due to sharp rise in input prices as a result of liberalisation of input markets and the inputs affected include fertilizers, high yielding variety seeds and irrigation charges.

Various forms of non - tariff barriers limit the entry of Indian goods in the global market. For example, exporters have found it difficult to meet the sanitary and phytosanitary standards (i.e. health and safety regulations for food, animals and plants) in the present Indian conditions. A protectionist response in the developed countries in the form of sanitary and phytosanitary measures affected the processed food exports from developing countries like India (Sykas and Barret, 1997; Henson *et al.*, 1999) and these technical barriers affect the domestic producers' interest. There is also low productivity growth in factors of production due to protectionism. The major constraints in the export sector are poor infrastructure in terms of storage,

transport, cargo space, facilities at air / sea ports, insufficient institutional support (credit and promotion) and inadequate research and development efforts (in terms of quality and productivity).

#### **1.4. The need for the study**

Challenges posed by the liberalised agricultural trade have to be addressed on priority basis considering the agricultural exports and growth linkages, changing price scenarios, employment generation, food consumption, poverty and export competitiveness of the agricultural commodities. Now the question is how best the country can develop expertise to increase exports of agricultural commodities with safety considerations and capitalize the comparative advantage in most of the agricultural commodities without affecting the basic objectives of food security. Therefore, the country has to map out measures to protect the domestic economy at the same time the advantage of trade openness in a dynamic setting has to be exploited to ensure agricultural viability. This study is contemplated to address the above issues with the following objectives.

Overall objective of the study is to analyze the implications of agricultural trade liberalisation on agricultural trade, agricultural growth, poverty among the rural households and prices of agricultural commodities.

#### **The Specific objectives are**

1. To assess trade openness of the economy and agricultural trade openness in particular.
2. To analyze the export performance of major agricultural commodities during pre and post reform periods.

3. To examine the temporal relationship between agricultural exports and agricultural growth.
4. To analyze the trend in rural poverty and the relationship between agricultural exports, agricultural growth and rural poverty in the context of liberalized agricultural trade.
5. To study the price variability in domestic and world markets and the extent of transmission of world price instability to the domestic market in the pre and post liberalisation periods.
6. To assess the export competitiveness of India's agricultural production in the context of liberalized trade.

### **Hypotheses**

1. India switched to liberalized trade policies comprising of import liberalisation and export promotion measures.
2. Export performance of agricultural commodities is higher during the post reform period.
3. Agricultural export expansion is a key factor for agricultural growth.
4. Promotion of exports leads to reduction in poverty due to favorable income distribution.
5. Free trade creates high instability in the world prices of agricultural commodities and such instability is directly transmitted to domestic prices.
6. There exists export competitiveness for India's agricultural commodities in the world market.

### **1.5. Scope of the study**

The process of economic reforms launched in 1991, along with the new international trade accord, has given new challenges as well as opportunities for

Indian agricultural sector. Being the founder member of GATT and signatory to Uruguay Round, India is committed and under obligation to replace non-tariff measures by reasonable levels of tariffs. The WTO agreement also necessitates substantial changes in the agricultural policy framework of India. However, this policy framework should take into account national objectives of food security, growth, employment and poverty alleviation. The possible impact of agricultural trade have to be given due consideration while formulating policies to achieve the above said national objectives.

The study analyses the impact of trade liberalisation on these factors. India being a country with about 26 per cent of population below poverty line, the effect of any policy on the poor is important. The study makes an attempt to find out the relationship between agricultural exports and agricultural growth while taking into consideration the time series properties of the variables. Growth in agriculture and off-farm activities in rural areas being the surest way of rapidly cutting down poverty, an analysis of how much poverty reduction has happened because of trade liberalisation is essential. Own labour being the major resource of poor, trade liberalisation affects them by affecting the wages they earn and changing the employment pattern due to changes in cropping pattern. Producers are affected by changes in real wages and income they earn because of influence of trade liberalisation on prices of agricultural commodities and also prices of goods and services they consume. Trade liberalisation can also influence the prices by raising it or by imparting high volatility to internal prices because of the price transmission from volatile international market. The extent of instability in the domestic market after the reform and how the farmers are affected due to price volatility and its transmission have also been studied. With the focus on above said aspects, the study

will be useful to policy makers for designing agricultural trade policy to harness the competitive advantage and thereby developing India's agricultural sector.

### **1.6. Limitations of the study**

The present study relied on secondary data collected from the various published sources for the period between 1970-71 and 2000-01. Though analyses were carried out both in static and dynamic settings, the impact of agricultural trade liberalisation was assessed within the specified time period. However, the EXIM policies are subject to change in the short run as well as long run and this would have implications on structure of exports and imports of agricultural commodities. The analyses were carried out only in a partial equilibrium setting. The effects of trade liberalisation on growth and poverty was analysed in a recursive system although many literature reflect the difficulties in systematically measuring the effect. The comparative advantage of agricultural commodities was also studied within the specified period though the competitiveness of exportable commodities are changing due to fluctuation in prices.

### **1.7. Organisation of the thesis**

The thesis is organised into six chapters as described below

**Chapter I** : **INTRODUCTION** : General discussion, importance, focus, objectives, hypotheses, scope and limitations of the study are presented

**Chapter II** : **CONCEPTS AND REVIEW** : A brief review of concepts, economic tools and results of the related studies are presented

- Chapter III** : **DESIGN OF THE STUDY** : The source of data, period covered, the reason for it and analytical tools used in the study are described
- Chapter IV** : **DESCRIPTION OF TRADE POLICIES IN INDIA** : Trade policies adopted in India since independence are presented.
- Chapter V** : **RESULTS AND DISCUSSION** : The results obtained from the analysis and specific inference drawn from the results are stated.
- Chapter VI** : **SUMMARY AND CONCLUSIONS** : A summary of the work done and the salient findings are presented, conclusions are drawn and their implications for policy are stated.

*Concepts and Review*

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## CHAPTER - II

### CONCEPTS AND REVIEW

To develop clarity and comprehension in any study, it is necessary first to review the various concepts, research methodologies and analytical tools used by researchers in earlier studies. Such an attempt would help the researcher to have better and precise understanding of the perspectives of the research problem and would also facilitate the researcher to modify and improve the present analytical framework in the right direction to suit the problem situation. The findings of earlier studies would guide the researcher in setting the hypotheses and objectives and enable him to evaluate the validity of his own findings. This chapter briefly reviews the concepts, analytical tools and findings of the past studies, which are relevant for the present study.

#### 2.1. REVIEW OF CONCEPTS

In this section, various concepts used in this study are reviewed and defined under the following titles.

1. Trade liberalisation
2. Agricultural trade liberalisation.
3. Agricultural growth
4. Poverty line
5. Rural poverty
6. Stationarity
7. Cointegration
8. Multiple cointegration
9. Error correction
10. Instability

11. Competitiveness
12. Net protection coefficient

### **2.1.1. Trade liberalisation**

A variety of concepts of trade liberalisation exist, as well as views of its design. In the traditional policy literature of the 1960s and 1970s trade liberalisation was defined in a very general way; what economists usually meant was some relaxation of trade and exchange controls.

In the NBER studies on trade regimes conducted by Bhagwati (1978) and Krueger (1978) a liberalisation episode was defined as a more extensive use of the price mechanism that would reduce the anti-export bias of the trade regime.

Krueger (1986) reaffirmed the above general definition and argued that even a (real) devaluation in the presence of quantitative restrictions constituted a liberalisation episode. He defined liberalisation as any policy action that reducing the restrictiveness of controls - reduced the scarcity premium attached to those controls. Thus, a regime with no quantitative restriction but very high tariffs could still be considered fully liberalized, but biased.

Bhagwati (1988) emphasized neutrality as the central aspect of liberalisation. In an import-substituting regime, incentives are biased against exports and in favour of domestic sales. The introduction of incentives to exporters (e.g., rebates for duties on imported inputs) into such a regime would be viewed as a move towards liberalisation because it reduces bias against exports. This would be true despite the fact that import barriers remained the same.

Edwards (1989) proposed a definition that will allow for a continuum - recognizing different degrees of liberalisation. He referred to the earlier definition by Krueger/Bhagwati as "mild liberalisation" and he opined that a move to neutrality would be a more intensive liberalisation. Finally a reduction in levels of intervention (increased liberality) would constitute a more drastic form of liberalisation.

The studies by Papageorgiou *et al.* (1991) and Thomas and Nash (1991) included both neutrality and liberality in their definitions of trade liberalisation. Liberalisation encompasses not only a reduction in the anti-export bias of the trade regime, and an increase in reliance on the price mechanism, but also a reduction in the level of intervention. Inclusion of these concepts in the definition of trade liberalisation means that a large number of policy changes like lowering average nominal tariffs, narrowing the range of nominal and effective tariffs, a shift from QRs to tariffs, a real devaluation, a unification of multiple exchange rates, removal of export taxes, removal of export Quantitative Restrictions (QRs), implementation of export subsidies, rebates or compensation schemes form part of liberalisation.

Rajaram (1992) referred to trade liberalisation as the dismantling of an existing pervasive system of trade controls - quantitative restrictions, import tariffs, export taxes, etc. - which distort the allocation of resources between tradeable and non-tradeable sectors and within the tradeable sector.

According to Greenaway and Sapsford (1994), trade liberalisation could mean one of at least three things: a reduction in import barriers with no change in export incentives; a movement of relative prices towards neutrality via a reduction in import barriers and/or an improvement in export incentives; the substitution of less costly for more costly instruments of protection, i.e. tariffs for quotas.

Goldar (1994) defined trade liberalisation as the removal of quantitative restrictions on imports and their replacement by tariffs, followed by reduction in the general level of nominal tariffs, move towards a more uniform tariff structure and a more appropriate exchange rate policy.

### **2.1.2. Agricultural trade liberalisation**

Agricultural trade liberalisation in India consisted of three components, abandoning of channeling of trade except for few commodities, dismantling of most of the quantitative restrictions and some reduction in tariffs.

### **2.1.3. Agricultural growth**

The concept of agricultural growth could be deduced from the concept of economic growth. While the economic growth incorporates all the goods and services, the agricultural growth singles out the agricultural goods. Therefore, the contribution of agricultural sector to the gross domestic product is the measure of agricultural growth (Elangovan, 1997).

Dhalokia (1997) defined agricultural growth as the growth in agricultural Gross Domestic Product both in current and constant prices. Hirway (1997) from a development perspective defined agricultural growth with broad base as one which not only raises agricultural production in a sustainable way but also generates greater employment, promote greater regional equity, ensures more efficient resource use, protects environment and reduce rural poverty.

Agricultural income per head of the rural population will be a better definition of agricultural growth when agricultural growth is being related to rural poverty

(Narain, 1976; Ahluwalia, 1978). If the real agricultural income measured in terms of net domestic product of agriculture grows slowly than the growth of rural population, it cannot result in a reduction of poverty. As the distribution of income is not remaining constant and also there are adverse terms of trade effects, an increase in agricultural production or GDP will not raise income levels for all sections of the rural population.

In this study agricultural growth is defined as the growth in per capita gross domestic product from agriculture at constant prices in consonance with Narain (1977) and Ahluwalia (1978).

#### **2.1.4. Poverty line**

Defining poverty line helps in meaningful categorization of population in poor non-poor. World Bank (1989) defined poverty line as the expenditure level at which a minimum calorie intake and indispensable non-food purchases are assured.

Estimates of poverty in India are typically based on a normative calorie intake. The Task Force (Planning Commission, 1979) fixed the calorie norms at 2400 kilo calorie per person for rural areas and 2100 kilo calories per person for urban areas.

#### **2.1.5. Poverty**

Poverty reduction handbook (World Bank, 1997) defined poor as those people whose standard of living (usually income or consumption) is below a minimum acceptable level known as the poverty line. This is a quantitative definition.

White and Carvalho (1997) defined poverty in a qualitative manner as deprivation resulting from a range of factors and not simply lack of income or consumption.

Datt and Sundaram (1998) defined poverty as a social phenomenon in which a section of the society is unable to fulfil even its basic necessities of life.

### 2.1.6. Stationarity of time series

As explained by Chatfield (1984) a time series is said to be stationary if there is no systematic change in mean (no trend) and variance and if strictly periodic variation have been removed.

According to Gaynor and Kirkpatrick (1994), a stationary time series is one that does not contain trend, i.e., it fluctuates around a constant mean. If the original series does contain trend, but not seasonality it can usually be transformed into a series without trend by taking first or second differences of the data.

Gujarati (1995) defined a stochastic process to be stationary if its mean and variance are constant over time and value of covariance between two time periods depends only on the distance or lag between the two time periods and not on the actual time at which the covariance is computed i.e. If a time series is stationary, its mean, variance and autocovariance (at various lags), remain the same no matter at what time we measure them.

Harris (1995) described the series  $Y_t$  to be 'stationary' if it tends to return to its mean value and fluctuate around it within a more-or-less constant range (i.e., it has finite variance). Suppose that the variable  $Y_t$  is generated by the following process.

$$Y_t = \rho Y_{t-1} + u_t$$

$$\text{Where } u_t \sim \text{IN} \quad (0, \sigma^2)$$

The variable  $Y_t$  will be stationary if  $|\rho| < 1$ . If  $\rho = 1$  then  $Y_t$  will be non-stationary. A non-stationary process becomes stationary after it is differenced.  $Y_t$  is said to be difference stationary or integrated of order one and denoted  $I(1)$  when differencing it once produces a stationary series. More generally, the order of integration of a series is the number of times it has to be differenced ( $d$  times) to yield a stationary series. Stationary series are said to be integrated of order zero and denoted  $I(0)$ .

### 2.1.7. Cointegration

According to Dolado *et al.* (1990) two variables are said to be cointegrated when three conditions are satisfied *viz.*, (a) The variable must be integrated of the same order. The order of integration is the number of times each variable has to be differenced in order to turn the series stationary, (b) There should be a linear relationship between them. That is, in an equation  $y_t = \beta x_t + u_t$ , the  $\beta$  coefficient must be significant (c) The residuals ( $u_t$ ) i.e., the extent by which the two variables deviate from the long run equilibrium relationship given by the equilibrium error ( $u_t$ ) should be stationary.

As per Granger (1986) when there is a pair of series  $X_t$  and  $Y_t$  each of which is  $I(1)$ , a linear combination of these two series will also be  $I(1)$ . However, if there exists a constant such that  $Z_t = Y_t - \alpha X_t$  is  $I(0)$ , then the pair of series  $X_t$  and  $Y_t$  are said to be co-integrated and  $\alpha$  is called the cointegrating parameter. This means that there exists a long run equilibrium relationship between the two series. If  $Z_t$  is not  $I(0)$  then the two series may diverge from each other indefinitely. Therefore, the basic idea behind cointegration of series is that the presence of cointegration ensures that the series will move closely together in the long run since the difference between them is stationary

with well defined mean and variance.  $Z_t$  is often called the 'equilibrium' error. The term 'equilibrium' is not used to imply anything about the behaviour of economic agents but rather describes the tendency of an economic system to move towards a particular region of the possible outcome space, when disturbed from that region.

Co-integration means that despite being individually non-stationary, a linear combination of two or more time series can be stationary (Gujarati, 1995).

### 2.1.8. Multiple cointegration

Multiple cointegration analysis (Johansen, 1988) enables the testing for, and estimation of more than one cointegrating relationship in a multivariate framework and also permits testing for the validity of any restrictions on cointegrating relationships implied by economic theory.

If the vector of variables  $X_t$  and  $Y_t$  are integrated of order one or are random walks, but the vector  $Z_t = X_t - \lambda Y_t$  is stationary, then  $X_t$  and  $Y_t$  are cointegrated and  $\lambda$  is called as the cointegrating vector (Pindyck and Rubinfeld, 1991).

According to Harris (1995) when there are more than two variables, there can be more than one cointegration relationship between the variables. Then adopting a single equation approach is inefficient as only one linear combination of these variables can be obtained and all the long run relationships between the variables cannot be estimated validly unless all the right hand side variables in the cointegration are weakly exogenous.

In a multivariate case if there is set of  $k$   $I(1)$  variables, there may exist up to  $k-1$  independent linear relationships that are  $I(0)$ , while any linear combination of

these relationships is - by construction - also  $I(0)$ . This implies that instead of individual cointegrating vectors only the space spanned by these vectors are identified (Verbeek, 2000).

### 2.1.9. Error correction

According to Granger Representation Theorem (Engle and Granger, 1987) if a set of variables  $Y_t$  and  $X_t$  are co-integrated then there exists a valid error correction representation of the variables, where the error tends to correct in the long run and it acts as a means of reconciling the short-run behaviour of the variables with its long-run behaviour.

The error correction model can be represented in the dynamic form as

$$\Delta Y_t = \alpha_0 + \alpha_1 + \Delta X_t + \alpha_2 Z_{t-1} + E_t$$

The speed at which the variables tend to approach equilibrium depends on the magnitude of  $\alpha_2$  whose expected sign is negative. This negative sign confirms that the error would correct in the long run.

### 2.1.10. Instability

Pradhan (1988) used the terms variability, volatility and fluctuation to describe the instability or movements (both expected and unexpected) in exchange rates in different time periods.

In this study instability is defined as the fluctuation in prices of agricultural commodities.

### **2.1.11. Competitiveness**

Porter (1990) argued that a theory of international trade must move beyond the comparative advantage to the competitive advantage. The concept of competitive advantage is more comprehensive involving segmented markets, differentiated products, technology differences, economies of scale etc. Thus price-cum-cost comparisons are the preliminary indicators of competitiveness.

### **2.1.12. Nominal protection coefficient**

The nominal protection coefficient (NPC) of a commodity is defined as the ratio of its domestic price to its border price (Tweeten, 1992).

Pursell and Gupta (1998) defined NPC of a commodity as the ratio of that commodity's domestic price to its international reference price and referred to it as an estimate of the extent to which its price has been affected by government interventions in the country's international trade. NPC determines the degree of export/import competitiveness of commodities by measuring the divergence of domestic price from the international or border price.

## **2.2. Review of past studies**

In this section, various past studies are reviewed and are presented under the following sections.

### **2.2.1. Empirical Studies on Export led Growth**

A summary of a set of empirical studies conducted between 1967 and 2001, which includes time period, methodology, variables, econometric technique and outcome is set out in Appendix I. Many of the studies showed evidence of some

association between exports or export growth and economic growth. In general, these empirical studies regarding the relationship between exports and growth could be separated into two categories, cross-section analysis and country-specific studies.

#### **2.2.1.1. Cross-section analysis**

In the cross section analysis growth of exports was employed as a proxy for policy orientation in order to judge the advantages and disadvantages of different type of trade strategies, mostly the inward as opposed to one with an outward orientation. Most of these studies found a significant positive relationship between export performance and growth of national income. Balassa (1980) concluded that countries applying outward-oriented development strategies performed better in terms of exports, economic growth and employment than countries with continued inward orientation.

Michaely (1977), Balassa (1978), Tyler (1981), Kavoussi (1984) found an evidence of a difference in the effect of exports on economic growth between countries above and below some critical level of some variable, called a "threshold effect". They claimed that export performance could affect growth only when the countries have achieved some minimum level of economic development. Consequently, their results indicated that nations heavily dependent on agricultural commodities were less likely to be benefited from exports, in comparison with the countries having a higher level of development and whose exports contained a higher domestic value added (Kohli and Singh, 1989). But the evidence on the existence of this "threshold effect" is mixed. Moschos (1989) searched for a critical switching point in a cross-sectional production function analysis and concluded that in the less advanced group output growth was influenced by export growth and capital

formation, while in the more advanced group, labour growth was also important. Greenaway and Sapsford (1994) found that the strength of the export-growth relationship changed through time and interpreted this as an indirect evidence of threshold effect.

Although some of the earlier cross-sectional empirical investigations could explain to some extent why growth differs across countries, this type of cross-section investigation had several deficiencies. These studies do not provide any useful country specific information to policy makers in developing countries. Smith (2001) argued that the cross section studies by assuming the same production function across different types of economies ignored the level of technology which was likely to differ across countries and hence could not capture the particularities of many developing countries. Previous studies focused mainly on estimating models using cross-country data based on the implicit assumption that developing countries share many common characteristics like low per capita incomes, dependability on the exports of a few primary commodities for their foreign exchange earnings, reliance on import of technology and capital goods, under developed financial markets, and also these countries were largely agrarian with very small industrial sectors. Eventhough this may be true to some degree, these countries differed in their exposure to economic problems and in their stabilization policy experiences. They differed not only in their institutional, political, financial, economic structures, but also in their reactions to external shocks (Onafowora and Owoye 1998). The enormous diversity among developing countries suggested that estimates from cross country regressions were misleading because they did not reveal any country specific characteristics.

#### **2.2.1.2. Country specific studies**

During 1990's investigations examining the relationship between export performance and the rate of economic growth in individual countries have been made and in some cases modern time series analysis were used (Fajana, 1979; Bhat, 1995; Ramakrishna, 1995; Henriques & Sadorsky, 1996; Begum & Shamsuddin, 1998; Shan & Sun, 1998 and Shan & Tian, 1998). The empirical results obtained in country case studies strongly differed between nations and periods of time studied. Both the categories of studies employed different for testing the export led growth and they are discussed below.

#### **2.2.1.3. Correlation studies**

Among earlier empirical studies, Emery (1967), Syron & Walsh (1968), Serven (1968), Kravis (1970), Michaely (1977), Heller and Porter (1978) explained economic growth in terms of export expansion alone, in a two-variable framework. They used bivariate correlation using the spearman rank correlation tests - in cross country format to illustrate the superior effects of the Export Led Growth Hypothesis (ELGH). The general conclusion from all the rank correlation studies was that high levels of economic growth were significantly associated with high levels of export growth.

#### **2.2.1.4. Production function analysis**

Balassa (1978, 1985), Tyler (1981), Feder (1983), Kavoussi (1984), Ram (1985, 1987), Heitger (1987), Moschos (1989), Fosu (1990), Sengupta (1991), Salvatore and Hatcher (1991), Lussier (1993), Sheehey (1993), Greenaway and Sapsford (1994) studied the relationship between export and output performance within a neoclassical framework. In most of these studies real output or output growth

was specified in the production function as a function of capital, labour and other macroeconomic variables such as exports and industrial production or the growth of these variables. They claimed that by including exports they were taking into consideration a broad measure of externalities and productivity gains generated by this sector which stimulated the domestic economy. The majority of these investigations used Ordinary Least Squares (OLS) on cross section data and used their results to demonstrate the advantages of the export promotion strategy in comparison with the import substitution policy. Khan and Saqib (1993) and Lee and Cole (1994) used 3 SLS and 2 SLS to establish the export growth hypothesis. All concluded that exports contributed significantly to the rate of economic growth of the developing countries studied.

Bhagwati (1988) argued that the results of the regressions do not 'bear directly on the question of whether the export promotion strategy is productive of more growth, because the incentive related export promotion strategy is not the one used to examine the question of income or growth performance'. It was necessary to identify whether the superior export growth rates or higher export magnitude belong to the export promoting countries. Along the same line, Sheehey (1993) argued that the regression used in most of the studies involved a built in correlation because exports are a component of GDP, therefore, this tend to result in a positive statistical link between the two variables, which may be independent of their true relationship.

#### **2.2.1.5. Causality tests**

The rank correlation analysis could show only covariation, while the parametric results from various OLS studies on cross-sectional data were incapable of showing causation. The question of causality that a higher rate of growth on exports

causes a higher rate of growth in GDP originated in the work by Jung and Marshall (1985). Only in 4 out of 37 cases there were evidences that supported the export-led hypothesis. It also suggested that the statistical evidence in favour of export promotion was not as unanimous as was previously thought. A similar question was also raised by Darrat (1987) in a study of just four countries.

Serletis (1992), Shan and Tian (1998), Chaudhri *et al.* (1999) used Granger causality test and found one directional causality in the short run between export and GDP but failed to establish it in the long run. Afxentiou and Serletis (1991) while using Granger causality test found bi-directional causality between real GNP growth and real export growth only in two out of 16 cases. Jin (1995) and Shan and Sun (1998) found bidirectional causality between export and real output, only in the short run. They rejected the export-led hypothesis defined as a unidirectional causation from export to growth. Bhat (1995) used Granger causality test and concluded that there existed a bi-directional causal relationship between exports and economic growth in India. Chaudhri *et al.* (1998) concluded that the direction of causation was from growth in trade to growth of GDP in 10 out of 13 countries. In the case of relationship between the agricultural sector and the trade, the direction was from trade to agricultural sector in seven cases including India.

The results from causality tests were also mixed. Several factors contributed to these mixed results. First, this could be due to difference in the countries and periods covered and the arbitrary choice of lag lengths of variables used in the causality test. Second, in all these studies the conclusions were based on non-stationary data. In virtually all of these studies, very little consideration was given in terms of evaluating the time series characteristics (stationarity and cointegration) of the data employed.

The application of conventional econometric techniques to non-stationary (integrated) time series can give rise to misleading results and erroneous inferences (Sims *et al.*, 1990). The assumption of stationarity and the imposition of *apriori* restrictions on the interrelationships among the variables would lead to biased results because of the failure to explore other avenues of mutual dependence among the variable. Third reason for mixed results is because of the choice of variables used by different authors to measure the contribution of trade policies to economic growth. With few exceptions, most existing studies of the export-output growth linkage have used export growth rates as proxies for trade policies, due to the lack of data on trade policy across countries.

#### **2.2.1.6. Cointegration analysis**

The most recent time series investigations on export and economic growth which have used the econometric methodology of cointegration have not been able to establish unequivocally that a robust relationship existed between these variables in the long term, namely the variables are cointegrated (Jin, 1995 and Islam, 1998). Many authors used Phillips-Peron Unit root test and Augmented Dickey Fuller tests to test for stationarity of series (Van den Berg and Schmidt, 1994 and Barra and Saavedra, 1994). In order to test for the existence of a long run or trend relationship between GDP and exports, the theory of cointegration developed by Engle and Granger (1987) and Johansen (1988) were applied by many authors. The error correction mechanism developed by Engle and Granger was also used as a means of reconciling the short run behaviour of an economic variable with its long-run behaviour.

Kugler (1991) used the multivariate cointegration approach proposed by Johansen (1988) and Johansen and Juselius (1990) using maximum likelihood

estimation for testing a long run relationship between GDP, consumption and investment on the one hand and exports on the other hand. This method was based on a vector autoregressive representation. There was only a weak empirical evidence supporting export-led growth hypothesis.

Jin (1995) and Henriques and Sadorsky (1996) using the technique of cointegration and VAR found no long run relationship between exports and GDP growth. Bhat (1995), Begum and Shamsuddin (1998), Onafowora and Owoya (1998), Ghirmay *et al.* (2001) and Smith (2001) found that export growth and real GDP are cointegrated. An additional engine of growth and that they concluded that exports operated as real economic growth can be stimulated through an outward-looking strategy of export expansion.

Evidence of one long run equilibrium relationship was found between real GDP, real exports and terms of trade for India by Dhawan and Biswal (1999) using Johansen maximum likelihood method of cointegration. They found causality from exports to GDP as a short run phenomenon and concluded that the recent export promotion strategies adopted in India have the potential of bearing growth in the future.

#### **2.2.1.7. Trade Orientation and Growth**

The World Bank (1987) classified 41 developing economies into four categories on the basis of trade orientation: (1) strongly inward-oriented (2) moderately inward-oriented (3) moderately outward oriented and (4) strongly outward-oriented. The trade orientation was then compared with average per capita growth over two periods, 1963-73 and 1974-85. It was found that outward oriented countries grew faster on average than inward oriented countries.

Salvatore and Hatcher (1991) used the classification of developing countries according to their trade orientation by World Bank as strongly outward oriented, moderately outward oriented, moderately inward oriented and strongly inward oriented to evaluate the economic performance of twenty-six countries with different orientations. They found partial support for the hypothesis that international trade benefited most developing countries and that an outward orientation leads to more efficient use of resources and growth. However, their conclusion was based on non-stationary data. When data are non-stationary the standard critical values used in determining the significance of estimated coefficients may not yield valid results.

IMF (1993) compared trade orientation with average per capita growth for the period 1986-92 and obtained the same result as the World Bank study. The cross-country studies by Whalley (1991) and Papagerogiou, Michaely and Choksi (1990) offered some support for the view that liberalisation and exports are related. According to these studies liberalisation reduces antiexport bias, thereby facilitating an increase in exports. The resultant improvement in resource allocation was presumed then to have a beneficial impact on growth. It was argued that liberalisation could also impact favourably on factor accumulation.

Substantial literature using a range of methodologies, support an association between exports and growth. However, this association tends only to hold in cross-section analysis, there being nothing like the same degree of agreement in time series work. Many of the earlier results were the output of bivariate models or loosely specified aggregate production functions. Levine and Renelt (1992) used extreme bound analysis to investigate the robustness of a range of explanatory variables which were typically incorporated in growth model. They found a relatively small number of

variables to be robustly related to cross-country growth rates. Exports was one such variable. However, two nuances were emphasized. Imports or total trade substituted very well for exports. It served to emphasize that it is perhaps not exports *per se* which was important, but openness to trade, for which exports acted as a proxy. Second, the relationship between exports and growth was strong only when investment was included, there being a robust and positive link between exports and investment. This suggested that the link between exports and growth operated through improved resource accumulation rather than via improved resource allocation.

### **2.2.2. Rural Poverty and Agricultural Growth**

Household level analysis of poverty in six states of India by Gaiha (1985) during the Green Revolution years, 1968-69 to 1970-71, found that the risk of poverty falls with indicators of village level prosperity and agricultural growth. The study also showed that the reduction in poverty between 1968-69 and 1970-71 involved large income mobility in both directions. While the proportion of the poor went down from 48 per cent to 36 per cent in the rural areas of these states 24.6 per cent of the population became non-poor from poor and 12.4 per cent of the population became poor from non-poor. Therefore, agricultural growth does not affect all households uniformly, and there is significant risk of increased poverty for some.

Analyses of rural poverty at the all-India level have shown that rural poverty falls with rural growth and increases with food prices (Mellor, 1986; Ahluwalia, 1986). In addition, several analysis found a significant time trend (falling) in rural poverty after correcting for the effect of income and prices (Desai, 1986). The presence of the negative time trend was robust to alterations in the specification using rural per capita expenditure or per capita agricultural output.

Gaiha (1987) found that the proportion of calorie deficient households increases with prices and concentration ratio of assets in West Bengal. He also found that per capita monthly expenditure of cultivator households decreased with the percentage of large farmers and the number of oil engines in the village after correcting for the effect of agricultural growth.

The importance of rural growth for poverty alleviation was further highlighted by a finding of Ravallion and Datt (1996). They considered poverty figures from 1950-51 to 1990-91. Their main interest was to capture the spillover effect of urban growth on rural poverty and vice-versa. They found both urban and rural Head Count Ratio to be affected significantly and positively by rural per capita expenditure. Rural poverty also had a significant, negative time trend and was not significantly associated with urban growth. The results regarding spillover effects and growth effects were robust to the use of alternative poverty measures such as the poverty gap index and the Foster-Green-Thorbecke measure. The time trend for rural poverty was insignificant for the latter measures, implying that depth of poverty was explained entirely by own sector growth or spillover factors.

### **2.2.3. Agricultural Trade liberalisation and Poverty**

The above studies on poverty do not look at the mechanics underlying poverty alleviation. There have been a few attempts to simulate effects of liberalisation of Indian agriculture using models of the economy (Binswanger and Quizon, 1986; Subramanian, 1993). These indicate some of the mechanics underlying changes in income distribution. While these models also find food prices and agricultural growth are important for the improvement of rural incomes, they point out the importance of supply response and controls in the determination of prices and output. Prices are

determined in a closed economy on the basis of the degree of control on prices and the elasticities of demand and supply. In an open economy, domestic prices are influenced by world prices. In addition to price determination, assumptions on the labour market turn out to be important. This determines the extent to which labourers can share the gains/ losses made by the agricultural sector.

Many studies predicted the adverse distributional consequence of liberalisation of agriculture (de Janvry and Subharao, 1984; Binswanger and Quizon, 1986) predicted a marginal rise in the incomes of the poorest rural groups. However, what was worth noting was the low magnitude of change in real incomes of the poorer rural households.

Subramanian (1993) while analysing the impact of agricultural trade liberalisation in India through a Computable General Equilibrium model reported that opening up agriculture would raise the poverty levels in the short run and this happens especially when agricultural prices rise with out commensurate increases in production. The results suggested that liberalisation, especially economy-wide liberalisation, while enhancing efficiency and output in the long run, had the potential for creating large changes in income distribution and decreasing the real income of all but medium and large farmers in the medium and long run, before increases in productivity resulting from resource allocation and investment begin to make themselves felt. These change were found to be accentuated with higher world prices.

Chadha *et al.* (1996) made an attempt to evaluate the comparative static effects of selected trade and domestic policy reforms, undertaken since 1991, on trade, output, domestic prices, economic welfare and intersectoral allocation of resources.

The major reforms analyzed in this study related to reduction in tariff and non-tariff barriers to trade along with rationalization of the tax regime. A Computable General Equilibrium model of the Indian economy was developed for the analysis. The results indicated that the import liberalisation enhance the welfare of the economy but the effect got further enlarged when exports were also liberalized simultaneously. This was particularly true of the agricultural sectors. The freeing of prices in the sectors which have been under some form of administered price controls in the base year (1989-90) greatly intensified the welfare effect. The economy became more efficient through better allocation of land, labour and capital across different production sectors with distinct increase in the returns to each of these factors of production. The output as well as exports were expected to register big increase in five sectors, viz., clothing, leather products, footwear, non-metallic minerals products and glass products. These sectors were the major gainers from the improving scale economics. In the case of agriculture, the resources were expected to move from cereals to other crops. The rationalization of the existing structure of indirect taxes and subsidies was expected to further benefit the factors of production and enhance overall welfare.

Parikh et al (1997) tried to capture the impact of trade liberalisation on agriculture through an applied general equilibrium model and reported that agricultural liberalisation by itself leads to a reduction in poverty. The marginal increase in terms of trade in agriculture and the decline in prices of coarse grain and other food together would result in differential impact on consumer price for different expenditure classes. The adverse income effect associated with it was more than compensated by the gains to the poor as consumers due to fall in rice and coarse grain price.

Tendulkar (1998) in an effort to explore the causal link between economic reforms and poverty observed that rural poverty situation deteriorated sharply in 1992 and reached approximately the pre-reform level by 1993-94. He argued that sharp increase in rural poverty in 1992 was a combined consequence of the weather related natural forces, constricted manoeuvrability of government action, and certain political economy factors that were influenced by reform-related policies of devaluation of the currency and the intended reversal of disprotection of agriculture. He concluded that economic policy reforms including liberalisation of trade can at best be only indirectly responsible for the observed movements in the poverty indicators in the post-reform period.

Chand (1999) quantified the impact of trade liberalisation in India on producer surplus, consumer surplus and net social welfare for four crops rice, maize, chickpea and rapeseed - mustard. The result demonstrated that free trade in rice would lead to a small net social loss to the country. In the case of maize, liberalisation of trade was found to be highly beneficial to the country as gain to producers was almost double the loss to consumers due to price rise. When the impact of import liberalisation of rapeseed-mustard oil was studied by equating the domestic price of oilseeds to its relevant import price and by incorporating required change in the seed price, the net social welfare improved by Rs.563 million, whereas in a second scenario with 4 per cent increase in international prices, net social gains remained positive but there was a decline in it when compared to the base scenario.

#### **2.2.4. Trade liberalisation and prices**

The underlying philosophy of WTO agreement is to correct the distortions in world trade of agricultural commodities with a view to promote efficient allocation

and use of world resources. The direct and indirect subsidies which have flowed into the agricultural sector, manifested themselves into distorted world prices of agricultural commodities. These distorted world prices resulted into a situation of deceptive comparative advantage that led to inefficient use of world resources and ultimately efficiency and welfare loss around the world.

The net effect of liberalizing all industrial country agricultural policies would be to raise the international food prices by 8 per cent during the late 1980s and these policies as a whole contributed about one third of the instability. Regarding the domestic producer prices they found that if industrial countries were to liberalize their food policies simultaneously, international prices would rise by more than if only one or a subset of a countries were to liberalize and as a consequence the required fall in domestic prices in a liberalizing country was less the larger the extent of simultaneous liberalisation in other countries (Tyers and Anderson, 1989).

Capros *et al.* (1990) based on a study on Greece using CGE analysis argued that the liberalisation of foreign trade had negative impacts on exports by way of increasing the supply potential and reducing the market prices. The labour market clearing wage rate decreased, but at a rate lower than that of consumption prices. The interactions with production, in which capital was replaced by labour, contributed to the formation of positive changes in the real wage and to further lessening of production prices. The outcome of this process was favourable for the real income of employees, but less favourable for the real income of non employees. Total savings increased, which had positive effects in the following years.

Various studies (UNCTAD/WIDER, 1990), FAPRI (1993), Brandao and Martin (1993), Goldin *et al.* (1995) which worked out the simulated effects of Uruguay round of trade liberalisation on world prices of agricultural commodities do not give very encouraging situation in the post-GATT/period from the point of view of the developing countries. Maximum rise in prices was expected for temperate crops such as rice, meat, sugar and dairy products but tropical products were expected to experience a minimum rise. Wheat was expected to gain in its prices between 5 and 7.5 per cent, rice between -1.9 and 18.3 per cent, meat 0.5 and 13 per cent, sugar 5 and 10.6 per cent and dairy products between 7.2 and 6.9 per cent. Thus the expected change was not uniform and generally was moderate to low level.

Subramanian (1993) found that higher world agricultural prices had little effect if India's agricultural trade was not liberalized because trade shares in agriculture were small so that the degree of price transmission was also small. India is a net exporter of agricultural commodities and according to him the country gain from higher world price and GDP increases in the long run under liberalised agricultural trade.

Gulati and Sharma (1994) found the prices of various agricultural commodities in India to be below their international levels. India being competitive in the international market with diverse agro-climatic conditions and low labour costs, they argued that the conditions were favourable for exports. The implication of this was that liberalisation would increase exports and domestic agricultural prices.

Chand (1997) argued that impact of trade liberalisation on domestic prices will depend on reduction in aggregate measure of support to agriculture. Due to reduction

in protectionism as proposed in WTO agreement, the prices in member countries were expected to move closer to international prices, leading to a rise in prices which are below the international level and fall in prices where they are above the international prices.

Parikh et al (1997) reported that trade liberalisation would cause substantial changes in relative prices in the Indian economy with an upward pressure on prices of several agricultural products and downward pressure on prices of non agricultural products and some agricultural products. For wheat, meat, dairy products, other animal products and non-food agriculture, the price rise ranged from 11 to 18 percent. On the other hand, tradable non-agricultural as well as other food prices would decline by 26 to 29 percent because of high initial protection levels. They concluded that the overall effect would be to shift the terms of trade in favour of agriculture.

Panda and Quizon (1998) found that an increase in the degree of agricultural openness following trade liberalisation was bound to increase domestic prices in absolute terms and would lead to relative price changes, which hurt the lower income groups more than the higher income groups

While quantifying the effect of trade liberalisation at the farm level Chand (1999) reported that free trade would lead to increase in farm harvest prices of exportables like paddy and maize, whereas, it would result in decrease in price of importable like rapeseed/mustard. Along with free trade, when subsidies were removed then gross return as well as net return without liberalisation were higher than those under free trade. This showed that reduction in income due to the removal of

high level of input subsidies in rice production would not be compensated by the access to international prices under free trade.

A study by Bhattacharya and Pal (1999) suggested that export restrictions kept internal prices low thereby reducing the farm incentives and they argued that liberalisation will increase prices and provide better incentives. But, Desai and Namboodiri (1999) found that liberalisation through prices will not have major effects on production since the aggregate supply response was small. However, even if the aggregate supply response was low the cropping pattern changes might bring important contributions to agriculture through comparative advantages.

#### **2.2.5. Studies on price instability**

Volatility of prices of primary commodities has been one of the issues continuously debated. Being exporters of primary commodities, the developing countries have substantially higher export earning instability than the developed countries. The competitiveness of agricultural commodities also will be affected by the volatility of prices in the international market and the trend of prices. It was argued that fluctuations in export earnings of developing countries generated domestic instability, complicated the task of development planning and reduced the efficiency within which investment resources were used (Massell, 1970; Glezakos, 1973; Sarvides, 1984 and Love, 1992).

Alternate measurements of instability have been proposed in literature, all which depend on a measure of the deviation between actual and normal outcomes (Demeocq and Guillaumont, 1985 and Scandizzo and Diakosawas, 1987). The normal outcome in these studies embodied some concept of a systematic and stable

component to the changes in prices over time, which may be the mean price, or more typically a trend and/or cyclical component.

Hazell *et al.* (1987) found that the world prices of agricultural commodities had coefficients of variation in excess of 20 per cent during the period 1949–87 and nearly all the variability in world prices were transmitted to developing countries in the dollar value of their export unit values (EUVs). However the variability in EUVs were not fully transmitted to average producer prices due to the buffering role played by real exchange rate and also domestic marketing arrangement and government intervention. They called for efficient means for reducing the risks of producers and concluded that price variability could become a greater impediment to the expansion of agricultural exports in many developing countries.

Nayyar and Sen (1994) reported that the world prices were more volatile than Indian prices. The rationale underlying agricultural trade policy in India had been the concern about domestic prices, particularly for exportables and importables which are wage goods or inputs for wage goods, because the majority of the poor in India do not have incomes that are index linked. The trade policy sought to maintain domestic prices at absolute levels that are commensurate with average income levels and also to impart a stability to domestic prices in the interest of both producers and consumers.

Chand (1997) argued that price instability because of supply side factors was much higher in India compared to global market. It was only due to government interventions that the observed instability in prices of agricultural commodities turned out to be lower in India than what it would have been otherwise. The domestic prices would have turned more volatile had they been left to the internal market forces.

Trade with the global market was an important instrument of reducing volatility in domestic market. According to him the impact of freeing imports on domestic price instability by way of transmission of world price instability would depend on domestic policies to check dumping when there is glut at international level and speculative buying when there are shortages.

#### **2.2.6. Trade liberalisation and competitiveness**

Bhatia (1994) observed that the Indian prices were growing at a faster rate than the international prices and the existing comparative advantage for exports would not exist without an exchange rate adjustment.

In contrast to this study, Gulati *et al.* (1994) found that commodity-wise grapes, litchee, onion and tomato were highly export competitive whereas wheat, mango and potato were moderately competitive and maize, apple and mango pulp and border line cases. However, Gill and Brar (1996) asserted that when costs involved in taking rice and wheat from the farm gate to f.o.b. destination were included for the surplus state of Punjab then rice and wheat did not remain competitive and called for an increase in productivity and efficiency to make them internationally competitive.

Based on a comparison of domestic and international prices, Chand (1997) reported that imports to India would not be attractive in the case of rice, tea, sunflower oil and cotton and the situation could turn favourable for imports of wheat and maize depending upon domestic and international supply positions. There was a strong possibility of rise in imports of sugar and edible oils after removal of QRs, which would exert downward pressure on the domestic prices of these commodities.

Pursell and Gupta (1998) found very large changes in the nominal protection of sugar and sugarcane production in India which were due to fluctuations in world free market prices. Nominal protection was very high during periods of low world price in the 1960s and the mid 1980s, was negative for a number of years of high world prices in the mid 1970s and early 1980s and was moderate to low by previous standards between 1989 and 1994.

Naik and Chaturvedi (2001) computed the NPC for rice under the exportable hypothesis for the period 1992–93 to 2000. They examined the total cost of delivering (including the price) rice for India and the competitor (Thailand) to a common port of an importing country, Ivory Coast. The export competitiveness was assessed for Parmal variety in Delhi market and international prices of Thai white rice. Wholesale price was considered as domestic price. The NPC values remained well below one till 1998–1999 and after that it was marginally higher than one.

Chand (2001) reported that Indian rice is competitive most of the time in 1990s and export margins also supported pushing its supports. He found that there was neither much scope nor advantage in export of wheat and coarse cereals and were found as efficient import substitutes. Among edible oils, soyabean was found to be only slightly export efficient. Soyabean and rapeseed-mustard were reported as efficient import substitutes.

*Design of the Study*

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## CHAPTER - III

### DESIGN OF THE STUDY

#### 3.1. SOURCE OF DATA AND CONCEPTUAL FRAMEWORK

The research study is based on secondary data collected from various published sources. The data pertaining to macroeconomic indicators like Gross Domestic Product, Gross Domestic Product from agriculture, exports and imports, agricultural exports and imports, population below poverty line, indices of agricultural production and prices, prices of agricultural commodities in domestic and international market were collected for the period between 1970-71 and 1999-00. The analyses were carried for the whole period and sub periods (pre and post liberalisation periods) to analyse the implications of agricultural trade liberalisation on growth, poverty, prices and competitiveness. A conceptual framework of agricultural trade liberalisation and its impact through various linkages is given in Fig. 1. The analytical techniques used for each of the objective are discussed below:

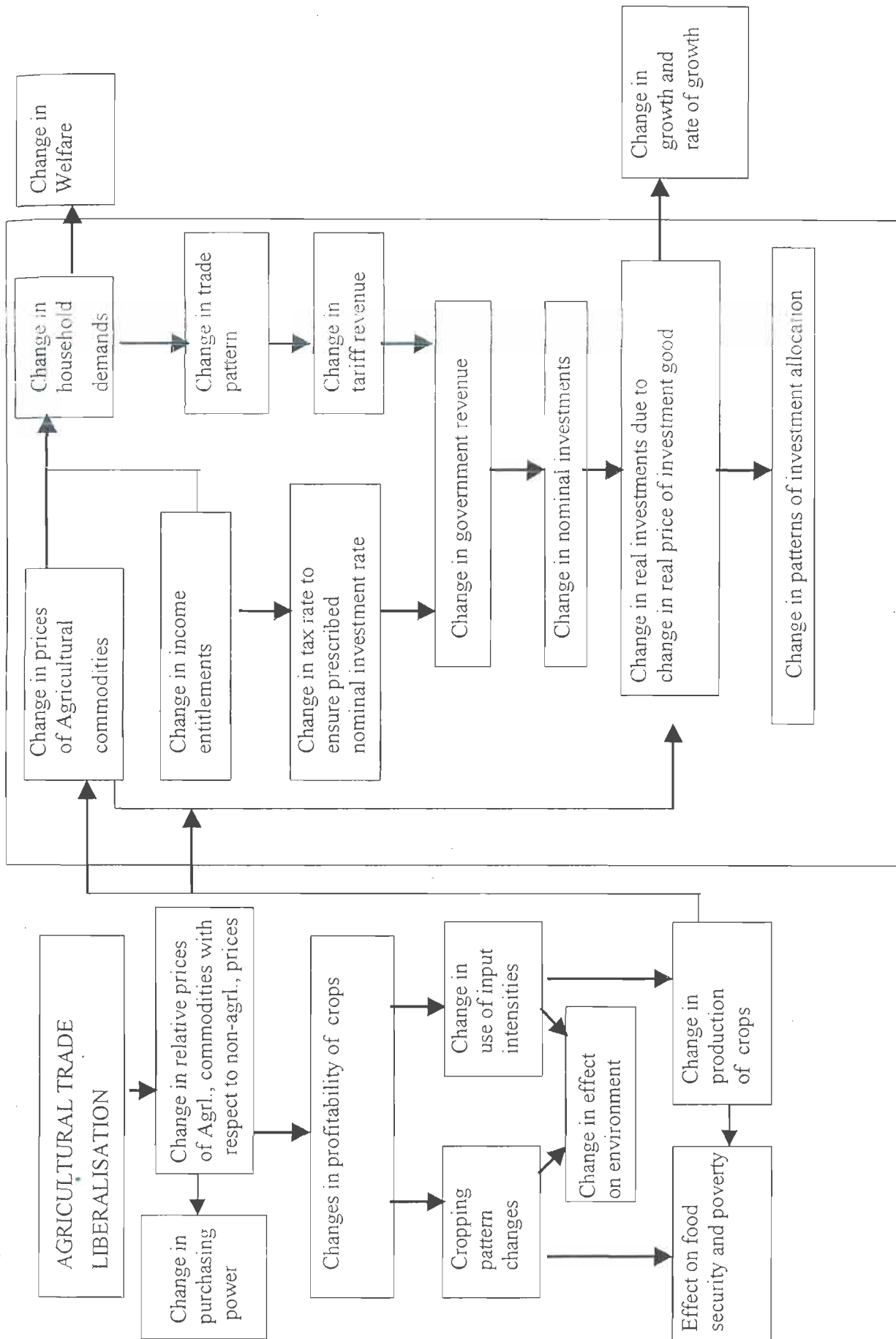
#### 3.2. TESTING EXPORT LED GROWTH

##### 3.2.1. A Theoretical Model of Export Led Growth

Both neoclassical theory and new growth theory attach considerable importance to exports in promoting economic growth and these theories indicated that exports promote economic growth by improving the efficiency in allocation of productive resources and by increasing the volume of productive resources and capital accumulation. Based on this assumptions, a model was built. The general production relationship under international trade regime was specified as

$$O = f(L, K, E, P) \quad \dots\dots (1)$$

Fig. 1. CONCEPTUAL FRAME WORK ON AGRICULTURAL TRADE LIBERALISATION AND ITS IMPACT



Where, O refers to real GDP in agriculture, and L denotes labour input in physical units, K refers to capital input in physical units, E is real value of agricultural exports and P is index of agricultural production. The variable exports (E) is introduced in the equation because of the greater productivity in export production, which is based on scale effects and externalities as argued by Feder (1983), Salvatore (1983) and Balassa (1985).

The index of agricultural production was included in the model to capture the process of growth and development that has been taking place in agriculture. Totally differentiating the equation with respect to the variables L, K, E and P, dividing throughout by O and rearranging the equation yields the following:

$$\frac{dO}{O} = \frac{\partial O/O}{\partial L/L} \frac{dL}{L} + \frac{\partial O/O}{\partial K/K} \frac{dK}{K} + \frac{\partial O/O}{\partial E/E} \frac{dE}{E} + \frac{\partial O/O}{\partial P/P} \frac{dP}{P} \dots (2)$$

The Equation (2) in terms of rate of growth is given by

$$O' = \beta_0 + \beta_1 L' + \beta_2 K' + \beta_3 E' + \beta_4 P' \dots (3)$$

Where, L', K', E' and P' are the respective rate of growth and  $\beta_1, \beta_2, \beta_3$  and  $\beta_4$  are the output elasticities.

The Equation (3) was modified by including the variable gross capital formation in agriculture for capital inputs and the Equation (3) was remodified into

$$O' = \beta_0 + \beta_1 L' + \beta_2 C' + \beta_3 E' + \beta_4 P' \dots (4)$$

Where,  $C'$  denotes growth of gross capital formation in agriculture and  $\beta_2$  indicates elasticity of capital.

It might be better for most purposes to use the real per-capita income rather than the growth of real GDP as the dependent variable in examining the relationship between trade and development. Further, due to large unemployment and even larger underemployment in most of the developing countries, the variable labour may not be included (Salvatore and Hatcher, 1991).

With the above arguments the Equation (4) was modified as

$$\text{PAGGDP} = \beta_0 + \beta_1 \text{CFAG} + \beta_2 \text{AGEXP} + \beta_3 \text{AGPIND} \dots (5)$$

Where, PAGGDP refers to growth of real per-capita income in agriculture, CFAG is the growth of real gross capital formation in agriculture, AGEXP denotes growth in the value of real agricultural exports and AGPIND is the growth in the index of agricultural production. Coefficients  $\beta_2$  and  $\beta_3$  are respectively the export and agricultural production elasticity of per-capita income and  $\beta_1$  is the elasticity of capital.

The contribution of additional investments to the growth is expected to be more in developing countries like India due to relative capital shortage in agriculture. However, a contemporaneous increase in capital output ratio may affect contribution of investment, as a result net effect of investment might be more or less. Therefore, a negative correlation between investment and per capita income is expected. If increase in capital output ratio neutralises the effect of investment then there are inefficiencies associated with inward trade orientation. Similarly, due to import substitution, which leads to gross inefficiencies, a negative relationship is expected between economic

growth and agricultural production for countries with inward orientation and a positive relationship is expected between economic growth and agricultural production for outward oriented countries (Salvatore, 1983 and Singer *et al.*, 1988).

### **3.2.2. Empirical model**

The theoretical model specified above when estimated with classical methods of estimation such as OLS leads to spurious relationships when the time series are non-stationary and thus their results would be meaningless. Numerous studies have been conducted to deal with the different aspects of growth promoting effects of exports. Evidences show that the positive effect of exports on economic growth as concluded by many of the previous studies were spurious due to the non stationarity of the data and in these studies, little consideration was given in terms of evaluating the time series characteristics of the data employed. Thus recently, attempts are being made to overcome those limitations by employing the cointegration and error correction techniques.

The Johansen and Juselius (1990) maximum likelihood test procedure allows cointegration analysis in a multivariate system and identifies the number of cointegrating vectors between the non stationary level variables in the context of a Vector Error Correction Model (VECM). Basically, this is a vector autoregression model (VAR) in an error correction form. The VAR augmented with error correction terms (residuals) derived from the estimated long-term cointegration relationships is estimated to confirm the export-led agricultural growth hypothesis. The VAR makes all variables potentially endogenous and relates each variable to its own past values and past values of all other variables, thus allowing for possible feedback between variables. Vector Auto Regression Error Correction (VAR) technique is found most

appropriate to investigate the dynamic and long run interrelationship between agricultural growth and agricultural exports due to its many features like devoid of *a priori* exogeneity assumption, true simultaneity and devoid of *a priori* distinction between endogenous and exogenous variables (Sims, 1980).

### 3.2.2.1. Testing stationarity

To ensure appropriate model specification and to reduce the possibility of arriving at misleading results, it is important to examine the time series characteristics of the data. This involves tests for the order of integration of the variables. If a variable contains a unit root then it is non-stationary and unless it combines with other non-stationary series to form a stationary cointegration relationship, regression involving the series can falsely imply the existence of a meaningful economic relationship. Before examining the causal relationship between specified variables in the export-led growth model to be estimated, whether the timeseries have a stationary or non-stationary trend and if non-stationary, the order of integration were established.

The most widely used tests for unit roots are the Dickey Fuller (DF) and Augmented Dickey Fuller (ADF) tests. Both test the null hypothesis that the time series has a unit root or in other words, it is non-stationary. The DF test was applied by running the regression of the following form,

$$\Delta Y_t = \beta_1 + \delta Y_{t-1} + u_t \quad \dots\dots (6)$$

where,  $\Delta Y_t = (Y_t - Y_{t-1})$ ;  $Y_t = \ln Y_t$

The ADF test was run with the equation,

$$\Delta Y_t = \beta_1 + \delta Y_{t-1} + \sum_{i=1}^p \alpha_i \Delta Y_{t-i} + \epsilon_t \quad \dots\dots (7)$$

$$\Delta Y_t = \beta_1 + \delta Y_{t-1} + \beta_2 t + \sum_{i=1}^p \alpha_i \Delta Y_{t-i} + \epsilon_t \quad \dots\dots (8)$$

where,  $\Delta Y_{t-1} = (Y_{t-1} - Y_{t-2})$

$\epsilon_t$  for  $t = 1, \dots, N$  is assumed to be Gaussian white noise i.e.,  $\epsilon_t \sim (0, \sigma^2)$ .

The first equation in ADF is with constant term and no trend whereas the second one is with constant and trend. The number of lagged terms  $p$  is chosen to ensure that the errors are uncorrelated. In all the tests the null hypothesis was  $\delta=0$  which implied that the time series  $Y_t$  was non-stationary.

The critical values of the test statistic ( $\tau$ ) of the lagged term have been tabulated by Dickey and Fuller (1979). They have also been considerably extended by Mackinnon through Monte Carlo simulations (Mackinnon, 1991).

As an alternative to the inclusion of lag terms to allow for serial correlation, the Phillips - Perron unit root test uses a non-parametric correction for serial correlation. The approach was to first calculate the above unit root tests from the regression equations with  $p=0$ . The statistics are then transformed to remove the effects of serial correlation on the asymptotic distribution of the test statistic. The critical values are the same as those used for the Dickey-Fuller tests.

Annual time series data for the period 1970-71 to 1999-2000 were used in the analysis. The tests were applied for variables namely, real per capita gross domestic product in agriculture (PAGGDP), real gross capital formation in agriculture (CFAG), real agricultural exports (AGEXP) and index of agricultural production (AGPIND).

### 3.2.2.2. Testing for cointegration

The test for the order of integration of each variable in the model was to establish whether the time series was non-stationary and how many times the variable needs to be differenced to result in a stationary series. However, first differencing is not an appropriate solution to the non-stationarity problem and it prevents detection of the long-run relationship that may be present in the data, i.e. the long-run information is lost, which is precisely the main question being addressed.

If a series must be differenced  $d$  times before it becomes stationary, then it is said to be integrated of order  $d$ , denoted  $I(d)$ . Consider two time series  $Y_t$  and  $X_t$ , which are both  $I(d)$ . In general, if  $X_t$  and  $Y_t$  are not cointegrated, any linear combination of the two series will also be  $I(d)$ ; i.e., the residuals,  $u_t$  obtained from regressing  $Y_t$  on  $X_t$  are  $I(d)$ .

The economic interpretation of cointegration is that if two (or more) series are linked to form an equilibrium relationship spanning the long-run, then even though the series themselves may contain stochastic trends (i.e., be non-stationary) they will nevertheless move closely together over time and the difference between them will be stable (i.e., stationary). The concept of cointegration mimics the existence of a long-run equilibrium to which an economic system converges over time, and  $u_t$  defined above can be interpreted as the disequilibrium error (i.e., the distance that the system is away from equilibrium at time  $t$ ). Thus following directly from the identification of cointegration with equilibrium it is possible to make sense of regressions involving non-stationary variables. If these are cointegrated then regression analysis imparts meaningful information about long-run relationships, whereas if cointegration is not established we return to the problem of spurious correlation.

An approach to testing for cointegration is to construct test statistics from the residuals of a cointegrating regression in levels mostly using Engle Granger and Augmented Engle Granger tests. However, in the case of a system of variables Johansen Maximum likelihood procedure (Johansen and Juselius, 1990) is the most applicable method since it permits the existence of cointegration between the system of variables without imposing any bias on the estimates. The Johansen test for cointegration is a multivariate unit root test which estimates the cointegrating rank 'r' in the multivariate case and is also able to estimate the parameters  $\beta$  of these cointegrating relationships. This test procedure is most efficient because it identifies the number of cointegrating vectors between the non-stationary level variables in the context of a Vector Error Correction Model (VECM). Basically, this is a vector Auto Regression (VAR) model in error correction form. In a system with two or more variables, a VECM, like the VAR model, treats each variable as potentially endogenous and relates the change in one variable to past equilibrium errors and to past changes in all variables in the system.

Following Johansen and Juselius (1990), the maximum likelihood method of cointegration is explained as follows :

Let  $Z_t$  be a vector of P time series variables which are potentially endogenous. It is possible to model  $Z_t$  as an unrestricted Vector Auto Regression (VAR) involving up to k lags of  $Z_t$ ;

$$Z_t = A_1 Z_{t-1} + \dots + A_k Z_{t-k} + u_t \quad u_t \sim \text{IN}(0, \sigma^2) \quad \dots (9)$$

where  $Z_t$  is a  $(n \times 1)$  vector of I(1) variables and each of the  $A_i$  is an  $(n \times n)$  matrix of parameters. This is comparable to the single equation dynamic model. The system is

in reduced form with each variable in  $Z_t$  regressed on only lagged values of both itself and all other variables in the system.

The above equation can be reformulated into a vector Error-Correction (VECM) form as

$$\Delta Z_t = \Gamma_1 \Delta Z_{t-1} + \dots + \Gamma_{k-1} \Delta Z_{t-k+1} + \Pi Z_{t-1} + u_t \quad \dots\dots (10)$$

where

$$\Gamma_i = (I - A_1 \dots \dots - A_i), i = (1, \dots, k-1)$$

and  $\Pi = -(I - A_1 \dots \dots - A_k)$

This way of specifying the system contains information on both the short- and long-run adjustment to changes in  $Z_t$ , via the estimates of  $\Gamma_i$  and  $\Pi$  respectively. The  $\Pi$  matrix contains information on the long run relationships. In fact,  $\Pi = \alpha\beta'$  where  $\alpha$  is a matrix representing the speed of adjustment to disequilibrium, while  $\beta$  is a matrix of long-run co-efficients such that the term  $\beta'Z_{t-k}$  embedded in the above equation represents upto  $(n-1)$  cointegration relationships in the multivariate model which ensure that the  $Z_t$  converge to their long-run steady state solutions. Assuming  $Z_t$  is a vector of non-stationary  $I(1)$  variables, then all the terms in the above equation which involve  $\Delta Z_{t-i}$  are  $I(0)$  while  $\Pi Z_{t-k}$  must also be stationary for  $u_t \sim I(0)$  i.e., to be 'white noise'.

If  $\Pi$  has full rank (i.e., there are  $r = n$  linearly independent columns) then all the variable in  $Z_t$  are  $I(0)$ , while if the rank of  $\Pi$  is zero there are no cointegration

relationships. More usually,  $\Pi$  has reduced rank; i.e., there are  $r \leq (n-1)$  cointegration vectors present.

The estimates of  $\alpha$  and  $\beta$  are obtained by the procedure reduced rank regression (Johansen, 1988). Rewriting the equation in VEC form as,

$$\Delta Z_t + \alpha \beta' Z_{t-k} = \Gamma_1 \Delta Z_{t-1} + \dots + \Gamma_{k-1} \Delta Z_{t-k+1} + u_t \quad \dots\dots (11)$$

The correction for short-run dynamics (ie. their effect) was made by regressing  $\Delta Z_t$  and  $Z_{t-k}$  separately on the right-hand side of the above equation. The vectors  $R_{ot}$  and  $R_{kt}$  are obtained from the following equations.

$$\Delta Z_t = C_1 + \Gamma_1 \Delta Z_{t-1} + \dots + \Gamma_{k-1} \Delta Z_{t-k+1} + R_{ot} \quad \dots\dots (12)$$

$$Z_{t-k} = C_2 + \Gamma_1 \Delta Z_{t-1} + \dots + \Gamma_{k-1} \Delta Z_{t-k+1} + R_{kt} \quad \dots\dots (13)$$

where  $C_1$  and  $C_2$  are constant terms

The residual (product moment) matrices are defined as

$$S_{ij} = T^{-1} \sum_{t=1}^T R_{it} R_{jt}' \quad (i,j = o,k) \quad \dots\dots (14)$$

The maximum likelihood estimate of  $\beta$  is obtained as the eigen-vectors corresponding to the  $r$  largest eigen values from solving the equation.

$$|\lambda S_{kk} - S_{ko} S_{oo}^{-1} S_{ok}| = 0 \quad \dots\dots (15)$$

which gives the  $n$  eigen values  $\lambda_1 > \lambda_2 > \dots > \lambda_n$  and the corresponding eigen vectors  $V = (v_1, \dots, v_n)$ . Those  $r$  elements in  $V$  which determine the linear combination of stationary relationships can be denoted  $\beta = (v_1, \dots, v_r)$ ; that is, the distinct  $v_i' Z_t$  ( $i = 1, \dots, r$ ) combinations of the  $I(1)$  levels of  $Z_t$  which produce high correlations with

the stationary  $\Delta Z_t \sim I(0)$  elements in the VECM equation are the cointegration vector by virtue of the fact that they must themselves be  $I(0)$  to achieve a high correlation. Since each eigenvector  $v_i$  has a corresponding eigenvalue, then the magnitude of  $\lambda_i$  is a measure of how strongly the cointegration relations  $v_i'Z_t$  (which can be denoted as  $\beta_i'Z_t$ ) are correlated with the stationary part of the model. The last  $(n-r)$  combinations obtained from the Johansen approach, that is,  $v_i'Z_t$  ( $i = r + 1, \dots, n$ ), indicate the non-stationary combinations, and theoretically these are uncorrelated with the stationary elements in VECM equation. Consequently, for the eigen vectors corresponding to the non-stationary part of the model,

$$\lambda_i = 0 \text{ for } i = r + 1, \dots, n. \quad \dots (16)$$

The null hypothesis that there are at most  $r$  cointegration vectors (and thus  $(n-r)$  unit roots) amounts to,

$$H_0 : \lambda_i = 0 \quad i = r + 1, \dots, n \quad \dots (17)$$

where only the first  $r$  eigenvalues are non-zero. This restriction can be imposed for different values of  $r$  and then the log of the maximum likelihood function for the restricted model is compared to the log of the maximum likelihood function of the unrestricted model and a standard likelihood ratio test.

The test of the significance is the maximum eigen value test. It tests the significance of the largest  $\lambda_r$  using  $\lambda_{\max}$  statistic.

$$\lambda_{\max} = -T \log (1 - \hat{\lambda}_{r+1}) \quad r = 0, 1, 2, \dots, n - 2, n - 1. \quad \dots (18)$$

This tests that there are  $r$  cointegration vectors against the alternative that  $r + 1$  exist.

The Johansen maximum likelihood procedure was applied to the vector  $Z_t$  of variables namely, real per capita gross domestic product in agriculture (PAGGDP), real gross capital formation in agriculture (CFAG), real agricultural exports (AGEXP) and index of agricultural production (AGPIND) and Trade Policy dummy (TP).

### 3.2.2.3. Vector auto regression

While the estimated cointegrating vectors show the long run equilibrium among the variables, the dynamic adjustments that occur in the short run leading to stable long-run relationships in response to various shocks to the system remain unspecified. The dynamic relations among the series was established in a Vector Auto Regression (VAR) model by conducting Variance Decompositions (VDCs) tests of the forecast errors at different time horizon. A VAR model augmented with the appropriate error correction terms (the residuals) derived from the estimated long-term cointegration relationships was estimated to confirm export-led growth hypothesis. It is important that all the variable used in the VAR are stationary for deriving valid inferences. In instances where the levels variables were non-stationary, stationarity of the series was accomplished through differencing. The VAR estimations was then applied to the stationary series. In a system with two or more variables, a vector error correction model, like the VAR model, treats each variable as potentially endogenous and relates the change in one variable to past equilibrium errors and to past change in all variables in the system. The error correction term (EC) is the residual lagged one period, derived from the estimated long-term cointegration relationship.

The VAR error correction models estimated are of the general form.

$$\Delta Y_t = \alpha_0 + \sum_{i=1}^h \alpha_i \Delta Y_{t-i} + \sum_{i=1}^k \sum_{j=1}^n \beta_{ij} \Delta X_{j,t-i} + \phi EC_{t-1} + U_t \quad \dots\dots (19)$$

The usefulness of VECM for policy analysis is conditional on their lag structures. To avoid biased results and invalid inference, the optimal lag order on each variable was determined statistically by minimising Akaike's Final Prediction Error (FPE) (Akaike, 1969) following Hsiao (1987). With the optimal lags determined in the VECM, the resultant equations are estimated as a joint system.

The vector Auto Regression model in error correction form was specified in the following way with stationary variables.

$$\Delta \text{PAGGDP}_t = \alpha_0 + \sum_{i=1}^h \alpha_i \Delta \text{PAGGDP}_{t-i} + \sum_{i=1}^k \beta_i \Delta \text{CFAG}_{t-i} + \sum_{i=1}^m \Delta \text{AGEXP}_t + \sum_{i=1}^n \Delta \text{AGPIND}_t + \psi \text{TPD} + \emptyset \text{EC}_{t-1} + U_t \quad \dots\dots (20)$$

where,

- $\Delta$  is the first – difference operator
- $\text{PAGGDP}_t$  – Real Agricultural GDP Per Capita
- $\text{CFAG}$  – Real Capital Formation in Agriculture
- $\text{AGEXP}$  – Real Agricultural Exports
- $\text{AGPIND}$  – Agriculture Production Index
- $\text{TPD}$  – Trade Policy Dummy
- $\text{EC}_{t-1}$  – Lagged Error Correction term
- $U_t$  – Zero mean white noise error term

Analysis was done for the period from 1970-71 to 1999-2000.

There are several ways to explain the coefficient estimates of the VECM. One way is to evaluate the short-run dynamics among the variables through the signs on the estimated lagged coefficients. The dynamic short-run interactions among the series can also be evaluated by inverting the estimated vector autoregressive error corrections models to derive their corresponding moving average representations. A variance decomposition that divides the forecast-error variance of shocks associated with each variable into that proportion attributable to its own innovations and innovations in the other variables in the system at different time horizons were used to evaluate the interactions.

### **3.3. ESTIMATION OF CONTRIBUTION OF AGRICULTURAL EXPORTS ON POVERTY REDUCTION IN A RECURSIVE SYSTEM**

#### **3.3.1. Theoretical arguments**

Contribution of agricultural exports to agricultural growth was analysed from the perspective of growth theory. The hypothesis was formulated and tested that agricultural exports contribute to poverty reduction through its impact on the agricultural growth/rate of increase in per-capita income derived from agriculture. Rapid increase in exports of agricultural products results in high agricultural growth due to increase in the efficiency of the resource transfers. The observed changes in rural poverty over the period was explained by the explicit model of the determination of rural poverty. In this context, it is obviously relevant to consider the rate of agricultural export growth as an important factor influencing the incidence of rural poverty through the rate of growth in agriculture.

By postulating that an important determinant of the extent of rural poverty is the growth in agricultural sector which is in turn influenced by the export growth, a cause and effect relationship was established between incidence of rural poverty,

agricultural growth and export growth. Agriculture is not only the dominant source of income in the rural areas, and besides, the scale of non-agricultural income generating activity in rural areas almost certainly depends upon the level of agricultural production. Hence agricultural production index was included in the model.

The relationship between the incidence of poverty and agricultural growth over the period was examined through regression analysis. Planning commission estimates of incidence of rural poverty (percentage of population below poverty line) were used for regression analysis. It was hypothesized that the incidence of rural poverty depends upon the level of per capita domestic product from agriculture. Further, an alternative hypothesis that the incidence of rural poverty depends not only on the current years level of net domestic per capita but also on the level in the previous year, was also tested. There are other factors operating in the rural economy, which influence the incidence of rural poverty. This hypothesis was tested including time as an additional variable.

There are relations between changes in nominal prices of some commodities consumed by the poor and their real incomes. The changes in the nominal price of the consumption basket of the poor had a far greater and more immediate impact on their ability to cross the poverty line than on their incomes, whether they are producers of these commodities or farm labourers. This is due to the rural poor's small share in the marketed agricultural surplus; rigidities in rural wages, which are increasingly monetised; and the wide spread dependence of the poor on market purchases for consumption needs (Narain, 1961; Ahluwalia, 1978) It is indicated that the use of Consumer Price Index of Agricultural Labourers (CPIAL) to estimate poverty percentages would produce a spurious positive correlation between the price variable

and the incidence of rural poverty. Narain (1977) argued that although measurement of poverty line was statistically influenced by CPIAL, its influence on the distribution of household expenditure was casual rather than statistical. If only the distribution of household expenditure remained unchanged over time then the use of CPIAL in estimating poverty percentages would produce a spurious positive correlation. Therefore, in the present study two more equations were estimated by adding price as an explanatory variable to GDPAP and TIME. For price, the CPIAL was included as explanatory variable in one equation and another equation was estimated using Index Number of Wholesale Price of Food Articles (WPIF).

### 3.3.2. Empirical estimation

The recursive system of equation is given as

$$\text{PAGGDP}_t = \beta_0 + \beta_1 \text{CFAG}_t + \beta_2 \text{AGEXP} + \beta_3 \text{INDAG} + u_{1t} \quad \dots\dots (21)$$

where, PAGGDP is the per capita real gross domestic product in agriculture, CFAG is the real capital formation in agriculture. AGEXP is the real agricultural exports,  $u_t$  is error term. Improved agricultural performance, measured as an increase in the gross domestic product in agriculture per head of the rural population at constant prices (PAGGDP) is definitely associated with reduction in the incidence of rural poverty. The equation is given by

$$\text{PPBL}_t = \beta_0 - \beta_1 \text{PAGGDP}_t - \beta_2 \text{CFAG}_t - \beta_3 \text{AGEXP} + \beta_4 \text{INDAG} + u_{2t} \quad \dots\dots (22)$$

where PPBL is the percentage of rural population below poverty line in India.

$$PPBL_t = \beta_0 - \beta_1 PAGGDP_t - \beta_2 PAGGDP_{t-1} - \beta_3 CFAG_t - \beta_4 AGEXP_t + \beta_5 INDAG + u_{3t} \quad \dots\dots (23)$$

Where,  $PAGGDP_{t-1}$  is the lagged (one year) per capita agriculture gross domestic product.

The rationale for having both  $PAGGDP_t$  and  $PAGGDP_{t-1}$  as explanatory variables is that poverty is defined in terms of consumption, and consumption can be protected from a decline in income in any one year by borrowing or sale of assets. This cushion is exhausted, however, if there are two bad years in succession since borrowing capacity is limited and assets sold have to be replaced. For this reason, a decline in income in one year does not lead to as large increase as poverty as when there are two bad years in succession. Equally, a rise in income levels immediately following a bad year does not reduce poverty as much as might be expected, since consumption loans undertaken in the previous years would have to be repaid, and assets sold replaced before consumption levels could recover fully. Lagged agricultural income was therefore an important variable on its own right.

To find out the underlying time trend in the incidence of rural poverty incidence associated with changes in  $PAGGDP$ , the above equation was modified as

$$PPBL_t = \beta_0 - \beta_1 PAGGDP_t - \beta_2 PAGGDP_{t-1} - \beta_3 CFAG_t - \beta_4 AGEXP_t - \beta_5 INDAG - \beta_6 TIME + u_{4t} \quad \dots\dots (24)$$

Time as an explanatory variable was included to identify the influence the host of factors like employment generation due to investment on socio-economic overheads in rural areas, development of cottage and village industries, growth of the

tertiary sector in rural areas resulting from agricultural development, land reforms, development of co-operative institutions and growth in health education and other services. The temporal variation in the incidence of rural poverty was assessed after making allowances for the changes in the incidence of poverty associated with agricultural performance and the nominal price of the rural poors consumption basket. The above equation was modified as:

$$\text{PPBL}_t = \beta_0 - \beta_1 \text{PAGGDP}_t - \beta_2 \text{PAGGDP}_{t-1} - \beta_3 \text{CFAG}_t - \beta_4 \text{AGEXP}_t - \beta_5 \text{INDAG} \\ - \beta_6 \text{TIME} - \beta_7 \text{CPIAL} + u_{5t} \quad \dots\dots (25)$$

$$\text{PPBL}_t = \beta_0 - \beta_1 \text{PAGGDP}_t - \beta_2 \text{PAGGDP}_{t-1} - \beta_3 \text{CFAG}_t - \beta_4 \text{AGEXP}_t - \beta_5 \text{INDAG} \\ - \beta_6 \text{TIME} - \beta_7 \text{WPIF} + u_{6t} \quad \dots\dots (26)$$

$$\text{Cov}(u_{1t}, u_{2t}) = 0$$

$$\text{Cov}(u_{1t}, u_{3t}) = 0$$

$$\text{Cov}(u_{1t}, u_{4t}) = 0$$

$$\text{Cov}(u_{1t}, u_{5t}) = 0$$

$$\text{Cov}(u_{1t}, u_{6t}) = 0 \quad \dots\dots (27)$$

where, CPIAL is the consumer price index of agricultural labourers

WPIF is the wholesale price index of food articles

The equations were estimated after logarithmic transformation for the time period, 1970-71 to 1999-2000.

### 3.4. TESTING PRICE INSTABILITY AND TRANSMISSION

Dismantling of trade barriers on imports and freer exports would increase the volatility of domestic prices and destabilise farm incomes and this will also lower the national export earnings. Since there is considerable volatility in prices in the world agricultural markets, it is often argued that due to free trade there would be chance of transmission of price volatility to domestic market affecting the farm income. Tests for price instability and transmission were done for commodities like coffee, tea, pepper, chilli, sugar, cotton, cashew, tobacco and rice for pre and post liberalisation periods.

#### 3.4.1. Measuring volatility in prices

As a first step, the pattern of variability in price was analysed using residual trend approach, which involves regressing the absolute value of residuals from the initial trend regression against time and testing for significant trend. Also, the Coefficient of Variation (CV) of the detrended price data was used as a summary measure of variability. This CV is a measure of relative dispersion around the original mean which indicated changes in variability when the standard deviation of the detrended data increases or decreases at a faster rate than does the mean. CV was estimated for detrended price data for the pre and post liberalisation periods.

The changes in the variability over time in domestic and world prices of agricultural commodities were measured by residual trend approach and the approach is given by

$$W_t = \beta_0 + \beta_1 t + u_t \quad \dots\dots (28)$$

Where,  $W_t$  = World Price

$t$  = Time variable

$$D_t = b_0 + b_1t + v_t \quad \dots\dots (29)$$

where

$D_t$  = Domestic Price

The residual trend model is given by

$$|u_t| = \alpha_0 + \alpha_1t + e_t \quad \dots\dots (30)$$

$$|v_t| = a_0 + a_1t + \varepsilon_t \quad \dots\dots (31)$$

The slope coefficients  $\alpha_1$  and  $a_1$  are tested for their significant difference from zero, where the slope coefficient  $\alpha_1$  denotes world price variability and  $a_1$  indicates domestic price variability. The world price and domestic price both in Rupee per kg and Dollar per kg were used for the analysis.

### 3.4.2. Change in covariance pattern

The extent of transmission of world price instability to domestic prices (changes in covariance pattern over time) was studied using cross-product trend approach.

With  $u_t$  and  $v_t$  denoting the residuals from the initial trend equations for world and domestic prices respectively, the product of  $u_t$  and  $v_t$  was regressed against time,

$$u_tv_t = \gamma_0 + \gamma_1t + Z_t \quad \dots\dots (32)$$

The slope coefficient ' $\gamma_1$ ' was tested for its significant difference from zero in order to test for changes in covariance patterns over time.

### 3.4.3. Relationship between the world market instability and domestic producers price

The price volatility transmission from world price to producer price begins with the average annual export price received by a country, the Export Unit Value (EUV) which need not closely follow the world price. Differences between the world price quotation and the EUV can be explained by differences in quality, by the seasonal distribution of exports, by forward pricing contracts and by the particular world market location used. The mapping of EUV in local currency to the average producer price is primarily affected by three factors. The first is the share of production sold in domestic market or carried forward stocks, especially if there are quality differentials between the domestic and export markets. Second, government intervention in the form of export taxes, attempts at price stabilisation, or other intervention in the domestic market induce less than perfectly correlated movements between the domestic price and the EUV. The third factor is the size and temporal behaviour of marketing and processing margin retained by market intermediaries.

The relationship between world prices for agricultural commodities and the average Export Unit Values (EUVs) received by the country were analysed. Export revenue was valued at f.o.b. in U.S. dollars. Export Unit Value was computed by dividing export revenue by the total quantity of exports of the particular commodity. Producer price are valued in Indian rupee per kilogram. World prices, as well as the EUV (export revenue), were deflated to 1995 US dollars with the IMF'S "World Consumer Prices Index", a GDP-weighted average of country consumer price indices (CPI). EUVs were also deflated with the world CPI instead of the national CPI to reflect the EUVs purchasing power in the international markets. In contrast the producer prices were deflated to 1995 prices by the Indian CPI. A simple CPI weighted real exchange rate is used. The real local currency/US dollar rate is defined

as the nominal local currency/US dollar exchange rate multiplied by the ratio of the world CPI to the Indian CPI.

The transformation of EUVs from US Dollar to local currency units is determined by the real exchange rate. The real exchange rate is affected by macroeconomic forces and policies, but agricultural export performance and hence movements in EUVs, can themselves be an important factor. It is also possible that the movements in EUVs can induce offsetting movements in the real exchange rate that tend to stabilise the domestic value of the EUV.

The transformation from EUV in US dollar to the average producer price (PP) in local currency depends primarily on four factors namely the real exchange rate, the share of production sold in the domestic market, government intervention and the marketing and processing margins retained by the market intermediaries.

The role of changes in the exchange rate in buffering the producer prices from EUV was isolated by a simple variance decomposition analysis. Let  $EUV_{(\$)}$  and  $EUV_{(R)}$  denote export unit values in US dollars and Indian rupee respectively, RR the real exchange rate and PP the produces price in rupees.

By definition

$$EUV_{(R)} = EUV_{(\$)} \times RR \quad \dots\dots (33)$$

The relationship between  $EUV_{(R)}$  and PP is not obvious because of the roles of marketing intermediaries between the producer and the exporter, the domestic market and government interventions, but it can be approximated with a linear regression of the form

$$PP_t = a + b EUV_{(R)} + U_t, \quad \dots\dots (34)$$

Where  $U_t$  is a stochastic residual

$$PP_t = a + b (EUV_{(S)} \times RR) + U_t \quad \dots\dots (35)$$

Using an approximation due to Goodman (1960), the variance of PP is

$$V(PP) = b^2 [\underline{RR}^2 \times V(EUV_s) + \underline{EUV_s}^2 \times V(RR) + 2 \times \underline{RR} \times \underline{EUV_s} \times COV(EUV_s, RR) - COV^2(RR, EUV_s) + R] + \sigma u^2 \quad \dots\dots (36)$$

Where V indicates the variance of the variable and CoV the covariance between two variables, single underline ( $\underline{RR}$ ,  $\underline{EUV_s}$ ) denote sample means, R is the a residual, and  $\sigma u^2$  is the variance of  $u_t$ . Given the variance of PP, it can be decomposed into five variability components,  $V(EUV_s)$ ,  $V(RR)$ ,  $COV(EUV_s, RR)$ , R and  $\sigma u^2$ .

### 3.5. EXPORT COMPETITIVENESS

#### 3.5.1. Nominal Protection Coefficient (NPC)

Trade Liberalisation is expected to bring changes in the domestic as well as international prices due to removal of price distorting policies. These changes can affect the competitiveness of countries in agricultural trade. NPC measures actual divergence or distortions between any given commodity's domestic price and its international or border price. Such a divergence represents the presence of market interventions such as taxes, subsidies, government controlled prices and other policy instruments. Accordingly, the divergence can be used as a general indicator of whether domestic producers are receiving an incentive or a disincentive in comparison with the no-divergence situation.

The NPC of a commodity is the ratio of domestic price to its border price (international reference price).

$$NPC_i = \frac{P_{di}}{P_{bi}} \quad \dots\dots (37)$$

Where  $NPC_i$  – is the nominal protection coefficient for the 'i' the commodity in a given country.

$P_{di}$  – domestic price  $i^{\text{th}}$  commodity at the producer or whole sale level.

$P_{bi}$  – border (reference) price of the  $i^{\text{th}}$  commodity.

$i$  – Commodity

NPC was worked out for commodities like tea, coffee, pepper, chilli and cashewnuts for ten years from 1990-91 to 1999-2000.

### 3.5.1.2. Domestic prices

In order to approximate as closely as possible to the prices that the farmers receive during the harvest, the wholesale prices for cashew, tea, coffee, pepper and chilli for the selected markets were considered as domestic prices.

### 3.5.1.3. Border prices/References prices

It is price that the farmers would have received or the prices of the domestic varieties would have been under conditions of free trade at the same exchange rate. Border prices were computed by using international price adjusted for freight, insurance, marketing costs and trading margins including any processing cost or by using the free on board (f.o.b) prices which are derived by dividing value of exports

by their respective quantities. The method of estimation of international reference price under exportable hypothesis is given in Table 3.1.

**Table 3.1. International reference price  
(Exportable hypothesis)**

S.No.	Particulars	Unit
1.	Auction market price	Rs/Qtl
2.	Marketing margin	Rs/Qtl 5% of domestic price
3.	Transportation cost (local market to port)	Rs/Qtl
4.	Port clearance charges	Rs/Qtl
5.	Freight charges to outside port	Rs/Qtl
6.	Domestic reference price	1+2+3+4+5 Rs/Qtl
7.	Exchange rate	1\$ = ---Rs
8.	FOB at outside market	(6 x 7) x 10 US \$/MT
9.	FOB price at domestic port	Rs/Qtl (8 x 7)/10

#### 3.5.1.4. Exportable hypotheses

NPC was estimated under the exportable hypothesis. In estimating the nominal protection indicators of farm commodities, transport and other related costs, both international and domestic, can make a very large difference. International transport costs provide a degree of protection for domestic producers against imports, whereas in exporting the domestic producer's price must be low enough to make the product competitive in foreign markets, including transport cost to the market. The importance of transport costs depends on a variety of factors, including the location of foreign markets for exports, the location of domestic producing areas in relation to main ports, and the value of the commodity in international trade.

The commodity in the case of exportable hypothesis is an exportable or potentially exportable one and competes with the domestically produced commodity in foreign markets and therefore the domestic commodity has to be extra efficient to the tune of international transportation costs at least. The relevant border or reference price under this hypothesis was obtained after inclusion of the transportation costs (both domestic and international), port clearance charges, marketing costs and trader's margin and processing costs necessary to make the commodity tradeable. This variant of NPC reveals whether a particular commodity is efficient exportable, if the NPC is less than unity.

An NPC value greater than one indicates a distortion favouring domestic producers of the good (who now have greater protection from imports and can raise the price of their output). With respect to domestic consumers, however, the NPC value greater than one indicates a reduction in their well-being, as the policy instrument (the tariff) has raised the price of their consumption basket. Thus, consumers suffer from a higher price and they will also purchase a smaller quantity of the good than they would otherwise. When there is no protection given to the commodity, its domestic price will be equal to its border (FOB) price and NPC is equal to one. A NPC more than one indicates the extent of protection given to the commodity. Trade Liberalisation in this situation would reduce the domestic price. When NPC is less than one, it indicates the extent of disprotection for the commodity and trade Liberalisation in this situation would raise the domestic price.

*Description of Trade Policies*

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## **CHAPTER - IV**

### **DESCRIPTION OF TRADE POLICIES**

Structure of imports and exports of a country depends to a larger extent on the trade policies adopted by it. Foreign trade policy in India has been a striking issue since independence, particularly from the era of the planned economic development. The doctrine of "laissez faire" which prevailed before independence gave its way to a development oriented policy. The present chapter gives a description of the trade policy adopted in India. The trade policy regime of India may be divided into three periods viz., period of export pessimism (the period of first two five year plan); era of export promotion and import restriction (1961 to 1991); and towards an open system (from 1991 onwards). A bird's eye view of dynamics of trade policy is presented in Appendix II.

#### **4.1. PERIOD OF EXPORT PESSIMISM**

In the first and second Five Year Plans, the Indian export policy evolved from indifference, pessimistic neglect, and for several major items, even a constellation of measures adding up to positive discouragement to growing encouragement via escalating subsidisation (culminating in the 1966 devaluation) and promotional measures undertaken by the government. Whenever there was deterioration in foreign exchange government used to reorient the EXIM policies. Though exports were encouraged to some degree, very restrictive import policy with import controls was followed. But the policies did not help much to check deteriorating Balance of Payments. Agricultural trade policy was designed to pursue the twin objectives of food self-sufficiency and promotion of exports of commercial crops. The export pessimism and the resultant indifference to export development on the earlier plans

resulted in the neglect of several sectors with considerable export potential and even after recognising the export potential of many products, the failure to effectively harness the potential has been more conspicuous than achievements in several cases.

#### **4.2. ERA OF EXPORT PROMOTION AND IMPORT RESTRICTION**

A major development soon after the Third Plan was the devaluation of the Indian rupee by 36.5 per cent which was resorted to partly to obviate the need for administering a system of export incentive schemes which became increasingly complex and partly due to the failure of the schemes to generate self sustaining exports. Following devaluation, large export taxes were imposed on a variety of traditional exports. Agricultural products received little export incentive in the form of cash incentives like Cash Compensatory Support, which were introduced after devaluation.

With the burgeoning trade deficit since the emergence of the oil price hike in the early 1970s, export promotion assumed added importance and export promotion measures have been sought to be enlarged. An Export Policy Resolution was announced by the government which aimed to expand, diversify and strengthen the domestic production base so as to generate more exportable surplus in a variety of sectors, strengthen and develop export marketing infrastructures, develop overseas markets and to provide incentives to give a boost to the export sector.

The rationale, efficacy and adequacy of different export promotion measure, various other dimensions of trade policy and their implementation have been subject to criticism by a number of committees and in the light of their recommendations efforts were made to improve the system. Policy of import liberalisation was adopted

with a view to encourage export promotion and emphasis on stimulating economic growth and export promotion through import liberalisation was followed. The most important change in the import policy was the move to a negative list system of restricted imports from a positive list of allowable imports. The two major changes in India's trade policies in 1970s were that the scope of export promotion measures were widened and there was some import liberalisation enabling shift of certain items from the Restricted List to the Open General Licence (OGL). The principle of "indigenous availability" and "essentiality" remained central features of the import policy. Thus imports were restricted largely to non-competitive producer goods and certain mass consumption goods, especially food.

A number of measures were taken in the eighties to promote exports. These include liberalisation of industrial and import policies to encourage production of export goods, development of Export Processing Zones, promotion of hundred per cent Export Oriented Units (EOUs), rationalisation and simplification of schemes of export assistance and incentives, etc. A more realistic and export oriented exchange rate policy which was pursued from 1985 onwards also helped growth of exports in 1980s. From 1985 onwards EXIM policy was announced on a three year basis. A general move towards liberalisation of imports especially of capital goods and raw materials and the emphasis on export incentives dominated the major policy changes. The import liberalisation measures, viz., widening the coverage of the OGL list and reduction in tariff rates had been very significant in food sector. Foreign Trade Policy, 1988 announced further liberalisation of import and export control. The OGL list was expanded in the successive policies and export expansionary efforts were linked to import liberalisation by means of import licenses to exporters.

India's foreign trade regime till the reforms initiated in 1991 was primarily dictated by two important considerations, a quest for import substitution and concern for dwindling foreign exchange resources. The major instruments used to implement these policy goals comprised quantitative restrictions, heightened tariffs, surcharge on imports, export incentives and severe restriction on foreign exchange transactions. There were phases in which these provisions were relaxed. Yet, the basic characteristic of an inward looking import-substituting policy remained more or less intact. Because of import substitution strategy, imports into India were restricted since the mid-fifties. However, country imported essential consumer goods such as edible oils and pulses as well as food, only during period of drought (Bimal Jalan, 1993). In fact, this has been the case up to 1984-85, with the result; the significance of exports for the growth of the economy was severely underestimated. From the EXIM policy of the Government of India it could be observed that imports into the country were regulated more as a means of expediency than as a part of the policy. For much of the last five decades, one could identify two specific elements in India's foreign trade strategy. On the import front, attempts were made to limit 'non-essential' imports both through quantitative restrictions and high tariffs, while on the export front, the emphasis was to maximise exports of those products that were available over and above domestic consumption.

#### **4.3. ERA OF TRADE REFORMS – TOWARDS AN OPEN SYSTEM**

The political instability after the 1989 general election and formation of successive governments did not auger well for the Indian economy. Country entered the decade of 1990s with large internal and external imbalances, exposed to exogeneous shock. The Gulf Crisis led to a hardening of international oil prices and consequently higher import bills. In June 1991, India's foreign exchange reserve sank

to Rs. 23,000 million which could finance only two weeks imports. India was on verge of defaulting on its commitments on debt repayment. Industrial growth became negative due to severe import squeeze and inflation reached double digits, hurting everybody, particularly the poorer sections. Export growth was slowing down, external debt servicing was posing problems and above all there was a great weakening of international confidence in the Indian economy. In response, the new government implemented a series of adjustment policies. The new policy adopted at that time consisted of two components (i) short term stabilization measures, which included reduction of fiscal deficit, devaluation of rupee and dismantling of barriers to the free flow of foreign capital; and (ii) medium term structural programmes involving reforms in fiscal policy, exchange rate policy, trade and industrial policy and policies on financial sector reform and capital market reforms. The set of stabilization measures was quickly succeeded by a spate of Liberalisation measures announced in GOI's Annual Budget for 1991-92. Some of the specific measures like partial convertibility of the Rupee, flashing a red signal on subsidies and devaluation of Indian Rupee, opening the doors to foreign investment through broad spectrum relaxation, a significant reduction in the quantitative restrictions on imports and a plan to gradually reduce tariffs were transparent indications of Indias' commitment to Liberalisation. There was a shift in focus from inward looking policy toward outward looking policy.

Changes in the exchange rate regime complemented the 1991 trade reforms. Until 1991 the rupee was tied to a weighted basket of currencies of India's major trading partners. The first move towards reform of the exchange rate regime was a 24 per cent devaluation of the rupee from Rs.21 per dollar to Rs.25.95 per dollar in July 1991. This was intended to correct the overvalued exchange rate and high costs

faced by exporters, which acted as a disincentive to export growth. Subsequently, in March 1992, the government introduced a dual exchange rate regime designed to liberalise foreign trade. The dual exchange rate was designed to liberalise trade, by subsidising imports and initiate a move towards convertibility of rupee. Nonetheless, the system penalised exporters to the extent that they subsidised imports. The system did not last long. The unification of the exchange rate with market forces determining the rate was announced in 1993-94 budget. The combination of the earlier devaluation and the unification measure resulted in a real effective depreciation of the rupee of around 20 to 25 per cent between July 1991 and March 1993.

A new instrument named eximscrips replaced import replenishment licenses (REP). With the introduction of eximscrips a lot of items formerly subjected to licensing were eligible to be freely imported.

New Export-Import Policy 1992-97 marked a distinct departure from the earlier trade regimes. The main focus of the EXIM policy, 1992-97 was on gradual removal on quantitative restriction on foreign trade, reduction in peak rate of tariff, removal of antiexport bias for agricultural as well as manufactured products, provisions of incentives for improving efficiency and up-gradation of technological and quality standards of the domestic producers. The general approach of the policy was to make the price mechanism, as reflected by a realistic exchange rate, the main form of export incentive. A very important feature of the EXIM policy 1992-97 was freedom.

As for imports until 1991 they were regulated by means of a positive list of freely importable items. As on July 1991, out of 5021 harmonized system (HS) tariff lines at the six-digit level, 4000 were subject to import licensing restrictions. Since

1992, imports were being regulated through a negative list. All goods, except those coming under the negative list, may be freely imported and exported. Imports of 3 items were banned, 80 items restricted and 8 items canalised. The negative list does not contain any capital goods. The banned items were (1) tallow, fat/oils of animal origin (2) animal rennet and (3) unmanufactured ivory. The 80 restricted items were made up of consumer goods, seeds, plants and animals, insecticides and pesticides, chemicals etc. Most restricted items were not permitted to be imported except against a license or in accordance with a public notice issued in this behalf. The canalised items included petroleum products, fertilizers, edible oils, cereals and a few other items. Only two types of import licenses (advance license and special import license) remained compared to several licenses, including the open General License, in the earlier regime. The number of canalising agencies were reduced from 8 to 5.

Agricultural and allied exports continued to be severely constrained by policy imposed restrictions. Indian farm products were characterized by extremely low import content compared to non-farm exportable and the exchange rate convertibility on trade account had enabled many of the farm-based products to become internationally competitive (Economic Survey 1993-94).

In the subsequent EXIM policies and Union Budgets many efforts were taken to liberalise agricultural trade. Prior to 1991, about 96 per cent of internationally tradable agricultural production were protected by non-trade barriers against imports. Exports of most commodities were also subject to Quantitative Restrictions (QRs), except long established exports – tea, coffee, spices, jute, tobacco, castor seed, pepper, oil meals – or those deemed to have an export potential – fruits, vegetables and fish. The 1991-92 trade reforms initially relaxed QRs on a few minor commodities.

Agricultural tariffs were reduced, but remained irrelevant since import licensing and other import controls were maintained. Gradual trade reforms culminated in 1994 with the full liberalisation of a few but important commodities: rice exports, and imports of most edible oils (30 per cent tariff), sugar. On the import side, these foreign trade reforms reduced the share of tradable agricultural production protected by non-trade barriers from about 93 per cent in May 1992 to about 77 per cent in May 1995. Despite significant dismantling of government monopolies in import trade oil seeds, onions, most edible oils and cereals could be imported only by a government monopoly. Despite the declared emphasis on export promotion in 1991 policy reforms, quantitative export restriction on a number of products remained intact. Quantitative Restrictions on import of many commodities were also continued in the name of protecting domestic economy.

In 1990s to remove the anti export bias in agriculture many export promotion were undertaken. With the reforms initiated in 1991, three major changes were effected in agricultural export – import. First channeling of trade has been abandoned and now government does not determine the value or nature of the imports or exports, except for exports of onion and imports of cereals, pulses and edible oils. Second, most of the quantitative restrictions on agricultural trade flows have been dismantled and third, tariffs have been reduced.

Quantitative Restrictions (QRs) on imports maintained on Balance of Payments (BOP) were notified to WTO in 1997 for 2714 tariff lines at the eight digit level. In view of the improvement in India's BOP, the committee on BOP restriction had asked India for a phase out plan for these QRs. Based on presentations before this committee and subsequent consultations with India's main trading partners, an

agreement was reached with those countries, except USA, to phase out the QRs over a period of six years beginning 1997. The matter was referred by USA to the Dispute Settlement Body of WTO on March 31, 1997. The WTO Dispute settlement panel ruled in favour of the USA. India's argument of adverse effect of lifting of QRs on its balance of payments was not accepted because of the improvement in its BOP position and the Appellate Body rejected India's appeal. On December 28, 1999 India and the USA reached a bilateral agreement to remove QRs in 18 months from the adoption of the panel reports in September 1999 to remove QRs on 714 items by 1 April 2000 and the remaining 715 items by 1 April 2001. In modification to EXIM policy 1997-2002 announced in March 31, 2000. It was argued that as an integral part of the country's development policy, India's foreign trade regime should be based on the strategy of export led growth and this could be achieved through optimal exploitation of India's competitive advantage vis-a-vis the rest of the world. It was pointed that in many cases, the composition of India's export basket was not in line with the structure of the world demand. It had been felt that in order to achieve sustained high export growth to the range of 20-25 per cent, considerable diversification in India's export basket in terms of commodity composition as well as direction would be required.

In the EXIM policy for 2000, the proposal to set up special economic zones (SEZ) with fewer rules and negotiations concerning exports and imports were made. The units operating in these zones were to be deemed as outside the country's customs territory and were to have full flexibility of operations. They would be able to import capital goods and raw materials duty free and would also be able to access the same from Domestic Tariff Area (DTA) without payment of Excise Duty. The only condition would be that the units in the zones would have to be a net foreign exchange

earner. The movement of goods between SEZs and ports will be unrestricted and without any hindrance. The only laws, which will operate within the SEZs, will be those related to labour and banking. The objective is to involve the states in export promotion. The first two SEZs will come up at Positra in Gujarat and Nanguneri in Tamil Nadu.

The SEZs imply a qualitative transformation of the traditional Export Processing Zones (EPZs). The improvements include 100 per cent FDI investment through automatic route to manufacturing SEZ units, no routine examination by customs of export and import cargo in SEZs, all imports on self certification basis, duty free material to be utilized over five years, no pre-determined value addition, DTA sales on full duty payment and various procedural simplification for operation like record keeping, inter-unit transfers, subcontracting, disposal of obsolete materials etc.

Conscious steps were initiated to ensure that the process of trade liberalisation in India remains aligned with norms of multilateral trading agreements. Towards this end, the incentive structure for Indian exporters were recasted to make them consistent with India's commitment to the WTO.

#### **4.4. WTO and Indian agriculture**

The Agreement on Agriculture (AOA) was signed by India in April 1994 at Marrakesh, Morocco and came into force on 1<sup>st</sup> January 1995. The agreement incorporated three broad areas of commitments namely market access, domestic support and export subsidies. A summary of provisions of AOA is given in Appendix III.

India's import substitution and inward looking policy regime resulted in high tariffs and non-tariff barriers on many products. Hence, reduction and rationalization of tariffs and removal of NTBs has been an integral part of India's trade policy since 1991 partly on its own initiative and partly from its commitment to WTO. The maximum tariff rate fell from 355 per cent in 1990-91 to 45 per cent in 1997-98 while the import-weighted average tariff had declined from 87 per cent in 1990-91 to 20 per cent in 1998. The EXIM policy facilitated imports of capital goods and raw materials at zero duty. The peak rate of customs was reduced from 50 per cent to 45 per cent in the 1997-98 budget. Subsequent budgets reduced it further and in 2001 it was reduced to 35 per cent.

The tariffs levels have been bound by India for primary agricultural products, processed agricultural products and edible oils, with a few exceptions, at 100 per cent, 150 per cent and 300 per cent respectively for end period of the agreement. Within these bound tariff level, there is considerable flexibility for imposing higher or appropriate tariffs on import of agricultural commodities for protecting the interest of farmers. The custom duty structure is being simplified and rationalised. The agricultural products generally attract a maximum slab of 35 per cent applied import tariff.

The Quantitative Restrictions (QRs) on Import of 1429 items of which 825 were agricultural products were removed in two phases, one in April 2000 and the other in April 2001. After the removal of QRs the tariffs on a number of agricultural items have been recently increased to safeguard the interest of domestic producers.

Import duties on a large number of commodities have been substantially increased and import of 131 goods have been made subject to compliance of Indian quality standards as applicable to domestic goods. In the budget 2001–2002, customs duty on tea, coffee, copra and coconut as well as desiccated coconut has been raised from 35 per cent to 70 per cent. Similarly, duty on refined edible oils except soybean oil has been raised to uniform level of 85 per cent and on crude oil to 75 per cent.

The product specific and the non-product specific support given to agriculture are below the *de minimis* level of 10 per cent of the value of agricultural output, so India is under no obligation to reduce domestic support currently extended to the agricultural sector. As for export subsidy, except for the general income tax exemption, agriculture gets hardly any subsidy. Developing countries are free to provide certain subsidies, such as reduction of export marketing costs, internal and international transport and freight charges. India is making use of these subsidies in certain schemes of Agricultural and Processed Food Products Export Development Authority (APEDA) especially for facilitating export of horticulture products.

India has submitted proposals to the WTO for the current negotiations on the Agreement on Agriculture in the areas of market access, domestic support, export competition and food security. Food and livelihood security of our people, protection of the interest of domestic farmers and maximizing export opportunities for Indian agricultural products are the guiding principles of India's proposals at the WTO negotiations on agriculture.

## *Results and Discussion*

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## CHAPTER - V

# RESULTS AND DISCUSSION

Analysis was done within the framework of the specified methodology and also with specific reference to each of the objectives set forth for the present study. As described in the methodology several possible models were tried to obtain consistent estimates and these estimates were used to draw meaningful inferences, which are presented in this chapter. The main focus of the study was to analyse the impact of agricultural trade liberalisation on agricultural growth and thereby its effect on poverty. Implications of trade liberalisation on commodity prices and its volatility and the changing competitiveness of commodities were also analysed. The results of the analysis are presented in the following sections.

### 5.1. TRADE OPENNESS

Major policy changes were adopted since mid 1991 with a view to achieve higher export growth and was targeted at 20 per cent in 2001. Exports were encouraged more actively through adoption of various export-promotion measures. Rupee was devalued by 24 per cent in two phases; the duty on import of capital goods was reduced; the Export Oriented Units were encouraged; Export Promotion Schemes were liberalized; Special Import Licenses were issued; and number of commodities have been shifted to OGL category. The post reform export growth behaviour in India is often ascribed to trade liberalisation policies of the government (Sarkar, 1995; Srinivasan, 1998; World Bank, 1998). An attempt was made in this study to endorse the fact that there is an improvement in trade performance during the reform period. Trade openness indicators, exponential growth rates and instability indices were estimated for both the pre and post reform periods and compared. In order to eliminate

the geographically determined component of trade, trade openness indicators were estimated using countries' trade as share of GDP. This, by definition, removes the spurious effect of geography on trade openness (because countries' geographic characteristics do not change over time) and gives a cleaner (although still far from perfect) measure of the policy-induced component of trade.

#### **5.1.1. Trade Openness in the overall economy**

Trade policy reforms have led to increase in the proportion of trade (exports + imports) in GDP. The ratio grew steadily from 16.62 per cent in 1991–92 to 20.57 percent in 1990–2000 (Table 5.1). Therefore, Indian economy is more integrated with the world economy in the reform period than in the early 70s and 80s and this was the result of high growth rates of both the exports and imports in the post-liberalisation period. From a modest level of 3.87 per cent in 1970–71, the ratio of exports to GDP rose to about 7.97 per cent in 1991–92 and got further momentum as economic reforms progressed. At present about 9.12 per cent of GDP goes as exports. Total exports at current prices grew at the rate of 14.84 per cent in rupee terms for the period, 1970–71 to 1990–91, while it was 17.57 per cent in the post reform period (Table 5.2). The average annual growth rate of about 18 per cent per annum in rupee terms that India's exports witnessed during the liberalisation period has reflected in openness indicators. The annual growth rate of real exports during the liberalisation period is also significant and it is observed that the real export exhibited higher rate of growth in the reform period. This is also due to fall in rupee value and it was estimated that over the last 20 years the value of Indian currency depreciated by over five times. The devaluation in 1991 also made exports highly profitable. The growth rates of exports in real terms envisaged that inflation remained higher in the post liberalisation period. It is argued that inflation remains high as the currency value falls

**Table 5.1. Indicators of Trade Openness**

YEAR	(TEX/ TGDP) x 100	(TIM/ TGDP) x 100	(TEX+TIM)/ TGDP) x 100	(AgEX/ AgGDP) x 100	(AgIM/ AgGDP) x 100	(AgEX+AgIM/ AgGDP) x 100	(AgEX/ TGDP) x 100	(AgIM/ TGDP) x 100	(AgEX+AgIM/ TGDP) x 100
1970-71	3.87	4.12	7.98	2.72	3.37	6.08	1.23	1.52	2.75
1975-76	5.67	7.39	13.06	5.12	7.43	12.61	2.10	3.01	5.11
1980-81	5.48	10.25	15.73	4.41	4.93	9.34	1.68	1.88	3.56
1985-86	4.66	8.41	13.07	3.91	5.04	8.94	1.29	1.66	2.95
1990-91	6.81	9.04	15.85	4.27	3.31	7.58	1.32	1.03	2.35
1991-92	7.97	8.66	16.62	4.76	2.97	7.73	1.49	0.93	2.42
1992-93	8.42	9.94	18.35	4.90	3.85	8.75	1.48	1.17	2.65
1993-94	8.93	9.36	18.28	5.38	3.16	8.54	1.67	0.98	2.64
1994-95	9.04	9.84	18.88	4.92	4.48	9.40	1.50	1.37	2.87
1995-96	9.97	11.50	21.46	6.97	5.08	12.06	1.98	1.44	3.42
1996-97	9.60	11.23	20.83	6.68	3.97	10.66	1.96	1.16	3.12
1997-98	9.36	11.09	20.45	6.57	4.63	11.20	1.83	1.29	3.12
1998-99	8.65	11.04	19.68	5.68	3.70	9.37	1.62	1.05	2.67
1999-00	9.12	11.45	20.57	5.08	3.32	8.39	1.38	0.90	2.28

TEX - Total Exports  
TIM - Total Imports  
TGDP - Total Gross Domestic Product

AgEX - Agricultural Exports  
AgIM - Agricultural Imports  
AgGDP - Agricultural Gross Domestic Product

Table 5.2. Growth of Economic Indicators

Per cent / annum

YEAR	1970-71 to 1990-91		1991-92 to 1999-00		1970-71 to 1999-00	
	MEAN	CGR (per cent)	MEAN	CGR (per cent)	MEAN	CGR (per cent)
GDP <sub>Cur</sub> (Rs.Cr)	168192.00	13.10	1109221.00	16.06	450500.70	14.33
GDP <sub>Con</sub> (Rs.Cr)	133354.05	4.37	279049.00	6.70	177062.53	4.95
GDP <sub>Ag, Cur</sub> (Rs.Cr)	57824.33	10.82	320379.11	14.13	136590.77	12.35
GDP <sub>Ag, Con</sub> (Rs.Cr)	48752.24	2.59	75251.11	3.54	56701.90	2.87
Tot.EXPORT. Cur(RsCr)	9618.81	14.84	100900.33	17.57	37003.27	17.51
Tot.EXPORT. Cur(\$M)	8135.03	10.29	28352.14	10.54	14200.17	9.88
Tot.EXPORT. Con(RsCr)	7007.86	6.37	24868.50	8.47	12366.06	8.21
Tot.IMPORT. Cur(RsCr)	13680.33	16.93	119220.78	19.81	45342.47	17.54
Tot.IMPORT. Cur(\$M)	11624.62	12.30	33231.50	12.65	18106.69	9.91
Tot.IMPORT. Con(RsCr)	9801.82	8.31	29085.58	10.53	15586.95	8.24
AgEXPORT Cur(RsCr).	2346.19	11.58	18432.67	16.83	7172.13	14.30
AgEXPORT Cur(\$M).	2099.89	7.16	5203.23	9.84	3030.89	6.88
AgEXPORT Con(RsCr).	1854.53	3.35	4535.98	8.40	2658.96	5.23
AgIMPORT Cur(RsCr)	2367.74	11.03	12611.23	15.99	5440.79	12.21
AgIMPORT Cur(\$M)	2149.20	6.62	3574.62	9.06	2576.83	4.93
AgIMPORT Con(RsCr)	1899.89	2.84	3139.38	7.01	2271.74	3.33

CGR - Compound Growth Rates (per cent / annum)

because the purchasing power of the domestic consumers is reduced. In the years between 1975 and 1997, when the rupee held steady exchange rate terms, the inflation rate remained low and exports were rising fast (Jeromi, 1997).

GDP at current prices has also grown from about 13 to 16 per cent in the reform period as compared to earlier period. Nonetheless the high average growth of exports during the liberalisation period is reflected in the increasing exports to GDP ratio. This rise in ratio took place in the presence of an increasing GDP, which was higher than the pre reform period. There has been a constantly rising trend during the last 10 years in proportion of GDP exported. Further, it is noticed that the degree of trade openness represented by the ratio, exports to GDP, showed fluctuations and increased significantly from 6.81 per cent in 1990–91 to about 9.12 per cent in 1999–2000 revealing that trade openness denoted by ratio of exports to GDP behaved very closely to the export policies implemented by the government. Though exports to GDP almost doubled in the 90s against the earlier period, the proportion at below 10 per cent is far behind China and Asian economies. This is due to India's orientation towards domestic market. The robust export growth in 1990s has narrowed down the overall trade deficit (Table 5.3). However, the rise in India's share in world exports to 0.6 per cent in 1990s is not as significant as increase in export GDP ratio in the post liberalisation period.

The import policy of India has undergone a change over a period of time from import restriction to import liberalisation. The extent of tariff reduction agreed under Uruguay round and subsequent lowering of import tariffs to a level lower than what was warranted by India's commitment to World Trade Organization (WTO) pushed up India's imports. The average weighted rates of import tariff has declined to 20 per cent

Table 5.3. Balance of trade

YEAR	Agriculture BOT (Rs. Crore)	Agriculture BOT (\$. Million)	Total BOT (Rs. Crore)	Total BOT (\$ Million)	(AgBOT/AgGDP) x 100	(BOT/GDP) x 100
1970-71	-117.00	-154.81	-99.00	-130.99	-0.65	-0.25
1975-76	-648.00	-746.33	-1229.00	-1415.49	-2.25	-1.73
1980-81	-243.00	-307.24	-5838.00	-7381.28	-0.52	-4.77
1985-86	-871.20	-712.06	-8763.00	-7162.30	-1.13	-3.75
1990-91	1419.00	790.85	-10645.00	-5932.74	0.96	-2.23
1991-92	3104.00	1268.30	-3810.00	-1556.77	1.80	-0.69
1992-93	2019.00	658.75	-9687.00	-3160.65	1.05	-1.52
1993-94	5382.00	1715.90	-3350.00	-1068.05	2.22	-0.43
1994-95	1214.00	386.64	-7297.00	-2323.99	0.44	-0.80
1995-96	5734.00	1714.21	-16325.00	-4880.45	1.89	-1.53
1996-97	9827.00	2768.18	-20103.00	-5662.83	2.71	-1.62
1997-98	7495.00	2016.69	-24075.00	-6477.90	1.94	-1.73
1998-99	9108.64	2165.08	-38579.00	-9170.06	1.98	-2.39
1999-00	8509.27	1963.71	-41658.00	-9613.53	1.76	-2.33

AgBOT - Balance of trade in agriculture  
AgGDP - Agricultural Gross Domestic Product  
BOT - Balance of Trade  
GDP - Gross Domestic Product

in 1998 from 87 per cent in 1990–91 (WTO, 1998). The change from import substitution to import liberalisation is reflected in the ratio, import to GDP, as it increased marginally from 9.04 per cent in 1990–91 to 11.45 per cent in 1999–00. The ratio of imports to GDP further shows that the government to protect domestic market has pursued import restrictions.

Total imports grew at the rate of about 16.93 per cent in rupee terms and 12.3 per cent in dollar terms in the earlier period (1970-71 to 1990-91). However, total imports witnessed about 19.81 per cent and 12.65 per cent at current prices in rupee and dollar terms respectively in the post reform period. As in the pre-reform period, the total import growth was higher than the total export growth in the post reform period. The structure of imports plays a vital role in the economic development of a country. The ultimate use of imports in consumption or investment shows the role of imports in economic development. The increase of investment and raw materials lead to increasing role of imports in the performance of economic growth and if the imports of consumption and food stuff goods occupy the lion share, the import does not lead to change in the economic base which in turn reinforce dependency on imports. Of the total importation in India during 1999–00, food and allied products constituted about 5.6 per cent, fuel 24.3 per cent, fertilizers 2.9 per cent, capital goods 11.4 per cent and input supplies of industries 33.8 per cent.

### **5.1.2. Trade Openness in Agriculture**

Agricultural trade openness, reflected in the ratio of agricultural exports to agricultural GDP, which was 4.27 per cent in 1990–91, increased to a maximum of 6.97 per cent in 1995–96 and thereafter there was a slow down to about 5.08 per cent in 1999–2000. Though growth of agricultural exports (16.83 per cent) was more than

the growth of agricultural GDP at current prices (14.13 per cent), the ratio almost remained constant. Agricultural exports share to total GDP was also found less and almost remained constant over the period though it declined to 1.38 per cent in 1999–00 and this was due to contribution of non-agricultural exports to GDP, which increased over the same period (Table 5.4). It is also evident that agricultural exports comprised about 48 per cent of total exports in 1960–61 and the share dropped sharply over the period and it was almost constant in 90s and at present agricultural exports comprises about one seventh (15 per cent) of the total exports and remaining 85 per cent consists of non-agricultural commodities. India's export of agricultural commodities has been on the increase and agricultural exports grew at the rate 11.58 and 7.16 per cent in rupee and dollar terms respectively at current prices in the period between 1970–71 and 1990–91. The agricultural-export growth was found higher in the 1990s and export of agricultural commodities recorded 16.83 and 9.84 per cent respectively at current prices in rupee and dollar terms. It is evident that agricultural exports also grew significantly in the post reform period and this could be attributed to the trade liberalisation policies followed in agriculture.

The import content of agricultural sector is insignificant as compared to that of non-agricultural sector and as a result agriculture was found to be the net foreign exchange earner for the country. The ratio of agricultural imports to total GDP was less and it was around one per cent. Agricultural imports grew by about 11.03 per cent and 6.62 per cent in rupee and dollar terms respectively in the pre reform period, which is almost equal to the export growth. However, during the post reform period, agricultural imports grew more exponentially at the rate of 15.99 per cent in rupee terms and 9.06 per cent in dollar terms, which is not faster than exports. Reduction and rationalization of tariffs and removal of non-tariff barriers have played a crucial

**Table 5.4. Share of agricultural exports in total exports**

Year	Agricultural Exports		Total Exports	
	Rupees crore	US \$ million	Rupees crore	US \$ million
1960-61	284 (47.65)	596	642 (100.00)	1346
1970-71	487 (37.02)	644	1535 (100.00)	2031
1980-81	2057 (30.65)	2601	6711 (100.00)	8486
1990-91	6317 (19.41)	3521	32553 (100.00)	18143
1991-92	8228 (18.68)	3338	44041 (100.00)	17865
1992-93	9457 (17.61)	3265	53688 (100.00)	18537
1993-94	13021 (18.67)	4151	69751 (100.00)	22239
1994-95	13712 (16.59)	4367	82674 (100.00)	26330
1995-96	21138 (19.88)	6320	106353 (100.00)	31797
1996-97	24239 (20.40)	6828	118817 (100.00)	33470
1997-98	25419 (19.54)	6840	130101 (100.00)	35006
1998-99	26104 (18.68)	6205	139753 (100.00)	33218
1999-2000	24576 (15.08)	5671	162925 (100.00)	37599

Note: Figures in parentheses indicate percentages to total

Source: Economic Survey, Government of India – various issues

role in increasing imports. The average unweighted tariff in agriculture declined from 113 per cent in 1990–91 to 26 per cent in 1997–98 (WTO, 1998). The major import component is food and related items in which pulses and edible oils form major share. The share of food items in total imports increased significantly and persistently from 1.6 per cent in 1991–92 to 6.5 per cent in 1998–99. However, in 1999–00 it was down to 5.1 per cent. The increase was essentially on account of the sharp increase in imports of edible oils. Balance of trade in agriculture at current prices was Rs.1419 crores in 1991 and it increased to a maximum level Rs.9827 in 1996–97 and at present it is Rs.8509 crores. The ratio of balance of trade to GDP in agriculture has also improved in the post-liberalisation period due to higher export growth (Table 5.3). The ratio of agricultural trade (Exports and Imports) to agricultural GDP was less than 10 per cent in 70s and 80s, but the ratio tended to increase in 90s and reached maximum of 12.06 per cent in 1995–96. There was a fluctuation in the ratio during 90s and at present the ratio is 8.39 per cent indicating that the country switched to liberalised trade policies comprising of import liberalisation and export promotion measures.

## **5.2. COMMODITY COMPOSITION AND GROWTH OF AGRICULTURAL EXPORTS**

Indian exports need to grow at the rate of 18 per cent annually, if the target of \$75 billion in 2004-05 is to be achieved for cornering one per cent of world trade from the present level of 0.7 per cent (Economic Times, 2001). India exports a wide range of agricultural and allied commodities. Of the various agricultural and allied items, tea and mate, cashew kernels, spices and coffee were the dominant exportable items during the 1970-71, but their share declined in the later period due to the increase in the share of non-traditional commodities. These traditional agricultural commodities constituted about 93 per cent (Table 5.5) of the total value of agricultural and allied

Table 5.5. Changing share of major agricultural commodities in India's agricultural exports

Commodity / year	Coffee	Tea & Mate	Oil cakes	Tobacco	Cashew Kernels	Spices	Sugar & Molasses	Raw cotton	Rice	Marine products	Meat	Fruits, Vegetables & pulses	Miscellaneous processed fruits
1960-61	2.46	43.66	4.93	5.63	6.69	5.99	10.56	4.23	-	1.76	0.35	2.11	0.35
1970-71	5.13	30.39	11.29	6.78	11.70	8.01	5.95	2.87	1.03	6.37	0.62	2.46	0.41
1980-81	10.40	20.71	6.08	6.85	6.81	5.41	1.94	8.02	10.89	10.55	2.72	3.89	1.75
1990-91	3.99	16.94	9.64	4.16	7.08	3.78	0.60	13.39	7.31	15.20	2.22	3.42	3.37
1991-92	4.04	14.73	11.21	4.58	8.22	4.79	1.91	3.71	9.19	17.54	2.81	4.28	3.71
1992-93	3.98	10.33	16.34	5.01	7.92	4.16	3.74	1.92	10.32	18.43	2.72	3.87	3.94
1993-94	4.19	8.13	17.85	3.54	8.05	4.37	1.37	5.02	9.88	19.60	1.88	3.75	3.61
1994-95	7.68	7.11	13.11	1.86	9.09	4.46	0.45	1.02	8.80	25.79	12.94	4.42	2.06
1995-96	7.11	5.54	11.11	2.11	5.85	3.76	2.39	0.97	21.61	15.99	2.97	3.79	3.52
1996-97	5.88	4.28	14.42	3.12	5.31	4.96	4.45	6.5	13.09	16.54	2.93	3.42	4.02
1997-98	6.67	7.38	13.51	4.21	5.54	5.55	1.00	3.23	13.26	17.65	3.18	4.20	2.08
1998-99	6.62	8.68	7.44	2.92	6.23	6.26	0.09	0.79	24.06	16.74	3.02	3.57	2.09
1999-00	5.55	7.19	6.52	4.04	9.97	6.93	0.15	0.33	12.63	24.81	3.18	4.93	3.09

Note : Share in percentages

products exported in 1970-71 and its share increased to 96 per cent in 1980-81. The share of these commodities declined during 90s and at present it forms 85 per cent. Diversification of export basket of agricultural commodities comprising of marine products, oil-cakes, floriculture products, castor oil, rice, guar gum meal etc. increased substantially during 1990s. The commodity-wise results pertaining to growth and instability indices are presented in Table 5.6 and are discussed below.

### 5.2.1. Coffee

India has been exporting over 80 per cent of its total coffee production and domestic production is around 60,000 tonnes for the last few decades. Coffee consumption is estimated at 53 grams per day and total intake is below domestic production. India's share in the world coffee exports increased from one per cent in 1970's to 3 per cent during 1990s. Coffee exports formed 5 per cent of the total value of agricultural exports and its share, which was 5 per cent in 1970-71, had almost doubled to 10 per cent in 1980-81. Coffee exports witnessed year-wise fluctuation in the reform period and it constituted 4 per cent in total value of agricultural exports in 1990-91; increased to 8 per cent in 1994-95 and declined to 6 per cent in 1999-00. These fluctuations are mostly attributed to trade reforms that has been taking place in coffee trade. Coffee Board no longer had monopoly procurement and free sale Quota, which was 30 per cent in 1994, increased to 100 per cent in 1996. Further, the subsequent frost in Brazil in 1994 also resulted in increased demand for Indian coffee. The major export markets for Indian Coffee are Germany, Italy, USA, Spain, Belgium though India exports nearly to 29 countries. Quantity of coffee exports grew at the rate of 6.77 percent during 1970s and declined to 2.69 percent in 1980s but there was a recovery in the reform period and coffee exports grew annually at the rate of 7.79 percent. Exports in value and unit value terms grew at the rate of 23.77 percent and

Table 5.6. Exports of major agricultural commodities - Growth and Instability

COFFEE											
Year	1970-71to1979-80		1980-81to1990-91		1991-92to1999-00		1970-71to1990-91		1970-71to1999-00		
	CGR	Instability index	CGR	Instability index	CGR	Instability index	CGR	Instability index	CGR	Instability index	
Quantity(000tn)	6.77	15.28	2.69	28.10	7.79	11.63	4.78	23.82	5.13	20.59	
Val Rs Cr(Curr)	29.09	20.21	6.28	23.62	23.77	30.05	13.46	29.38	14.22	29.35	
Val Rs Cr(Con)	20.10	21.10	-1.54	27.14	14.19	30.27	5.09	31.79	5.18	30.92	
Val \$million	27.25	19.09	-1.45	24.32	16.38	33.57	8.96	31.16	6.80	31.38	
UV(Rs/Kg)-Cur	20.91	24.46	3.50	25.90	14.82	26.79	8.28	32.40	8.64	30.40	
UV(Rs/Kg)-Con	12.48	24.99	-4.12	25.05	5.94	28.44	0.29	32.77	0.05	31.04	
UV(\$/Kg)	19.18	23.57	-4.03	25.98	7.96	32.37	3.99	32.81	1.59	32.34	
TEA & MATE											
Year	1970-71to1979-80		1980-81to1990-91		1991-92to1999-00		1970-71to1990-91		1970-71to1999-00		
	CGR	Instability index	CGR	Instability index	CGR	Instability index	CGR	Instability index	CGR	Instability index	
Quantity(000tn)	0.19	9.61	-0.66	7.51	0.66	18.03	-0.18	11.50	-0.75	13.53	
Val Rs Cr(Curr)	14.63	23.24	9.02	23.17	9.11	29.64	9.68	29.17	8.94	28.88	
Val Rs Cr(Con)	6.65	21.40	0.99	24.68	0.67	31.50	1.59	28.29	0.32	28.84	
Val \$million	13.00	23.42	1.09	20.67	2.59	32.33	5.33	28.86	1.86	30.00	
UV(Rs/Kg)-Cur	14.42	19.54	9.74	18.14	8.40	12.40	9.88	23.93	9.76	20.83	
UV(Rs/Kg)-Con	6.45	18.69	1.66	18.69	0.01	13.97	1.77	23.51	1.08	21.04	
UV(\$/Kg)	12.79	20.11	1.76	15.75	1.92	13.96	5.52	23.72	2.64	22.08	

Table 5.6. Contd....

RICE											
Year	1970-71to1979-80		1980-81to1990-91		1991-92to1999-00		1970-71to1990-91		1970-71to1999-00		
	CGR	Instability index	CGR	Instability index	CGR	Instability index	CGR	Instability index	CGR	Instability index	
Quantity(000tn)	30.98	64.04	-3.50	51.90	25.67	118.79	20.19	82.57	19.12	91.17	
Val Rs Cr(Curr)	42.88	74.46	7.36	46.10	26.55	78.59	31.81	89.27	29.04	84.72	
Val Rs Cr(Con)	32.92	69.03	-0.54	48.69	16.76	77.55	22.09	85.29	18.83	81.43	
Val \$million	40.84	76.18	-0.45	45.43	18.99	76.02	26.58	92.70	20.66	86.16	
UV(Rs/Kg)-Cur	9.08	42.51	11.25	12.74	0.70	29.62	9.67	44.24	8.32	39.71	
UV(Rs/Kg)-Con	1.48	41.68	3.06	12.48	-7.09	29.81	1.57	43.24	-0.25	38.94	
UV(\$/Kg)	7.53	41.96	3.16	13.21	-5.32	27.12	5.31	43.90	1.29	39.06	
SPICES											
Year	1970-71to1979-80		1980-81to1990-91		1991-92to1999-00		1970-71to1990-91		1970-71to1999-00		
	CGR	Instability index	CGR	Instability index	CGR	Instability index	CGR	Instability index	CGR	Instability index	
Quantity(000tn)	7.49	14.19	2.71	9.71	6.10	19.11	3.73	18.28	5.06	19.12	
Val Rs Cr(Curr)	20.22	18.86	14.15	29.28	23.40	15.35	11.61	30.74	13.45	28.21	
Val Rs Cr(Con)	11.85	16.92	5.74	32.39	13.85	16.19	3.37	31.40	4.48	28.23	
Val \$million	18.51	19.79	5.84	30.63	16.03	19.61	7.18	32.39	6.09	28.90	
UV(Rs/Kg)-Cur	11.84	18.09	11.14	30.14	16.31	11.58	7.59	28.44	7.99	24.64	
UV(Rs/Kg)-Con	4.05	14.57	2.95	33.73	7.31	9.77	-0.34	28.11	-0.55	24.01	
UV(\$/Kg)	10.25	17.68	3.05	32.07	9.36	13.80	3.32	29.41	0.98	25.65	

Table 5.6. Cónid...

CASHIEW KERNEL											
Year	1970-71to1979-80		1980-81to1990-91		1991-92to1999-00		1970-71to1990-91		1970-71to1999-00		
	CGR	Instability index	CGR	Instability index	CGR	Instability index	CGR	Instability index	CGR	Instability index	
Quantity(000tn)	-7.29	16.56	5.17	14.05	5.07	11.54	-1.99	20.93	1.64	18.73	
Val Rs Cr(Curr)	8.31	23.44	12.38	21.89	14.46	14.40	9.79	28.91	13.28	25.89	
Val Rs Cr(Con)	0.77	19.71	4.11	23.60	5.60	16.66	1.69	26.43	4.32	24.01	
Val Smillion	6.77	23.74	4.20	21.86	7.62	18.51	5.43	29.35	5.92	26.12	
UV(Rs/Kg)-Cur	16.83	16.07	6.85	19.21	8.94	11.16	12.02	22.60	11.45	20.97	
UV(Rs/Kg)-Con	8.69	13.41	-1.01	20.38	0.50	12.38	3.76	21.12	2.63	19.41	
UV(S/Kg)	15.17	16.91	-0.92	18.36	2.43	16.03	7.58	24.52	4.22	22.16	

SUGAR&MOLASSES											
Year	1970-71to1979-80		1980-81to1990-91		1991-92to1999-00		1970-71to1990-91		1970-71to1999-00		
	CGR	Instability index	CGR	Instability index	CGR	Instability index	CGR	Instability index	CGR	Instability index	
Quantity(000tn)	5.30	131.64	-11.29	314.13	-2.48	279.04	-9.92	292.82	-1.46	283.78	
Val Rs Cr(Curr)	19.70	139.71	-14.45	258.54	-16.39	287.63	-7.35	262.73	2.53	272.78	
Val Rs Cr(Con)	11.36	135.59	-20.75	256.84	-22.86	288.57	-14.19	258.34	-5.58	268.65	
Val Smillion	17.99	139.48	-20.67	259.70	-21.38	284.51	-11.03	262.97	-4.12	269.19	
UV(Rs/Kg)-Cur	13.67	34.62	-3.56	116.08	-14.26	146.66	2.85	89.97	4.05	106.25	
UV(Rs/Kg)-Con	5.75	28.29	-10.66	120.89	-20.90	150.89	-4.74	88.57	-4.18	106.07	
UV(S/Kg)	12.05	34.91	-10.57	119.96	-19.38	149.47	-1.23	94.11	-2.70	109.03	

Table 5.6. Contd...

RAW COTTON											
Year	1970-71to1979-80		1980-81to1990-91		1991-92to1999-00		1970-71to1990-91		1970-71to1999-00		
	CGR	Instability index	CGR	Instability index	CGR	Instability index	CGR	Instability index	CGR	Instability index	
Quantity(000tn)	-11.43	201.82	2.72	283.53	-15.68	248.60	6.94	332.02	5.00	306.05	
Val Rs Cr(Curr)	-1.05	220.24	7.97	247.41	-3.34	233.10	15.04	333.03	13.65	304.02	
Val Rs Cr(Con)	-7.95	227.84	0.02	249.26	-10.82	234.21	6.55	341.94	4.66	311.58	
Val \$million	-2.46	219.49	0.11	250.64	-9.12	236.39	10.47	334.88	6.27	309.97	
UV(Rs/Kg)-Cur	11.72	14.60	5.10	51.18	14.63	52.59	7.57	38.17	8.23	42.19	
UV(Rs/Kg)-Con	3.93	17.28	-2.63	55.34	5.76	52.22	-0.36	42.07	-0.33	45.07	
UV(\$/Kg)	10.13	15.42	-2.54	49.29	7.78	50.02	3.30	38.21	1.21	42.75	

OILCAKES											
Year	1970-71to1979-80		1980-81to1990-91		1991-92to1999-00		1970-71to1990-91		1970-71to1999-00		
	CGR	Instability index	CGR	Instability index	CGR	Instability index	CGR	Instability index	CGR	Instability index	
Quantity(000tn)	2.11	28.33	11.15	27.42	-2.92	20.80	2.97	36.20	6.44	33.27	
Val Rs Cr(Curr)	11.75	44.47	18.37	26.16	7.51	43.72	9.22	49.99	15.18	47.93	
Val Rs Cr(Con)	3.96	46.50	9.65	26.97	-0.81	44.35	1.16	52.21	6.07	49.35	
Val \$million	10.15	43.09	9.76	26.04	1.08	42.17	4.88	48.34	7.71	45.90	
UV(Rs/Kg)-Cur	9.44	22.47	6.49	12.89	10.75	26.53	6.07	24.70	8.21	24.93	
UV(Rs/Kg)-Con	1.81	21.24	-1.35	11.22	2.18	27.20	-1.76	23.06	-0.35	24.24	
UV(\$/Kg)	7.88	22.58	-1.25	14.24	4.13	24.42	1.86	25.96	1.19	26.04	

Table 5.6. Contd....

TOBACCO											
Year	1970-71to1979-80		1980-81to1990-91		1991-92to1999-00		1970-71to1990-91		1970-71to1999-00		
	CGR	Instability index	CGR	Instability index	CGR	Instability index	CGR	Instability index	CGR	Instability index	
Quantity(000tn)	4.32	12.95	-5.25	25.88	5.87	48.33	0.55	22.86	0.99	30.90	
Val Rs Cr(Curr)	14.31	8.55	-0.48	30.85	14.40	46.92	7.60	23.60	9.78	31.25	
Val Rs Cr(Con)	6.35	10.60	-7.80	31.29	5.54	48.75	-0.34	24.89	1.10	32.30	
Val \$million	12.68	8.17	-7.72	28.17	7.56	46.38	3.33	23.32	2.66	30.38	
UV(Rs/Kg)-Cur	9.58	8.70	5.04	9.68	8.05	16.17	7.01	11.32	8.71	14.21	
UV(Rs/Kg)-Con	1.94	8.81	-2.70	10.18	-0.31	13.69	-0.88	11.59	0.11	12.80	
UV(\$/Kg)	8.02	8.78	-2.61	8.75	1.60	13.88	2.77	12.21	1.65	12.72	

MARINE PRODUCTS											
Year	1970-71to1979-80		1980-81to1990-91		1991-92to1999-00		1970-71to1990-91		1970-71to1999-00		
	CGR	Instability index	CGR	Instability index	CGR	Instability index	CGR	Instability index	CGR	Instability index	
Quantity(000tn)	11.11	10.67	7.07	11.83	8.92	17.40	7.30	14.46	9.13	15.19	
Val Rs Cr(Curr)	26.87	19.42	13.27	12.75	16.32	15.02	16.30	23.93	18.28	21.86	
Val Rs Cr(Con)	18.03	24.79	4.93	11.41	7.32	16.29	7.72	28.74	8.92	25.33	
Val \$million	25.07	18.01	5.03	13.00	9.37	19.03	11.69	23.47	10.60	21.95	
UV(Rs/Kg)-Cur	14.19	10.52	5.79	8.59	6.80	10.73	8.39	13.40	8.38	12.83	
UV(Rs/Kg)-Con	6.23	16.16	-1.99	9.75	-1.47	10.65	0.40	18.97	-0.19	16.69	
UV(\$/Kg)	12.56	9.00	-1.90	9.68	0.41	11.84	4.09	14.00	1.35	13.61	

CGR - Compound Growth Rate (per cent/annum); Instability Index - Coppock's Instability Index  
Quantity - 000' tonnes; Val Rs Cr(Curr) - Value in Crore Rupees; Val Rs Cr(Con) - Value in Crore Rupees at 80-81 prices; Val \$million - Value in Million Dollars;  
UV(Rs/Kg)-Cur - Unit Value in Rupee/kg at current prices; UV(Rs/Kg)-Con - UV Unit Value in Rupee/kg at 80-81 prices; UV(\$/Kg) - Unit Value in Dollar/kg

14.82 percent, respectively in the reform period which were higher than the growth rates recorded during 1980s. The growth in coffee exports in value terms was contributed both by increase in quantity and unit value. Variability in quantity of export was stable during the reform period as compared to the other decades. However, post-reform period exhibited higher variability in value term. It is also observed that the unit value fluctuations in coffee exports was higher as compared to the quantum fluctuations which resulted in high instability in value term.

### 5.2.2. Tea

India produced nearly 855 million kg during 2001 and the domestic consumption was around 673 million kg. India consumes about 23 per cent of world's tea output. India's tea production has grown at a sluggish pace even as domestic consumption continued to rise. There is also a concern over sluggish demand in both international and domestic markets. As a result exportable surplus have shrunk. Kenya and Srilanka are emerging as the major competitors for our exports. The major export markets of Indian tea are Russia, UK, UAE, Germany and USA. Of the total exports Russia alone accounted for 39 per cent, followed by UK (10 per cent), UAE (10 per cent), Germany (6 per cent) and USA (5 per cent).

India has lost a substantial portion of its market share in world trade of tea and mate, with a decline from 33.4 per cent in 1970 to 22.1 per cent in 1990. In the post-liberalisation period also declining share of India's tea exports in the world trade continued and it further declined to 16.4 per cent in 1998. The share of tea exports in India's agricultural exports also declined from 30.39 per cent in 1970-71 to 16.94 per cent in 1990-91. It reached an all time low of 4.28 per cent in 1996-97 and further improved to 7.19 per cent in 1999-00. The growth rates revealed that tea exports in

quantity and unit value terms in constant rupees as well as dollar terms have made only very low growth in the post reform period. About 47 per cent of production was exported in 1970-71 which declined to 29.2 per cent in 1990-91 and further to 28.8 per cent in 1999-2000. As a result of decline in production the share of country's production in the world also declined as it is observed that the share of production which was 30 per cent in early years declined to 17 per cent in the recent years. Tea exports witnessed higher instability both in quantity and value terms and such instability has increased in the reform period as compared to the earlier period. In quantity terms, tea exports recorded 18 per cent variability, while value terms registered 29.64 per cent variability. However, variability in unit value of exports showed a significant decrease in the reform period. The variability in value terms was mostly attributed to the variability in quantity than unit value.

### **5.2.3. Rice**

Traditionally India exported basmati rice but since 1991-92 export of non-basmati rice has increased and it dominated the rice trade since 1995-96. During late eighties, non-basmati export constituted less than 2 per cent of the total rice export and during the recent triennium its share has risen to above 80 per cent of total quantity of rice export. India was net importer of rice whereas since 1990-91 imports have dwindled almost to nil. The big boost to export of non-basmati rice was witnessed during 1995-96 when export touched 4.5 million tonnes. India exports rice to wide range of countries and Saudi Arabia is the major export market for Indian basmati rice and it consume nearly 60 per cent of India's basmati rice exports. Bangladesh, Saudi Arabia, South Africa and Russia are the major export markets for non-basmati rice and 27 per cent of India's export goes to Bangladesh.

The growth in value of export earnings from rice was contributed by growth in quantity exported whereas the unit value realization experienced a negative growth in the post Liberalisation period unlike earlier period. The growth in rice exports in the post Liberalisation period is contributed more by the non-basmati rice exports whose unit value is less when compared to basmati rice. Non-basmati rice formed 54 per cent of rice exported in 1990-91 and the unit value realized for basmati rice was Rs.12.76 per kg whereas that for non-basmati was 6.05 with an average unit value of Rs.9.14 per kg. By 1995-96, of the total quantity of 4914 thousand tones of rice exported, non-basmati rice formed about 92 per cent. The unit value of total rice exports was Rs.9.30 whereas it was 22.79 for basmati rice and 8.19 for non-basmati rice in the same period. In 1997-98 also non-basmati exports formed about 74 per cent of total rice exports.

Post liberalisation period registered higher variability of rice exports both in quantity and value term. However variability in quantity terms recorded very high instability with 118.79 percent, while the value terms recorded 78.59 per cent of variability. Reduced variability in unit value of exports of rice in post reform period contributed for lesser variability in value of rice exports as compared to that of exports of rice in quantity term.

#### 5.2.4. Spices

India is the largest producer, consumer and exporter of spices. Pepper, chilli, ginger, and turmeric form major spices exports from India. Pepper contributed about 18 percent of spices exports in quantity and value terms during 1999-2000. Spice oils and oleoresins constituted about 16 percent of export earnings from spices. About 75 percent and 40 percent of the world requirement of oleoresin and

pepper respectively is met by India. India's share in the world spices trade was 20.5 percent in 1970s, which declined to 7.7 percent in 1998. The major export markets for spices are USA and UK. During 1999-2000 India exported 130.92 million dollar worth of spices to USA which formed 33.2 percent of total spices exports. Spices contributed about 8 percent of total value of agricultural exports in 1970-71; declined to 3.78 percent in 1990-91 and then increased to 6.93 percent in 1999-2000.

Liberalised environment, heavier emphasis on value added products and supportive trade policies of the government resulted in remarkable growth in export of spices. Spices recorded a high growth rate of 7.49 per cent in 70s in quantity term, but there was a decline in growth (2.71 per cent) during 80s and again it jumped to 6 per cent during the reform period. Similar phenomenon was also observed in value of spices exports and it increased at the rate of 23 per cent and 14 per cent annually both in current and constant prices respectively during 1990s. Indian spices, which are competitive in the world market, is visible from the growth in the unit value of exports as it recorded 16 per cent in the liberalisation period compared to pre-reform period (11 per cent). The rise in unit value of exports of spices contributed more than the quantum of exports for increase in export earnings. Although black pepper is the largest export earner, its production has been showing an erratic trend, which resulted in higher variability in quantity of spices export, particularly during the post reform period. Variability in value of exports was relatively lower and post-reform period witnessed lesser variability as compared to earlier period.

#### **5.2.5. Cashew kernel**

Cashew is primarily an important export oriented commodity and production of raw cashew nut in the country is far below the requirement of the processing sector

(production meets hardly 50 per cent of the demand). Since it is one of the most important item of international trade, many countries are involved in export of cashew kernels. India, Brazil, Mozambique, Tanzania and Kenya are the major countries in terms of production. The world production was nearly 7 lakh tones, of which India shares more than 50 per cent followed by Brazil (25 per cent), Mozambique (6 per cent), Tanzania (4 per cent), Kenya (2 per cent) and other countries (10 per cent). USA, Netherlands, UK and Japan are the major export markets for India accounting for 49 per cent, 20 per cent, 8 per cent and 5 per cent respectively of the total cashew exports.

The share of cashew exports in total agricultural exports declined from 12 per cent in 1970-71 to 7 per cent in 1990-91 and thereafter there was year-wise fluctuations. Presently, cashew exports forms 10 per cent of the total value of agricultural exports. As the largest producer of cashew kernels, India has taken the lead in establishing grade specification for cashew kernels. The availability of raw cashew nuts to traditional processors and exports in India has shown signs of a decline over the years. This is mainly because many former raw cashew producing and exporting countries have turned processors and exporters of cashewnuts. Depressed demand condition are also said to be main reasons for the low growth in exports (Business Line, October 2001).

Performance of India in export of cashew kernel was impressive during the reform period. Export in quantity terms recorded 5 per cent growth which is almost similar to that of 1980s and in value terms it increased at the rate of 14 per cent per annum. The increase in export earnings was mostly contributed by increase in unit value, which record a growth of 9 per cent during 1990s. Increase in competition from

other countries like Brazil, Vietnam, major African countries and Indonesia has reflected in decrease in unit value growth of exports from 17 per cent in 1970s to 8.94 per cent in 1990s. Export variability was less both in quantity and value term during the reform period.

#### **5.2.6. Sugar**

World sugar production exceeded the consumption and it was estimated that of the total production of 135.2 million tonnes, consumption was estimated at 130 million tonnes. The major sugar exporters are Brazil, EU, Australia, Thailand and Cuba. Major importers are Russia, EU, Japan, Korea, US, and Canada. India is world's largest producer of sugar with annual production of 17.4 million tonnes of which 16.6 million tonnes of sugar was consumed. Due to rise in domestic demand and production volatility, export of sugar follows a sort of cyclical pattern. Although India is world's largest producer of sugar and has freight advantages because of its geographical proximity to the major importing nations, Indian exports is less and due to regular cycles of surplus and deficit of sugar production in India, in certain years India tops the list of importers.

Export of sugar increased during 1970s at the rate of 5 per cent and 20 per cent per annum in quantity and value terms respectively. Erratic behavior in domestic production is reflected in export growth as it is noticed that there was 11 per cent decrease in exports during 80s and 2 percent decrease in 90s in quantity terms. It is also evident from the instability indices that sugar exports witnessed very high variability both in quantity, value and unit value terms. Variability in sugar exports was very high during 80s recording more than 300 percent in quantity terms and there was a marginal decline in the variability during the reform period. So it is clearly

evident that India is an occasional importer/exporter of sugar and this has the possible repercussions on the international prices of sugar.

#### **5.2.7. Cotton**

India ranks third in production next to US and China with an annual production of 13.2 million bales in 2000-01. The share of cotton export to the total agricultural exports declined sharply over the years from 8 per cent in 1980-81 to less than one percent in 1999-2000. Exports of cotton in the reform period declined substantially at the rate of 16 per cent per annum, while in value terms the decrease was much lesser at the rate of 3 per cent per annum due to increase in unit value at the rate of 15 percent. Cotton exports exhibited high variation in all the periods and the instability was higher during 1980s as compared to 1970s and post-reform period. Cotton exports was most unstable due to fluctuations in domestic production and adhoc policy of the government.

#### **5.2.8. Oilcakes**

India exports oilcakes to various countries like Indonesia, South Korea, Japan, Singapore etc. Export of oilcakes increased over the years and its share in total agricultural exports was more than 10 percent in 1990s compared to 6 percent in 1980s. Limited domestic demand for oilcakes encouraged exports and as a result exports increased substantially over the years. The domestic demand for animal feed remained much lower than expected. There is a rapid diversification of oil meals export and most of the recent growth was due to increase in exports of soymeal and rapeseed-mustard oilcakes. It is observed that export of oilcakes recorded very high growth rate of 20 percent and 44 percent in quantity and value terms in the post reform period though it was slightly lower than the growth rates recorded during 70s

and 80s. The export unit value of oilcakes, showed high growth rate of 11 percent during the reform period which is mainly due to price competitiveness of oil meals particularly soymeal. Indian soymeal has high protein content. However, other oil cakes are subjected to high quality discount in the international market due to aflatoxin in groundnut meal glucosinolates in rapeseed- mustard cake and silica and sand in the rice bran. The instability in export of oil cake in quantity term decreased to 21 per cent in reform period from 28 per cent in 70's while instability in value terms was high in post-reform period which was 44 per cent and this was due to increase in variability of unit value (26 per cent).

#### **5.2.9. Tobacco**

India exports both manufactured and unmanufactured tobacco to various world markets and shares about one per cent of tobacco trade in the world. Contribution of tobacco to the total value of agricultural exports hovering around 3 to 4 per cent in 1990's, while it was around 7 per cent in the earlier period. The main export market for Indian manufactured tobacco are USA, UAE, Saudi Arabia and Malaysia and these countries accounted for 27, 18, 15 and 11 per cent of the total exports. In the case of unmanufactured tobacco, Russia, UK, Belgium and Germany are the main export markets sharing 24, 15, 12 and 10 per cent of the total unmanufactured tobacco exports. There was a sizable increase in tobacco exports particularly in the reform period. It is noticed from the growth rates that quantity of exports grew at the rate of 6 per cent, value at the rate 14 per cent and unit value at the rate of 18 per cent. There is also high instability in tobacco exports during the reform period as it is evident from the Koppock's instability index constructed for quantity (48.33 per cent), value (46.92 per cent) and unit value (16.17 per cent).

### **5.2.10. Marine products**

Fisheries sector is emerging as an important export-earning sector for the country. The export share of marine products formed only 2 per cent of total value of agriculture and allied products exports in 1960's, 6 per cent in 70's and 11 per cent in 1980's. In the post reform period, the share has increased substantially to 21 per cent during 1999-00 and forms the major export item in the agricultural export basket. Japan and USA are the major markets for the Indian marine products accounting 41 and 16 per cent of the total marine products valued at 1181.55 million dollar in 1999-00. Performance of this sector is tremendous and it attained 9 percent and 16 percent growth in quantity and value terms respectively in the reform period. There was reduction in growth of unit value during 1980s and 90s. Hence, contribution of increase in quantity was the main cause for the increase in value of exports of marine products. Variability in export of marine products was less and the maximum instability index of 17.4 was noticed in reform period for quantity and 15 for value.

## **5.3. EXPORT LED GROWTH**

The validity of the hypothesis that rapid growth of exports accelerates economic growth in India was investigated in a Vector Autoregressive (VAR) Framework. The analysis was done for the period, 1970-71 to 1999-2000 and the empirical results are discussed below.

### **5.3.1. Testing for unit roots**

Time series properties such as stationarity and non-stationarity of the variables real per capita agricultural GDP, real gross capital formation, real agricultural exports and index of agricultural production were tested using Dickey Fuller (DF), Weighted Symmetric (WS) and Phillip Perron (PP) tests. These tests were applied with constant

and no trend to the variables in levels. The results indicated that the time series are non-stationary. Descriptive statistics of the variables included in the model are set out in Table 5.7 and the results are furnished in Table 5.8. When these tests were applied with constant and trend to variables in levels, DF and WS tests proved that the variables are non-stationary, but Phillip Perron test could not fully establish the non stationarity for all the variables.

The results provided a strong evidence that all the time series in levels were non stationary. Thus, they had stochastic trend and the tests indicated that the null hypothesis of a unit root for all the variables in levels cannot be rejected. After first differencing, the null hypothesis of non-stationarity was rejected for most of the variables in all the tests at one per cent level. This suggested that the variables are integrated of order one,  $I(1)$ . The results of the unit root tests performed corroborate previous findings in empirical literature, i.e. as with most macro economic series the variables under consideration in this study appear to be non-stationary and trended in levels. Only their first differences are stationary. Considering that the data appear to be stationary in first differences, no further tests were performed.

### **5.3.2. Multiple cointegration**

Since, the variables are stationary in their first difference, it was appropriate to test for the presence of cointegration between the non-stationary variables. The Johansen and Juselius maximum likelihood test procedure was used as it provides most efficient estimate of the cointegrating vectors and also identifies the number of cointegrating relationships among the non-stationary variables.

**Table 5.7. Descriptive statistics of the variables used in the cointegration and recursive models**

Variable	Mean	Standard deviation	Coefficient of variation
Percentage of Rural Population Below Poverty Line	44.11	9.48	21.49
Per Capita GDP in Agriculture at 80-81 prices (000' Rupees)	0.96	0.11	11.56
Agricultural Exports at 80-81 prices (000' Rupees)	26589621.11	14311142.04	53.82
Gross Capital Formation in Agriculture at 80-81 prices (000' Rupees)	51069666.67	14804155.17	28.99
Index of Agricultural Production (Triennium ending 81-82 = 100)	123.69	32.23	26.06
Whole Sale Price Index of Food Articles (1981-82=100)	176.38	125.85	71.35
Consumer Price Index of Agricultural Labourers (General) (1981-82=100)	122.39	82.48	67.39
Consumer Price Index of Agricultural Labourers (Food) (1981-82=100)	125.79	84.89	67.48

Table 5.8. Results of the stationarity tests

Variables	Levels						First differences					
	With constant no trend			With constant and trend			With constant no trend			With constant and trend		
	Test statistic	Probability level		Test statistic	Probability level		Test statistic	Probability level		Test statistic	Probability level	
Dickey Fuller												
PAGGDP	0.99605	0.9947	-2.32076	0.4225	-4.7691	0.0009	-3.8985	0.0238				
AGEXP	-0.98284	0.7758	-1.98398	0.61013	-2.5012	0.0457	-2.0284	0.5492				
GCF	-0.64698	0.9865	-2.94987	0.14664	-2.5800	0.0310	-2.2888	0.4159				
INDAG	0.47478	0.9862	-2.29854	0.4348	-4.1102	0.0038	-4.1415	0.0146				
Weighted symmetric												
PAGGDP	-0.25143	0.9776	-2.23628	0.4765	-4.2795	0.003	-3.9011	0.0062				
AGEXP	-0.43714	0.96162	-21.12623	0.5585	-2.4345	0.0602	-2.4714	0.3108				
GCF	0.34105	0.99612	-2.00670	0.6439	-2.5817	0.0396	-2.5884	0.2411				
INDAG	0.0200	0.98992	-2.20436	0.5004	-4.0244	0.006	-4.3515	0.0016				
Phillip Perron												
PAGGDP	-0.90166	0.8949	-20.32658	0.0600	-32.4841	0.005	-30.3089	0.0082				
AGEXP	-1.48583	0.8381	-6.11732	0.7361	-26.9924	0.0020	-26.5154	0.0184				
GCF	-1.50659	0.8359	-8.34919	0.5563	-31.1634	0.0007	-30.6052	0.0077				
INDAG	0.32739	0.9715	-19.46401	0.0785	-37.8432	0.0001	-37.8192	0.0016				

PAGGDP - Per Capita Agricultural GDP at Constant Prices  
 AGEXP - Real Agricultural Exports  
 GCF - Real Gross Capital Formation in Agriculture  
 INDAG - Index of Agricultural Production

The results of the Johansen maximum likelihood method, the eigen values and the likelihood ratio (LR) statistics for determining the number of cointegrating vectors ( $r$ ) are presented in Table 5.9. The null hypothesis of no cointegration ( $r = 0$ ) versus the alternatives of  $r \leq 1$ ,  $r \leq 2$ ,  $r \leq 3$ ,  $r \leq 4$  have been tested. The results revealed that the null hypothesis of no cointegration ( $r = 0$ ) could be rejected at one per cent level of significance. But the null hypothesis of  $r \leq 3$  was accepted at the five per cent level confirming that there are three cointegrating vectors among the variables. The sharp fall in eigen value statistics for  $r = 4$  also confirmed this results and suggested that it was not necessary to search for a fourth vector between the series. From the above analysis, it was inferred that variables, per capita agricultural GDP, agricultural exports, gross capital formation in agriculture, index of agricultural production and trade policy are cointegrated with three cointegrating vectors and that the series are causally related.

### **5.3.3. Vector Auto Regression - Variance Decomposition Tests**

While the estimated cointegrating vectors showed the long run equilibrium relationship among per capita agricultural GDP, agricultural exports, gross capital formation in agriculture, index of agricultural production and trade policy, the dynamic adjustments that occur in the short run leading to stable long-run relations in response to various shocks remained unspecified. These short-run dynamics among the series was established in the VAR model by conducting Variance Decomposition (VDs) tests of the forecast errors at different time horizons which break down the variance for each variable into components that can be attributed to each of the endogenous variable. The results of the Forecast Error Variance Decomposition (FEVD) are presented in Table 5.10. The values in the above table represent the

Table 5.9. Estimates of Multiple Cointegration

Eigen value	Null	Alternative	Likelihood ratio statistic	Critical value	
				5%	1%
0.7949	$r = 0$	$r = 1$	76.94	47.21	54.46
0.5483	$r \leq 1$	$r = 2$	44.22	29.68	35.65
0.3849	$r \leq 2$	$r = 3$	16.10	15.41	20.04
0.0249	$r \leq 3$	$r = 4$	2.10	3.76	6.65
0.0082	$r \leq 4$	$r = 5$	0.012	0.293	1.21

Co-integration LR tests based on the maximum eigen values of the stochastic Matrix: PAGGDP, AGEXP, GCF, INDAG, Trade policy

Table 5.10. Forecast error variance decompositions at different time horizons

Variance of	Time horizon	Percentage of forecast variance explained by shocks				
		$\Delta$ PAGGDP	$\Delta$ AGEXP	$\Delta$ GCF	$\Delta$ INDAG	$\Delta$ TPD
$\Delta$ PAGGDP	2	89.06	1.36	6.34	0.39	2.83
	4	77.82	1.95	15.68	0.59	3.97
	6	77.35	2.44	15.53	1.87	3.89
	8	75.67	2.99	15.31	2.02	4.36
	10	74.94	3.15	15.27	2.18	4.45
	12	74.44	3.26	15.15	2.62	4.51
$\Delta$ AGEXP	2	3.61	66.92	14.95	14.19	0.33
	4	6.10	60.39	12.63	17.79	3.09
	6	7.18	56.71	12.84	19.24	4.03
	8	7.41	54.79	12.26	20.17	5.37
	10	8.57	53.54	12.01	20.52	5.37
	12	8.77	52.12	11.53	22.02	5.56
$\Delta$ GCF	2	20.85	11.32	66.07	0.25	1.50
	4	19.98	12.62	61.70	3.63	2.08
	6	19.91	12.94	59.95	4.14	3.06
	8	19.69	13.35	59.39	4.12	3.45
	10	19.99	13.16	58.51	4.70	3.63
	12	19.85	13.48	57.79	5.02	3.87
$\Delta$ INDAG	2	77.05	1.54	4.01	17.25	0.15
	4	63.97	11.38	8.94	15.17	0.53
	6	62.05	11.13	8.71	17.13	0.53
	8	58.64	11.92	8.24	19.46	1.74
	10	56.28	14.01	8.18	19.08	2.45
	12	55.84	13.98	8.15	19.55	2.48
$\Delta$ TPD	2	7.71	2.10	1.51	12.55	76.12
	4	18.28	1.24	0.62	20.92	58.93
	6	17.84	2.61	1.04	19.03	59.48
	8	17.93	2.41	1.07	19.22	59.38
	10	18.01	2.45	1.04	19.04	59.44
	12	18.01	2.43	1.07	18.86	59.63

fraction of the forecast error variance in the variables generated by innovation in each of the variable in the system as given in column 1.

A 12 year forecast time horizon was chosen for the FEVDs. The results of the per capita agricultural GDP (PAGGDP) forecast error variance decomposition showed that per capita GDP growth is largely explained by its own shocks, about 89 per cent of variance in output growth is explained by its own innovations. Further, it is noticed that more than 74 per cent of the variance is explained by its own shocks even after ten year period. This indicated that PAGGDP is endogenous to the system.

Gross capital formation in agriculture has considerable impact on output growth as it increased from about 6 per cent in time period two to 16 per cent in the time period four and remained almost at a constant level of 15 per cent even as the forecast horizon was extended upto 12 years. Exports account for 1.36 per cent for time period two and it explained 3.26 per cent of GDP growth after 12 years horizon. The variance explained by trade policy dummy variable increased from 3 per cent in period 2 to 5 per cent in time period 12 and the growth was more than that for exports. This established that more than exports, trade policy orientation is what determines per capita GDP growth. The variance of PAGGDP explained by INDAG was less than AGEXP and TPD. So to increase per capita GDP production was not sufficient, but exporting the production and an outward oriented policies are more important for GDP growth.

The agricultural exports forecast error variance decomposition showed that it is more explained by own innovation (67 per cent in period 2 to 52 per cent in period 12). The effect of agricultural production was also high in explaining the variance of

agricultural exports and it increased from 14 per cent in time period 2 to 22 per cent in time period 12. The trade policy forecast error variance decomposition showed that it was more explained by its own innovation though it declined from 76 in period 2 to 60 per cent in period 12.

The variance decomposition showed that the per capita agricultural GDP, agricultural exports, gross capital formation in agriculture and trade policy are endogenous to the system. These findings lend support for treating all variables as endogenous in a test of the impact of the trade policies and export growth on real output growth. The postulated relationship between trade orientations, export growth and per capita GDP growth is the primary element of the exports promotion story. The finding that trade policy and export growth could alter real per capita GDP growth in agriculture to some extent is consistent with the assumptions of exports promotion strategy, though it could not fully establish the export led growth hypothesis. In the case of per capita agricultural GDP, though it is endogenous, it is influenced more by trade policy orientation than by exports. The strong relationship among agricultural exports and agricultural production showed that agricultural exports are more influenced by production for exports.

#### **5.4. TRADE, AGRICULTURAL GROWTH AND POVERTY**

The important question is that how has increased participation in international trade affected the economic growth rate, and what implications has this had for the distribution of income and the incidence of poverty? Experiences suggest that rapid economic growth translates into sustainable reductions in poverty and there is a significant association between trade liberalisation and long run improvements in economic growth. Thus, there is likely to be a positive link between liberalisation and

eradication of poverty in the long run. Evidence indicate that in Morocco, for example, the incidence of poverty fell by half from 26 per cent to 13 per cent of the population, just five years after trade was liberalized in the mid 1980s (World Bank, 1997). Sachs and Warner (1995) estimates that countries with open economies (those integrated into the world economy) in developing regions grown, on an average by 2.5 per cent points more than those with closed economies. This, in turn, would have a positive impact on poverty reduction in the absence of an anti-poor bias in domestic policies and investment pattern.

International trade has grown twice as fast as income worldwide during 1990s. In India, per capita GDP growth in agriculture in the 1990s accelerated from nine percent a year in the early 1990s to 13 per cent at current prices. This acceleration in growth is even more remarkable given the inflation rate. At constant prices, per capita GDP grew at the rate 2.15 per cent in the post reform period, while in the earlier period the growth was less than one per cent (0.80). There was a sizable reduction in poverty in the post reform period and it was estimated that rural population below poverty line declined by three per cent in the 1990s, while it was less than one per cent in the early 1990s. Similarly, percentage of population below poverty line also declined in the reform period, which is almost 2 percent more than the earlier period (Table 5.11). Although these estimates are suggestive of the growth effects of trade on poverty, they are hardly conclusive.

In recent studies, the growth effects of trade was more systematically analyzed using a large sample of developed and developing countries. Although a large body of literature has examined the effects of trade on growth (and many of these studies have found substantial growth effects of trade), they have been subjected to criticism. First,

Table 5.11. Estimates of growth of poverty, income and prices

(per cent / annum)

YEAR	1970-71 to 1990-91		1991-92 to 1999-00		1990-71 to 1999-00	
	MEAN	CGR	MEAN	CGR	MEAN	CGR
Per capita AgGDP (Current Rs)	1025.38	8.89	4648.66	12.59	2112.36	10.48
Per capita AgGDP (Constant Rs)	906.64	0.80	1100.96	2.15	964.94	1.16
Rural Population (FAO)000'	534868.38	1.77	682198.00	1.37	579067.27	1.70
Rural Population BPL 000'	256484.06	-0.63	227170.36	-3.01	247689.95	-0.81
Per cent Rural Population BPL	48.69	-2.35	33.43	-4.32	44.11	-2.47
INDEX of Agrl. Production	106.41	2.84	163.88	2.37	123.65	2.94
WPI Food Articles	104.01	7.97	345.22	8.39	176.38	8.59
CPI Agrl. Labour (General)	74.95	6.84	233.10	8.49	122.39	7.79
CPI Agrl. Labour Food	76.41	6.97	241.03	7.61	125.79	7.91

it is difficult to draw conclusions from many of these studies, which rely on cross-country evidence, about the effects of trade liberalisation on growth and poverty. Efforts to use more direct measures of trade policy (such as average tariffs or nontariff barriers) have shown mixed results, although this may simply reflect the difficulties in systematically measuring these indicators of trade policy. Second, it is often difficult to disentangle the effects of trade liberalisation from other domestic policy choices—after all, many countries that liberalize trade often simultaneously embark on other domestic reforms that can also have sizable growth benefits. Without adequately controlling for other policies, one risks confounding the effects of trade liberalisation with other growth-enhancing policies. Third, it is difficult to identify the direction of causation in many existing studies—does trade cause faster growth or do economies that grow quickly also trade more? While conclusively identifying causal effects of trade on growth is likely to remain elusive for some time, it is possible to improve on many existing studies that ignore the issue entirely.

There are extensive and disquieting literatures (Desai, 1986; Ahluwalia, 1978, 1986; Rath, 1996) on quantifying the poverty line and absolute poverty in terms of the absolute number or the proportion of population below poverty line. A recurring theme in much of literature (Ahluwalia, 1978, 1986; Lal, 1976; Bardhan, 1986; Ravallion and Datt, 1996; Gaiha, 1985) is to find the relationship between trends in rural poverty and agricultural growth. There is a debate on the methods of measurement of poverty and its dimensions during the last three decades. The interest of this research, however, centres around the effect of trade on agricultural growth and the incidence of poverty without resorting much to the methods of estimation of poverty line and the measurement issues relating to trade and poverty linkage.

#### 5.4.1. Trends in Rural Poverty

The years of rapid growth in the Indian economy coincided with reduction in poverty. As average annual increases of more than 3 percent in GDP in the first half of the 1970s accelerated to rates of 6 per cent in the last of the 1980s (World Bank, 1989) and 7 percent in the early 1990s (Economic Survey, 1996-97), the incidence of poverty recorded notable decline and there is considerable potential towards reducing poverty in India to 25 per cent by 2000 AD (Venkataraman, 1998). According to Planning Commission (1998), the annual average rate of decline of the poverty ratio in India during the period 1973-74 to 1993-94 has been 2 per cent in rural areas and on the basis of the growth rate experienced between 1993-94 and 1996-97, the incidence of poverty has been worked out to 30.55 per cent in 1996-97 and 18.61 per cent in 2001-02. Rural poverty shows a slow decline in the 1970s and a faster decline in the 1980s till 1990-91. Post reform period was marked by near stagnation in the growth of aggregate real output. Per capita availability of food grains also declined over the years (Table 5.12). There was a slow down in the agricultural production structure during the reform period (Table 5.13). However, there was reduction in poverty during the post reform period (Table 5.14). A higher growth of output in the 1980s, than in the 1970s was largely responsible for this outcome.

To provide an evidence for asserting a trend in increase or decrease in rural poverty over the period, Planning Commission (1998) estimates were used and the results are reported in Table 5.15. These results indicate an evidence of presence of discernible trend in the incidence of rural poverty in India. The earlier studies reported a mixed picture in incidence of rural poverty in India. The trend analysis of Ahluwalia (1978) provided no evidence for asserting a trend increase or decrease in rural poverty in India over the period as a whole (1957-58 to 1973-74). However,

Table 5.12. Net availability of food grains

(Kgs. Per Capita Per Annum)

Year	Rice	Wheat	Other Cereals	Cereal	Gram	Pulses	Food grains
1970	69.4	37.4	40.4	147.1	8.0	18.9	166.1
1975	58.0	40.9	34.6	133.5	5.2	14.5	148.0
1980	60.8	46.4	31.7	138.9	3.9	11.3	150.2
1985	68.9	50.6	32.1	151.6	4.7	13.9	165.5
1990	77.4	48.4	31.7	157.5	3.9	15.0	172.5
1991	80.9	60.0	29.2	171.0	4.9	15.2	186.2
1992	79.2	57.9	21.5	158.6	3.7	12.5	171.1
1993	73.4	51.2	29.2	171.0	3.9	13.2	169.4
1994	75.7	58.2	21.5	158.6	4.3	13.6	172.0
1995	80.3	63.0	31.6	156.2	5.4	13.8	180.8
1996	74.8	64.4	24.5	167.0	4.1	11.9	173.8
1997	78.5	65.7	23.7	161.9	4.5	13.6	184.5
1998	73.7	65.7	22.7	170.9	4.9	12.0	164.4
1999	75.0	59.8	23.4	152.3	5.4	13.5	171.7
2000 (P)	75.3	58.4	21.9	158.2	4.0	11.7	167.4

Source: Agricultural Statistics at a glance, 2001.

Table 5.13. Pre and post-reform growth in agriculture

(Annual average growth rates at 1993-94 prices)

(Per cent)

Crop	1980-81 to 1991 - 92	1992-93 to 1999-2000
Agriculture and Allied	3.9	3.6
Agriculture (all crop, animal husbandry, dairying)	4.2	3.7
Forestry	-0.1	0.8
Fishing	5.4	5.5
<b>Annual compound growth of crop agriculture (Base: Triennium Ending 1981-82)</b>		
Crop Agriculture	3.4	2.2
Food grains	2.9	2.0
Cereals	3.1	2.1
Rice	3.7	2.2
Wheat	3.6	3.6
Coarse cereals	0.0	-1.6
Pulses	1.4	0.8
Non-foodgrains	4.3	2.4

Source: Economic Survey, 2001

Table 5.14. Population below poverty line

YEAR	Rural Population Below Poverty Line in 000's	Percentage of Rural Population Below Poverty Line
1970-71	262167.43	58.88
1973-74	265773.72	56.40
1975-76	267414.88	54.75
1977-78	268095.00	53.10
1980-81	261822.52	49.40
1983-84	256025.11	45.70
1985-86	246384.28	42.40
1987-88	235466.85	39.10
1990-91	242008.84	38.20
1991-92	244008.16	37.90
1992-93	245896.48	37.60
1993-94	247669.39	37.30
1994-95	239879.72	35.60
1995-96	231697.95	33.90
1996-97	222930.09	32.19
1997-98	213786.01	30.49
1998-99	204271.68	28.79
1999-00	194393.76	27.09

Table 5.15. Trend in Rural Poverty - Estimates of Linear Regression

Particulars	$\beta$	SE ( $\beta_i$ )	t ratio	Probability level
Constant	53.123	0.9055	58.667	0.0000
Time	-0.8328	0.0660	-12.610	0.0000

$$R^2 = 0.88$$

Dependent variable - Consumer expenditure level (Planning Commission, 1998)

Bardhan (1971) reported an increase in the incidence of poverty over the sixties, which appears as an upswing in a pattern of cyclical variation. On the otherhand, Minhas (1970) reported a decline in the percentage of the rural population in poverty over the period 1956-57 to 1967-68. These differences are due to identifiable differences on some key issues in estimating rural poverty. The analysis shows that the presence of any discernible trend in the incidence of poverty obviously implies an increase in the absolute numbers of people in poverty because of the growth in rural population over the period.

#### **5.4.2. Export led growth and poverty**

The exports of agricultural commodities in the post reform period increased consistently over the period and witnessed highest growth rates. The balance of trade in agriculture improved during the reform period and its contribution to GDP was also significant. Therefore, it is obviously relevant to consider the exports as an important factor influencing the agricultural growth and that leads to reduction in the incidence of rural poverty. By postulating that an important determinant of the extent of rural poverty is the export led growth, recursive form of equations were specified. Agriculture is not only the dominant source of income in rural areas, and besides, the scale of non-agricultural income generating activity in rural areas almost certainly depends upon the level of agricultural production. Hence, higher exports will induce domestic production and increases in agricultural production per head reduce the incidence of rural poverty.

Planning Commission estimates were used for regression analysis. The relationship between export and growth was examined in the recursive system and the results are reported in the Tables 5.16. Export was found to be an important factor

**Table 5.16. Relationship between agricultural exports and growth - Estimates of the Recursive model (1970-71 to 1999-2000)**

Variable	Coefficient	Standard error	t ratio	Probability level
Constant	-3.9628	0.9652	-4.106	0.0004
CFAG <sub>t</sub>	-0.01638	0.0602	-0.272	0.7878
AGEXP <sub>t</sub>	0.0658	0.0375	1.755	0.0921
INDAG	0.6782	0.1044	6.5	0.0000
Time	-0.0107	0.0035	-3.013	0.0060

Dependent variable – Per capita agricultural GDP at constant prices (000' Rupees)  
(PAGGDP<sub>t</sub>)

CFAG – Real capital formation in agriculture (000' Rupees)

AGEXP – Real agricultural exports (000' Rupees)

INDAG – Index of agricultural production

$R^2 = 0.94$

F = 105.04

DW statistic = 0.98068

Rho = 0.50966

determining output growth and the estimated elasticity (0.0658) is statistically significant at 10 per cent level of probability. Further, it is hypothesised that the incidence of rural poverty depends upon the level of net domestic product per capita and an alternative hypothesis that the incidence of rural poverty depends not only on the current year's level of net domestic per capita but also on the level in the previous year, is also tested. There are other factors operating in the rural economy, which influence the incidence of rural poverty. This hypothesis was tested including time as an additional variable.

Trade liberalisation affects a poor family in two ways. First, it affects the wages they earn and if they are farmers, it affects the income they earn from the sale of products. Second, it affects the prices of goods and services they consume. There are relations between changes in nominal prices of some commodities consumed by the poor and their real incomes. The changes in the nominal price of the consumption basket of the poor had a far greater and more immediate impact on their ability to cross the poverty line than on their incomes, whether they are producers of these commodities or farm labourers. This is due to the rural poor's small share in the marketed agricultural surplus; rigidities in rural wages, which are increasingly monetised; and the wide spread dependence of the poor on market purchases for consumption needs (Narain, 1961). Therefore, two more equations were estimated by adding price as an explanatory variable to PAGGDP and TIME. For, price, the Consumer Price Index for Agricultural Labourers (CPIAL) was included as explanatory variable and another equation was estimated using index number of wholesale prices of food articles (WPIF).

As shown in Tables 5.17 (Eqn.I) the coefficient of the variable PAGGDP is not statistically significant and deviated from *a priori* expectation. However, introduction of lagged PAGGDP improved the explanatory power of the equation ( $R^2 = 0.92$  increased to 0.93) and then the coefficient of lagged PAGGDP was negative and was significant (Probability level = 0.0408) indicating that the incidence of poverty depends also on the level of PAGGDP in the previous year (Tables 5.17. (Eqn.II)). Introduction of the time variable has further improved the explanatory power of the equation ( $R^2 = 0.99$ ) and both the current and lagged PAGGDP have *a priori* expected signs and PAGGDP was highly significant. The results (Tables 5.17. (Eqn-III)) further suggest that there is an underlying time trend in the incidence of poverty after allowing for changes in poverty incidence associated with changes in PAGGDP. There is clear evidence of an inverse relationship between rural poverty and agricultural performance.

The upshot of Narain's (1976) results that it is not enough to take into account agricultural performance and time to explain temporal variations in rural poverty; it is equally necessary to consider changes in the nominal prices of goods consumed by the poor. He observed that inclusion of price as an independent variable increased the explanation of the variation in rural poverty substantially ( $R^2=0.93$ ) and made regression coefficient of time highly significant. There was also a definite downward trend in the incidence of rural poverty between 1956-57 and 1970-71. After inclusion of price variables the results (Tables 5.17. (Eqn-IV)) show that the explanation power of the independent variables or regressors moved up substantially ( $R^2=0.93$  improved to 0.99). When CPIAL for food and CPIAL (general) were used,  $R^2$  remained 0.99 (Tables 5.17. (Eqn-V)). But in both the cases the coefficient of current year per capita

Table 5.17. Relationship between agricultural exports, growth and poverty - Estimates of the Recursive model (1970-71 to 1999-2000)

Equation	Constant	PAGGDP <sub>t</sub>	PAGGDP <sub>t-1</sub>	CFAG <sub>t</sub>	AGEXP <sub>t</sub>	INDAG	Time	CPIALF	CPIAL <sub>Gen</sub>	WPIF	R <sup>2</sup>	DW
I	10.0028	0.1247 (0.325)	-	-0.1527 (-1.187)	-0.0069 (-0.080)	-0.7134* (-3.848)	-	-	-	-	0.92	0.8439
II	8.5600	0.2284 (0.633)	-0.4862** (-2.167)	-0.1169 (-0.967)	0.0275 (0.337)	-0.6709* (-3.863)	-	-	-	-	0.93	0.7719
III	-0.7307	-0.8874* (-4.5517)	-0.0840 (-0.7860)	0.0026 (0.0483)	0.0810** (2.2309)	0.7547* (4.608)	-0.0400* (-9.8416)	-	-	-	0.99	1.2939
IV	-0.8729	-0.8958* (-4.442)	-0.0789 (-0.713)	0.0119 (0.182)	0.0739 (1.626)	0.7628* (4.485)	-0.0414* (-6.202)	0.01697 (0.267)	-	-	0.99	1.3225
V	-0.6363	-0.8780* (-0.2279)	-0.0870 (-0.7849)	-0.0023 (-0.0363)	0.0852** (1.8908)	0.7466* (4.2723)	-0.0391* (-5.5006)	-	0.01697 (-0.1625)	-	0.99	1.2773
VI	-0.9914	-0.9048* (-4.4203)	-0.0769 (-0.6947)	0.0146 (0.2259)	0.0735** (1.73)	0.7673** (4.4952)	-0.0429** (-4.8401)	-	-	0.0318 (0.3615)	0.99	1.3461

Dependent variable (PPBPL) - Percentage of rural population below poverty line.

PAGGDP<sub>t</sub> - Per capita agricultural GDP at constant prices

PAGGDP<sub>t-1</sub> - Lagged GDP from agriculture at constant prices

CFAG<sub>t</sub> - Real capital formation in agriculture

AGEXP<sub>t</sub> - Real agricultural exports

INDAG - Index of agricultural production

CPIALF - Consumer price index of agricultural labourers for food

CPIAL<sub>Gen</sub> - Consumer price index of agricultural labourers (General)

WPIF - Whole sale price index of food articles

GDP turned negative and highly significant. When WPIF was used, current year GDP remained significant and negative (Tables 5.17. (Eqn-VI).

These results, after allowance is made for the changes in the incidence of rural poverty associated with other variables, there is definite negative relationship between the incidence of rural poverty and agricultural growth in India. Varied results were obtained after the introduction of Wholesale Price Index. Ahluwalia (1978) indicated that the use of CPIAL to estimate poverty percentages would produce a spurious positive correlation between the price variable and the incidence of rural poverty. Narain (1976) argued that although measurement of poverty line was statistically influenced by CPIAL, its influence on the distribution of household expenditure was casual rather than statistical. If only the distribution of household expenditure remained unchanged over time then the use of CPIAL in estimating poverty percentages will produce a spurious positive correlation. Our results clearly show that such an assumption is not justified on *apriori* grounds. The results revealed that there is a positive link between trade liberalisation and economic growth and such linkage would help the country to eradicate poverty in the long run.

### **5.5. PRICE INSTABILITY AND TRANSMISSION**

Long term trend behavior of international and domestic prices was studied for selected agricultural commodities for the last 30 years beginning 1970. The hypothesis that international prices are more unstable and trade liberalisation imparted instability in domestic prices was analysed using various approaches. Measures of coefficient of variation for detrended price series and residual trend regressions were estimated to examine the instability in both the international and domestic prices and their significance. The results are reported in Tables 5.18. 5.19 and 5.20.

Table 5.18. Coefficient of variation of detrended prices

(per cent)

Period	PEPPER				Period	SUGAR			
	WP		DP			EUV		EUV	
	\$/Kg	Rs/Kg	\$/Kg	Rs/Kg		\$/Kg	Rs/Kg	\$/Kg	Rs/Kg
1970-79	14.10	16.45	17.20	14.04	1970-79	69.84	26.04	52.96	52.89
1980-90	38.63	33.15	34.97	38.98	1980-90	58.67	23.10	56.44	54.63
1991-99	17.52	25.81	21.66	16.88	1991-99	20.83	6.25	55.14	51.47
1970-99	43.25	79.97	70.02	41.68	1970-99	56.82	23.85	67.68	57.59
	<b>COTTON</b>					<b>RICE</b>			
Period	WP		DP		Period	WP		EUV	
	\$/Kg	Rs/Kg	\$/Kg	Rs/Kg		\$/Kg	Rs/Kg	\$/Kg	Rs/Kg
	1970-79	13.87	11.45	15.90		17.88	1970-79	38.08	13.58
1980-90	16.06	12.39	33.95	26.18	1980-90	24.07	5.11	8.90	13.01
1991-99	19.60	13.09	29.41	32.55	1991-99	11.56	3.87	19.57	17.10
1970-99	22.20	37.23	44.91	33.12	1970-99	31.21	23.27	25.43	32.96
	<b>COFFEE</b>					<b>TEA</b>			
Period	WP		DP		Period	WP		EUV	
	\$/Kg	Rs/Kg	\$/Kg	Rs/Kg		\$/Kg	Rs/Kg	\$/Kg	Rs/Kg
	1970-79	34.38	6.33	33.11		30.49	1970-79	19.58	13.18
1980-90	17.94	55.32	16.31	16.28	1980-90	21.42	18.13	17.55	12.98
1991-99	28.95	25.22	22.47	27.02	1991-99	10.75	13.95	9.07	8.76
1970-99	38.57	58.89	40.23	36.85	1970-99	24.44	28.97	26.88	23.51
	<b>TOBACCO</b>					<b>CASHEW</b>			
Period	WP		DP		Period	WP		EUV	
	\$/Kg	Rs/Kg	\$/Kg	Rs/Kg		\$/Kg	Rs/Kg	\$/Kg	Rs/Kg
	1970-79	9.98	24.13	8.61		7.44	1970-79	16.62	19.75
1980-90	7.61	17.82	9.61	6.25	1980-90	14.88	20.35	11.69	14.93
1991-99	11.95	17.16	12.62	11.79	1991-99	9.20	9.04	9.89	10.22
1970-99	14.13	27.14	33.43	15.76	1970-99	22.52	30.13	30.84	24.52

WP - World Price; DP - Domestic Price; EUV - Export Unit Value  
 Note : Definition of price series is given in Appendix IV

Table 5.19. Estimates of residual trend regressions of domestic and world prices

YEAR/COMMODITY			1970-71To1990-91	1980-81To1990-91	1991-92To1999-00	1970-71To1999-00
COFFEE	WP	S/Kg	-0.0153	0.0350	0.0468	-0.0219***
			DP	-0.0384**	0.0329	-0.0305
	WP	Rs/Kg	-0.7707**	1.0015**	1.1983	0.4229
			DP	-0.0457	0.4156	1.8418
TEA	WP	S/Kg	0.0062	-0.0166	0.0058	-0.0112***
			DP	0.0072	-0.0002	-0.0112
	WP	Rs/Kg	0.2553*	0.4384	0.1114	0.2504**
			DP	0.2065***	0.0927	0.2722
TOBACCO	WP	S/Kg	-0.0026	0.0253**	-0.0384***	0.0018
			DP	-0.0069***	-0.0012	0.0028
	WP	Rs/Kg	0.1038***	0.1817	0.4647	0.0092
			DP	0.3108*	0.7650*	-0.8952
CASHEW	WP	S/Kg	0.0320	0.0093	-0.0233	-0.0133
			DP	0.0243	-0.1183	-0.0064
	WP	Rs/Kg	0.4186	-1.3106	0.9216	0.3100
			DP	0.1150	-0.1327	0.8888
PEPPER	WP	S/Kg	0.0595*	0.1137**	0.0200	0.0481*
			DP	0.0473*	0.0769	-0.0108
	WP	Rs/Kg	0.4694**	0.8500	0.2100	1.7253*
			DP	0.6265*	1.2393***	2.1265
SUGAR	WP	S/Kg	-0.0058	-0.0085	0.0023	-0.0051*
			DP	-0.0007	-0.0183**	-0.0029***
	WP	Rs/Kg	0.0001	-0.1324	-0.1280	0.0194
			DP	0.0088	-0.0314	0.0878
COTTON	WP	S/Kg	-0.0069	0.0100	0.0061	-0.0040
			DP	0.0069**	0.0051	0.0020
	WP	Rs/Kg	0.0439***	0.0384	0.3208	0.1971*
			DP	0.1867**	0.3309	0.4547
RICE	WP	S/Kg	-0.0053**	-0.0017	0.0015	-0.0039*
			DP	0.0001	0.0004	-0.0010
	WP	Rs/Kg	0.0001	0.0055	0.0294	0.0171***
			DP	-0.0027	0.0205	0.1221

WP- World Price      DP- Domestic Price

\* Significant at 1 % level

\*\* Significant at 5 % level

\*\*\* Significant at 10 % level

Table 5.20. Results of residual trend for Export Unit Value

Commodity/ Year	Unit	1970-71 to 1990-91	1980-81 to 1990-91	1991-92 to 1999-00	1970-71 to 1999-00
Coffee	Rs/Kg	0.0034	0.2699	0.7484	0.6484*
	\$/Kg	-0.0141	0.0049	0.0199	-0.0193**
Tea	Rs/Kg	0.2586**	0.5152***	0.8761**	0.1407
	\$/Kg	-0.0021	-0.0001	0.0057	-0.0112**
Tobacco	Rs/Kg	0.0733***	0.2142	0.2037	0.2350**
	\$/Kg	0.0110	0.0069	-0.0004	-0.0039
Cashew	Rs/Kg	0.0385	-0.5865	2.0290	0.4466
	\$/Kg	0.1841	-0.0407	-0.0146	-0.0189
Pepper	Rs/Kg	0.5604*	0.8406	0.0977	1.3696*
	\$/Kg	0.0523*	0.0757	-0.0189	0.0379*
Sugar	Rs/Kg	0.0368	0.0788	0.0743	0.1241*
	\$/Kg	-0.0006	-0.0009	0.0001	-0.0020
Cotton	Rs/Kg	0.0333*	0.6547***	0.3973	0.4092*
	\$/Kg	0.0148**	0.0337	0.0202	0.0035
Rice	Rs/Kg	-0.0156	0.0172	-0.1368	0.0281
	\$/Kg	-0.0034	0.0016	-0.0012	-0.0013

\* Significant at 1% Level  
\*\* Significant at 5% Level  
\*\*\* Significant at 10% Level

It is argued that world prices are artificially low mainly as a result of protectionist policies followed by industrial economies. However, it is expected that world prices will turn sharply upward once the Uruguay Round Accord is fully implemented and international prices would be more unstable. Evidences showed that divergence between border and domestic price movements has increased and domestic and border prices more or less at the same rate for exportables (Nayyar and Sen, 1994) Since 1978 domestic prices have increased much faster than the border prices with somewhat less variability around the trend. Border prices have tended to fluctuate around the trend than the domestic prices. Thus given its imperfection the world markets in agricultural commodities is less stable than the Indian domestic market.

#### **5.5.1. Instability of prices**

It is observed from the Table 5.18 that during 1970s international prices of coffee, sugar, cashew and rice showed higher fluctuations as compared to other selected crops like tea, tobacco, pepper and cotton. Among the selected agricultural commodities, sugar witnessed highest variability of 70 per cent during 1970s followed by rice (38 per cent) and coffee (34 per cent). The high international price variability of sugar, rice and coffee was explained by the fact that there was inter and intra year price fluctuations. One distinguishing feature of the price trends in other commodities was that annual price movements were relatively gentle during 1990s.

The instability in domestic prices of the selected commodities was lesser during 1970s as compared to international price variability except for tobacco, cashew and, pepper. International prices of tea and pepper were more unstable during 1980s and evidences also showed that international prices of agricultural commodities

during 1980s were more unstable compared to domestic prices (Nayyar and Sen, 1994). Domestic prices were unstable during 1980s as compared to 1970s. Particularly in the case of coffee price variability increased to 55 per cent in 1980s from 6 per cent in 1970s. Similarly there was an increase in instability in domestic prices of pepper during 1980s as compared 1970s as it increased from 16 to 33 per cent. In most of the other commodities there was significant decline in instability during 1980s.

The most important concern is that the trade liberalisation would increase instability in international prices and that would be transmitted to domestic prices; such transmission would be detrimental to small and marginal farmers and vulnerable consumers. However, it is observed that in most of the commodities *viz.*, tea, pepper, tobacco and to some extent in cashew, international price variability is almost equal or lesser than the domestic price variability during the reform period. Moreover, variability in both international and domestic prices had declined in most of the commodities during the reform period. During 1970s and 1980s domestic prices of rice and sugar witnessed much lower variability than the international prices due to the government intervention through support prices, procurement and buffer stocking and such intervention has been quite effective in insulating the domestic prices from the effect of instability in international prices. Sugar has been an important item of public distribution in India and government has been playing an active role in sugar trade through domestic intervention, export - import policy and tariff on imports. So it is a clear indication that the domestic prices of rice and sugar remained less volatile than international prices and there is no indication that international price would impart instability to domestic prices of these two commodities. Compared to international prices, domestic prices of sugar, rice and cotton show remarkable

stability in the post reform period. Sugar and rice prices in India deviated from the trend by 4 to 6 per cent during the reform period, while deviation from trend of international prices varied from 21 to 11 per cent, respectively. Though the domestic price variability of coffee and cotton was lesser than the international price variability during the reform period, they deviated from the trend by about 13 to 25 per cent.

Evidences also indicated that the international prices of commodities like, rice, sugar, cotton have tendency to rise for a period of 4 to 5 years and then decline for same number of years which is completed in 10 years. Such behaviour of international prices imply that low level experienced in the post WTO period is statistical nature of prices and does not seem to be caused by implementation of WTO (Chand, 2001). International prices and EUV more or less showed the same pattern of instability. EUV instability of coffee, tobacco and cotton has increased in the liberalisation period, while for tea, cashew and pepper it decreased.

Residual trend linear regressions estimated for international prices revealed positive and significant trends only for tobacco in the post reform period (Table 5.19). The trends for the absolute value of the price trend residuals indicated that there is less systematic increase in the absolute variability in the world prices of many of the commodities during the reform period. The international price variability in 1980s were sizable for tobacco and pepper. From the results it is found that there is no evidence of systematic increase in instability in prices of major agricultural commodities and opening up of Indian agriculture to free international trade could have repercussions on the Indian and international prices. The residual trends for Export-unit Value (EUV) showed significance only for tea and implies that there is a significant variability in EUV of tea (Table 5.20).

### **5.5.2 Transmission of Price Instability**

In the context of trade Liberalisation, it is important from the policy perspective that how instability in world price is transmitted to domestic prices? Evidences indicate that Indian and world prices are generally positively correlated with each other and degree of such correlation was extremely low except for tea, jute, pepper and cotton (Nayyar and Sen, 1994). Repercussions of possible trade liberalisation through transmission of price instability from international prices is not evident in most of the commodities except for rice in the reform period. The coefficient of cross products trend for rice was significant at 5 per cent level of probability indicating that movements in international prices affect the domestic prices (Table 5.21). There is no such evidence to show that there was a transmission of instability even during 1980s except in tobacco and sugar. So there is a clear indication that Liberalisation of trade has not imparted instability to domestic prices for most of the commodities. The cross product trend for EUV and World Price revealed that none of the coefficients for agriculture commodities were significant in the post reform period but in 1980s the cross product trend were significant for pepper and sugar (Table 5.22). It is unlikely that world price instability has been transmitted to domestic prices.

### **5.5.3. World market instability and variability in producer prices**

The transmission of world market instability to the price that a producer receives is very important in a country like India in the context of opening up of trade. Many factors like the real exchange rate, quality differentials between domestic and export markets, government intervention in the market, buffer the producer from the full transmission of instability in prices. Because of these factors there can be divergence between producer prices and world prices, though export unit value seem

Table 5.21. Estimates of the cross product trend regression between world and domestic prices

YEAR/COMMODITY			1970-71To1990-91	1980-81To1990-91	1991-92To1999-00	1970-71To1999-00
COFFEE	WP&DP	\$/Kg	-0.0361	-0.0372***	0.0339	0.0299**
	WP&DP	Rs/Kg	-5.5715	-8.4696	82.5336	28.6137**
TEA	WP&DP	\$/Kg	0.0042	-0.0062	0.0018	-0.0045
	WP&DP	Rs/Kg	1.4975**	1.4464	4.3057	7.2539**
TOBACCO	WP&DP	\$/Kg	-0.0003	0.0037*	-0.0008	-0.0004
	WP&DP	Rs/Kg	1.9643***	2.1769*	1.2508	0.1878
CASHEW	WP&DP	\$/Kg	0.0349	-0.0876	-0.0301	-0.0331
	WP&DP	Rs/Kg	2.2529	-13.2155	19.8576	41.8192
PEPPER	WP&DP	\$/Kg	0.0771*	0.1642	-0.0204	0.0826*
	WP&DP	Rs/Kg	9.5310**	21.6237	7.2166	168.1630*
SUGAR	WP&DP	\$/Kg	-0.0009	-0.0022**	-0.0001	0.0011
	WP&DP	Rs/Kg	0.0036	-0.0989	-0.0958	0.0032
COTTON	WP&DP	\$/Kg	0.0005	-0.0002	0.0021	-0.0008
	WP&DP	Rs/Kg	0.0574	-0.1373	5.1346	2.2923**
RICE	WP&DP	\$/Kg	-0.0003**	0.0001	0.0001	-0.0002*
	WP&DP	Rs/Kg	-0.0046	0.0069	0.0734**	0.0568**

WP - World price      DP-Domestic price

- \* Significant at 1% Level  
 \*\* Significant at 5% Level  
 \*\*\* Significant at 10% Level

**Table 5.22. Result of cross product trend regression between world price and export unit value**

Commodity/ Year	1970-71 to 1990-91	1980-81 to 1990-91	1991-92 to 1999-00	1970-71 to 1999-00
Coffee	-0.0195	0.0143	0.0316	-0.0356***
Tea	0.0006	-0.0064	0.0044	-0.0109
Tobacco	-0.0013	0.0028	-0.0071	-0.0014
Cashew	0.0538	-0.0471	-0.0258	-0.03338
Pepper	0.0863*	0.1829***	-0.0167	0.0735*
Cashew	0.0538	-0.0471	-0.0258	-0.03338
Sugar	-0.0026**	-0.0037**	0.0001	-0.0014**
Cotton	0.0012	0.0076	0.0098	-0.0011
Rice	-0.0010***	-0.0001	-0.0001	-0.0008*

♦ World Price and Export Unit Value in Dollar/kg.

- \* Significant at 1% Level
- \*\* Significant at 5% Level
- \*\*\* Significant at 10% Level

to move closely with world prices. The variance decomposition analysis decomposes the variance of producer price  $V(PP)$  into five variability components namely variance of Export Unit Value in dollars  $V(EUV\$)$ , variance of real exchange rate  $V(RR)$ , covariance between export unit value and real exchange rate ( $Cov(EUV\$, RR)$ ), residual (R) and variance of error term  $u_t$  ( $\sigma^2u$ ).  $\sigma^2u$  was estimated from the  $u_t$  of the regression in which producer price (PP) was regressed as a function of Export Unit Value  $EUV_{Rt}$  in rupees. The results are reported in Table 5.23 and expressed as percentages.

$\sigma^2u$  is that part of  $V(PP)$  not explained by the  $V(EUV\$)$  and  $V(RR)$  and explained by the government policy, the effects of domestic market and market intermediaries. The results revealed that  $\sigma^2u$  is not only an important source of  $V(PP)$  both in the pre and post liberalisation periods but also the dominant source with more than 50 per cent in almost all the commodities in both the periods except in the case of tea, pepper and cashew.

There is also a concern that there would be adverse impact of undue price fluctuations in the world market on domestic prices of major agricultural commodities. Even though WTO bound rates are higher than the tariff rates fixed by the government it is not enough to protect the farmers from the international pressures. However, the results indicated that for most of the commodities the variation is explained by the internal factors than the variance in  $EUV\$$  and  $RR$ . Government took several initiatives to influence the structure and conduct of the markets to improve the performance of agricultural marketing system. The regulatory measures consists of two distinct sets namely development and regulation of primary markets and regulation of market conduct through series of legal instruments. The

Table 5.23. Decomposition of Variance of Producer Prices

(in per cent)

Commodity/ Components	1970-79	1980-90	1991-99	1970-90	1970-99
<b>COFFEE</b>					
V(EUV\$)	43.14	1.95	0.03	21.65	10.28
V( RR)	0.23	0.20	0.33	0.38	3.42
COV(EUV\$,RR)	-5.77	0.15	0.04	-1.13	0.22
$\sigma^2_u$	64.52	93.41	59.12	88.77	97.83
R	-2.11	4.30	40.48	-9.67	-11.74
<b>TEA</b>					
V(EUV\$)	74.19	3.94	0.43	43.20	30.99
V( RR)	0.09	0.89	6.00	2.58	33.80
COV(EUV\$,RR)	0.75	0.86	-1.47	-3.07	2.46
$\sigma^2_u$	27.63	10.05	59.01	29.27	41.33
R	-2.66	84.26	36.03	28.02	-8.58
<b>TOBACCO</b>					
V(EUV\$)	10.79	6.13	1.04	13.99	24.38
V( RR)	0.10	2.41	15.17	5.30	84.41
COV(EUV\$,RR)	-0.78	2.90	-3.44	-2.71	24.83
$\sigma^2_u$	88.14	95.95	74.75	97.26	98.74
R	1.76	-7.40	12.48	-13.83	-132.36
<b>CASHEW</b>					
V(EUV\$)	10.39	3.21	0.57	11.81	10.69
V( RR)	0.01	0.06	1.28	0.18	3.01
COV(EUV\$,RR)	-0.04	0.12	-0.74	-0.93	-1.32
$\sigma^2_u$	5.62	42.31	89.70	35.98	40.75
R	84.03	54.29	9.19	52.96	46.88

Contd...

Table 5.23. Contd...

Commodity/ Components	1970-79	1980-90	1991-99	1970-90	1970-99
<b>PEPPER</b>					
V(EUV\$)	16.87	3.20	0.11	7.46	3.09
V(RR)	0.05	0.13	1.03	0.49	3.26
COV(EUV\$,RR)	-0.04	-0.36	-0.29	-0.19	0.52
$\sigma^2u$	2.90	13.87	53.88	13.16	13.22
R	80.22	83.16	45.27	79.07	79.91
<b>CHILLI</b>					
V(EUV\$)	59.09	3.88	0.64	7.46	3.09
V(RR)	0.24	3.27	2.03	6.49	3.26
COV(EUV\$,RR)	-3.36	0.72	0.63	-0.19	0.52
$\sigma^2u$	74.95	90.81	66.30	13.16	13.22
R	-30.93	1.31	30.39	79.07	79.91
<b>SUGAR</b>					
V(EUV\$)	24.85	35.72	0.47	38.37	21.07
V(RR)	0.16	7.16	10.05	9.07	134.70
COV(EUV\$,RR)	-0.59	10.47	0.34	-5.78	10.06
$\sigma^2u$	96.68	93.85	95.57	99.42	85.38
R	-21.11	-47.21	-6.42	-41.07	-151.21
<b>COTTON</b>					
V(EUV\$)	39.26	58.61	0.28	21.32	23.49
V(RR)	18.15	5.88	4.70	9.43	83.72
COV(EUV\$,RR)	-1.52	-1.31	-2.52	-1.63	12.78
$\sigma^2u$	60.57	97.40	81.89	95.52	98.13
R	-16.46	-60.58	15.66	-24.64	-118.13

other forms of intervention include fixation and announcement of administered prices, maintenance of buffer and operation stocks, operation of public distribution system, open market sales and purchases and operation of market intervention schemes. The public agencies like Cotton Corporation of India, National Agricultural Cooperative Marketing Federation (NAFED), Jute Corporation of India and State Level Federations undertake open market operations. The government also promotes Farmers Cooperatives for undertaking marketing functions on behalf of the farmers. Commodity boards like Coffee Board, Tea Board and Spices Board also play a crucial role for commodity developments. Commodity wise analysis revealed that about 95.57 per cent of variation in producer prices of sugar was explained by these domestic factors in the reform period followed by cashew (89.70), cotton (81.89), tobacco (74.75), tea (59.01) and coffee (59.12).

The variation in producer prices, explained by  $V(EUV\$)$  decreased during 1990s as compared to 1980s for most of the commodities and it is inferred that domestic factors are a much greater source of variability in producer prices than is variability in world prices in the reform period and variance estimates of EUV in most of the commodities were less than one.

The implications of exchange rate volatility on the trade volume can be in terms of uncertainty in the exchange rates leading to the uncertainty of the effective prices applicable to the exporters, which in turn affects the wholesale prices and then the producer prices, ultimately resulting in uncertain profits. If the profits are more risky, it may be expected that the risk averse trader or producer will reduce his volume of trade or production to minimize the adverse impact on his profit. Variability in the real exchange rate,  $V(RR)$ , is an important source of variation in producer prices for

commodities like sugar, cotton and chilli during 1980s. The variability in real exchange rate increased substantially from 0.89 to 6.00 in the case of tea, 2.41 to 15.17 in the case of tobacco, 7.16 to 10.05 in the case of sugar between the pre and post reform periods and found that exchange rate was also one of the major sources of variation in producer prices during the reform period for these commodities. In the case of coffee, cashew, pepper, chillies, the variability in exchange rate was minimal in both the periods. The variability in real exchange rate decreased from 5.88 in 1980s to 4.70 in the reform period in the case of cotton.

Except for tobacco and cotton the covariance between exchange rate and export unit value [COV (EUV\$, RR)] plays a little role in the contribution to V(PP) for other commodities in 1990s. The covariances being negative, fluctuations in EUVs are correlated with movements in the real exchange rate and it buffered the producer prices.

## **5.6. PRICE COMPETITIVENESS OF AGRICULTURAL COMMODITIES**

Under liberalized trade, identification and enhancement of competitiveness of agricultural commodities is an essential ingredient for successful trade strategy and it becomes essential to identify agricultural commodities in which India possesses comparative advantage. The studies by Gulati *et al.*, (1994), Gill and Brar(1996), Sharma (1998), Gulati and Sharma (1998), showed varied results and some of these studies refer to a single point of time. Thus, the robustness of the results is argued. In the present study, an attempt was made to analyse the international competitiveness of major exportable agricultural commodities like pepper, chilli, cashew, tea and coffee for a period of 10 years since 1990.

### 5.6.1. Pepper

Pepper is grown to a larger extent in India, Indonesia, Vietnam, Malaysia, Brazil, Thailand and Sri Lanka. The five major exporting countries are India, Vietnam, Brazil, Indonesia and Malaysia. The global demand was estimated at 1.85 lakh metric tones. Of the total demand, the average world demand is estimated at 120-125 thousand MT for black pepper and 25-32 thousand MT for white pepper. USA is the largest importer of pepper accounting for 21 per cent of world imports. Even though India is the largest producer of pepper in the world, it occupies only third position among the exporting countries. Indonesia as the second largest producer has a moderate domestic market and thus occupies more than 30 per cent of world export market.

In India, pepper cultivation is mainly concentrated in the states of Kerala, Karnataka and Tamil Nadu. The total area under pepper covered around 1.9 lakh ha. India consumes more than 50 per cent of its pepper production, which is highest in the world. India met 80 per cent of world demand in the earlier period but its share has now decreased due to new entrants. Indian pepper exports now account for nearly 45-50 per cent of global share. Black pepper is the foremost export oriented spice grown in India and it accounts for nearly 40-45 per cent of export earnings from spices. The increase in foreign exchange earnings from this crop is mainly due to the rise in the unit value price. More than 20 countries are buying Indian pepper for variety of needs. Major export markets for Indian pepper during 1999-00 were USA, which accounted for 57.71 per cent of Indian exports followed by Russia (5.9 per cent), Canada (5.78 per cent) and Netherlands (5.56 per cent).

The ever-increasing domestic demand has kept pepper prices above international prices in some of the years. Availability of black pepper in international market at lower prices than the domestic prices led to a fall in exports. The NPC also demonstrated that the country has distinct advantage in exporting pepper. The NPCs for many years have been less than one in the reference years and showed fluctuations and it was more than one during 1997-98 and 1998-99 (Table 5.24). It was also noted that when there was an increase in domestic price the quantum of export has decreased. For instance NPC worked out to 0.91 during 1996-97 and the export was 45361 tonnes with the domestic price ruling at Rs 80.27 per kg and international price at Rs 97.83 per kg. Exports reduced to 31502 tonnes in 1997-98 due to increase in the domestic price to Rs 157.74 per kg which was higher than the international price (Rs 144.20 per kg). Though NPC is almost close to one in the reform period, there was steady increase both in domestic and international prices till 1999-2000, but 2000-01 recorded lower price. As a result export has declined sharply to 19250 tonnes in 2000-01. India lost its market share in pepper exports with a 59 per cent decline in quantity and 65 per cent in value. Pepper prices crashed to lower levels due to imported black pepper from Vietnam at lower prices which is substantially less than the prices in India, Brazil and Indonesia and there is a declining European demand.

The growth rates (Table 5.25) reveal that Vietnam is the major threat to other producing countries including India. While the domestic consumption is increasing in all other producing countries, Vietnam's consumption is falling sharply. The growth rates of area, production and export of pepper for Vietnam showed very high. Countries like Brazil, Malaysia and Indonesia showed a negative production growth rates, but there was steady increase in consumption values. So the export shares of these countries are likely to be taken over by countries like India and Vietnam in the

Table 5.24. Trade Flows and Price Competitiveness of Pepper

Year	Exports Qty (Tonnes)	Value (Rs. Lakhs)	International Price Rs./kg	Domestic Price Rs./kg	Reference Price Rs./kg	NPC
1990-91	29985	10240	37.47	32.72	35.25	0.93
1991-92	20535	7432	36.20	33.72	34.90	0.97
1992-93	23821	7894	34.01	28.58	32.66	0.88
1993-94	46675	17868	52.62	34.94	42.01	0.83
1994-95	35128	22423	71.99	60.06	62.18	0.97
Mean	-	-	-	-	-	0.92
1995-96	23751	17946	84.81	75.34	76.50	0.98
1996-97	45361	39242	97.83	80.27	88.09	0.91
1997-98	31502	45515	144.20	157.74	150.32	1.05
1998-99	30869	58660	226.31	199.49	195.25	1.02
1999-00	39348	83141	245.52	207	222.25	0.93
2000-01	19250	32633	189.44	168.36	172.52	0.98
Mean	-	-	-	-	-	0.99

International Price - MG1- New York (Rs./kg); Domestic Price - Cochin MG (Rs./kg)

Reference Price - FOB US (Rs./kg)

**Table 5.25. Performance of Pepper - Global scenario 1990-2000 (CGR)**

Countries	Area	Production	Consumption	Export
India	3.10	0.66	0.49	4.26
Brazil	-9.69	-7.06	4.06	-7.45
Indonesia	-0.83	-1.56	2.71	-0.81
Malaysia	0.82	-2.80	6.05	-0.15
Vietnam	9.03	13.40	-11.94	7.84
World	0.9	-0.20	2.80	-0.05

CGR - Compound Growth Rate (per cent / annum)

coming years. Though the area under the crop has increased at a steady pace in India, it has been nullified by stagnating productivity. As a result production growth is insignificant in India. The productivity of pepper in India is 300 kg per ha while; it was 10 times higher in Vietnam. India has greater advantage of cashing in all these opportunities by increasing productivity through replantation, focus on organic cultivation and value addition and such increase in productivity will reduce the unit cost production and further it will improve the price competitiveness. Demand for organic spices is more in western countries and organic cultivation increases the quality of pepper. Indian pepper is qualitatively superior and fetch premium prices. Targeting western markets also increases India's export earnings.

#### **5.6.2. Chillies**

India produced near 8 lakh tonnes of dry chillies from an area of 9.3 lakh hectares and consumption of chilli is the highest in India. Chillies are exported in different forms such as red chillies, stalkless chillies, green chillies, chilli powder and oleoresins. India is the major supplier of chilli in the international market and during the year 2000-01 it exported 61000 metric tonnes of dry chillies valued at 195.24 crores. Sri Lanka, USA, UAE, Pakistan, Bangladesh and Malaysia are the important market for Indian chillies. Export of chillies to USA has increased substantially from 7441 tonnes in 1998-99 to 11799 tonnes in 1999-2000. There was a reduction in exports of chilli to Sri Lanka and Bangladesh, which are also major markets for Indian chillies. Of the total exports, Sri Lanka accounted for 27 per cent followed by USA (18 per cent), Pakistan (14 per cent), Bangladesh (7 per cent), Malaysia (6 per cent), and UAE (6 percent). Though USA forms second important market for Indian chillies, in value terms USA accounts for 24 per cent of the total value of exports due to increase in the unit value.

The NPCs (Table 5.26) for dry chilli revealed that chilli has price advantage in the international market as in many years NPCs were less than one. In the post-Liberalisation period international prices increased substantially compared to domestic prices and NPCs were lesser and NPC was lowest (0.64) in 1997-98. Though the prices of chillies fluctuated in the international and domestic markets, international prices were always ruling higher than the domestic prices and there was a steady increase in exports from 50051 metric tonnes in 1996-97 to 68019 metric tons in 1998-99 and thereafter there was a marginal decline in exports.

India faces competition from China, Pakistan and Bangladesh, which offer chilli at lower price. There was a decline of 6 per cent in quantity and 22 per cent by value in 2000-01 due to adverse competition from Pakistan that offers at lower price. Pungency along with size and colour has become a major parameter for chilli exports. Pesticide residues and aflatoxin levels pose a significant threat to exports. Production of specific varieties of chilli for different international markets on committed demand will improve the export of dry chillies. There is a need for producing quality chilli free of pesticide residue, which are in demand in US and Europe. For maintaining good quality, right farming/growing practices and proper packaging practices are essential.

### **5.6.3. Cashew**

India and Brazil are the major producers and exporters of cashew kernels and India exported nearly 0.97 lakh tonnes of cashew kernels valued at 2.5696 crores during 1999-2000. Export was increasing steadily from 1996-97, but there was a decline in exports during 2000-01. India has the largest share of about 50 per cent of the world cashew market. India exports to as much as 60 countries, which is unmatched by any other country. The major export markets for Indian cashew is

Table 5.26. Trade Flows and Price Competitiveness of Chilli

Year	Exports		Domestic Price (Rs./kg)	International Price (Rs./kg)	Reference Price (Rs./kg)	NPC
	Quantity (MT)	Value (Lakh/Rs.)				
1990-91	24534	275555	13.81	25.71	17.16	0.80
1991-92	32603	894849	34.89	57.41	38.74	0.90
1992-93	17038	683709	38.12	54.99	43.57	0.87
1993-94	30776	721356	21.33	35.00	28.25	0.76
1994-95	20096	5712	28.93	47.07	34.71	0.83
Mean	-	-	-	-	-	0.83
1995-96	56165	19546	42.40	73.74	48.81	0.87
1996-97	50051	20145.15	40.69	71.22	45.70	0.89
1997-98	51779	15890.02	26.00	44.24	40.80	0.64
1998-99	68019	25287.26	45.68	70.49	59.23	0.77
1999-00	64776	25065.89	38.12	68.47	50.74	0.75
2000-01	61000	19523.5	27.25	61.42	38.00	0.72
Mean	-	-	-	-	-	0.77

Domestic Price - Virudhunagar (Rs./kg); International Price - S<sub>4</sub> New York (Rs./kg);  
Reference Price - FOB US (Rs./kg)

United States, which takes nearly 37 per cent of Indian exports, followed by Netherlands (24 per cent), Japan (8 per cent) and UK (6 per cent).

There was a steady increase in international prices of cashew as a result of global shortage. International prices were almost equal to the domestic prices and in some of the years prices were 20 to 25 per cent higher in the domestic market as compared to the international prices but there was an increase in exports with a view to capture the markets. NPCs (Table 5.27) are almost equal to one in many of the years and in some years NPC coefficients were more than one. Cashew prices have declined during 1999-2000 and evidences indicated that ([achalcashew.com](http://achalcashew.com)) considering the inflation prevailing in the developed countries the nominal prices for cashew kernels are very much below the potential market level.

In the early period India held 99 per cent of the world trade in cashew kernels. The development of cashew crop in Brazil and processing facilities in East Africa led to competition in cashew kernel market and India's share has been progressively reduced to 50 per cent of global trade. Entry of new competitors in the international market, decreasing availability of raw cashew nuts and increased competitions from other tree nuts are some of the hurdles faced by Indian cashew industry. The availability of raw cashew nut to traditional processors and exporters like India had shown signs of decline over years. This is because many former raw cashew producing and exporting countries have turned processors and exporter of cashew nuts. The change in consumption pattern of EU countries is also one of the reasons for growing importance of Vietnam as a cashew exporter.

Table 5.27. Trade Flows and Price Competitiveness of Cashewnut Kernels

Year	Exports		Domestic Price (Rs./kg)	International Price (Rs./kg)	Reference Price (Rs./kg)	NPC
	Quantity (Tonnes)	Value (Rs.crores)				
1990-91	49874	442.239	101.79	95.93	94.02	1.08
1991-92	47738	669.1	140.00	129.76	143.81	0.97
1992-93	53436	745.5	159.56	132.01	145.47	1.10
1993-94	69884	1046	151.79	154.59	160.03	0.95
1994-95	77000	1246.3	155.13	156.32	164.38	0.94
Mean	-	-	-	-	-	1.01
1995-96	70334	1240.5	159.52	179.26	173.04	0.92
1996-97	68663	1285.5	193.27	193.94	192.42	1.00
1997-98	76593	1396.1	179.38	218	186.68	0.96
1998-99	77076	1630.1	217.63	271.97	226.83	0.96
1999-00	96805	2569.5	265.00	291.35	269.23	0.98
2000-01	81657	1878.5	218.00	230.81	228.74	0.95
Mean	-	-	-	-	-	0.96

Domestic Price - Kollam (Rs./kg); International Price - New York W320 (Rs./kg);

Reference Price - FOB USA (Rs./kg)

To bring about an increase in the availability of cashew to meet the requirement of cashew industry, large tracts of rainfed and marginal lands should be brought under cashew cultivation. Cashew cultivation must be improved in a more scientific way. Scientific management of these plantations will produce adequate surplus for processing and export. India may lose its premier position as major supplier of cashew kernels unless it steps up raw cashew nut production.

#### 5.6.4. Tea

The size of the Indian tea market in terms of production is 800 million kg per year and in terms of value it is around Rs 5600 crores. Indian tea accounts for nearly 29 per cent of the world tea production and shares about 16 per cent of world's exports. Domestic consumption is nearly 80 per cent. India's tea production is estimated at 823.4 million kg during 2000. North India contributes 75 per cent of production and the rest 25 per cent by South India. South Indian tea production was 204.5 million kg during 2000. Growth rate of consumption has declined to 1.8 per cent in 2000 as against four per cent in early years. Shrinkage of Russian market for South Indian tea, import of low-grade tea and slow down in consumption led to fall in prices. Price of tea decreased to Rs 69.32 per kg from Rs 80.58 kg between 1999 and 2000 in North India registering about 14 per cent decline and in South India price has gone down to Rs 44.64 per kg from Rs. 57.09 between the same period witnessing a fall of 22 per cent. There is also high volatility in tea prices, which ranged between 12 to 41 per cent (February 2000 to January 2001) in the case of CTC leaf and Darjeeling tea, respectively.

Estimates of Net Protection Coefficient (Table 5.28) were less than one in all the reference years and it was found that tea was most competitive in the period

Table 5.28. Trade Flows and Price Competitiveness of Tea

Year	Exports quantity ('000 tonnes)	Value (lakhs Rs.)	Inter-national price.	Domestic price			Reference price	NPC		
				North India	South India	All India		North India	South India	All India
1990	210024	111335.10	35.56	44.79	38.62	43.24	46.44	0.96	0.83	0.93
1991	202918	113455.83	41.79	43.04	33.07	40.38	48.91	0.88	0.68	0.83
1992	174962	99533.06	51.76	40.40	33.09	38.92	49.27	0.82	0.67	0.79
1993	175318	116126.36	58.37	50.94	42.69	48.93	59.24	0.86	0.72	0.83
1994	150691	98912.69	57.51	50.43	31.38	40.47	58.64	0.86	0.54	0.69
Mean	-	-	-	-	-	-	-	0.88	0.69	0.81
1995	167996	120801.56	53.22	52.91	41.25	47.96	70.55	0.75	0.58	0.68
1996	161696	124687.19	62.76	52.72	41.42	48.82	73.22	0.72	0.57	0.67
1997	202995	177477.81	86.15	59.25	59.31	66.78	83.45	0.71	0.71	0.80
1998	210338	230943.60	98.45	83.12	68.78	76.28	97.79	0.85	0.70	0.78
1999	190180	181800	100.05	80.58	57.09	68.84	87.59	0.92	0.65	0.79
2000	178000	153200	87.75	69.32	44.64	56.98	70.07	0.99	0.64	0.81
Mean	-	-	-	-	-	-	-	0.82	0.64	0.76

International Price - London Auction (Rs./kg); Domestic Price - Average auction price (Rs./kg); Reference Price - FOB - CIS (Rs./kg)

between 1994 and 1996 as NPC was nearing 0.70. The country always had about 200 million kg surplus of tea for export. But export-oriented unit allowed to import tea for the blends and re-export it as value added, the demand for South Indian tea was affected. The South Indian tea was normally used as a mix in blended tea. The imported tea largely substituted this. The average cost of imported tea was Rs 25 per kg. Average production cost of tea had risen from Rs 57 in 1999 to Rs 65 in 2000 (The Hindu, 2001). The prevailing market price at present could not even cover the cost of production. It is suggested that productivity has to be increased in order to reduce cost of production.

#### **5.6.5. Coffee**

The estimated global production of coffee for the year 2000-01 was 69.03 lakh tonnes. Major coffee producing countries are Brazil, Columbia, Vietnam, Indonesia, Mexico and India and they constitute 28.33 per cent, 10.43 per cent, 9.71 per cent, 6.34 per cent, 5.04 per cent and 4.26 per cent of the world production respectively. Major exporters are Brazil, Columbia, Vietnam, Indonesia and Mexico and major importers are Malaysia, Guatemala, Philippines, Venezuela and Indonesia. The overall per capita consumption in the world ranged between 4.48 kg and 4.84 kg. Indian coffee will have nominal effect on world supply as Indian contribution is only around four per cent of the world output. And contributes a little less than 5 per cent of the world trade in coffee. Coffee is cultivated in about 3.4 lakh hectares in India mainly spread over three southern states namely Karnataka (56.5 per cent ), Kerala (24.7 per cent) and Tamil Nadu (9 per cent). Arabica and Robusta are the two varieties grown comprising of 41 per cent and 59 per cent of the area, respectively.

Coffee is freely exportable commodity. About 80 per cent of coffee produced is exported. Major buyers of Indian coffee are Italy, Germany, Russian Federation and USA. Due to severe frost in Brazil during 1994, the international coffee price has shot up which resulted in increased demand for coffee in the international market. During this period exports from India increased enormously to 1.71 lakh tonnes from 1.37 lakh tonnes between 1994-95 and 1995-96. The EUV increased from Rs 39.92 per kg to Rs 76.64 per kg in the period between 1993-94 and 1994-95. Except in 1990-91, NPCs (Table 5.29) were less than one but they are closer to one in many of the reference years. The recent sharp fall in international coffee prices due to surplus coffee supply has adversely affected the Indian coffee exports.

After liberalisation bearing area under Arabica increased at the rate of 5 per cent per annum. There was a depression in coffee prices. And such depression will hamper the income of the small farmers who cultivate 65 per cent of the total area and produce 60 per cent of total production. These farmers do not have any hedging mechanism to protect themselves.

Table 5.29. Trade Flows and Price Competitiveness of Coffee

Year	Exports		Domestic price	Reference price	NPC
	Quantity 000' tonnes	Value Rs. Cr			
1990-91	86.50	252.19	37.1	32.07	1.16
1991-92	98.40	332.09	33.71	33.75	0.99
1992-93	114.10	376.25	29.17	32.98	0.88
1993-94	136.69	545.60	35.08	39.92	0.88
1994-95	137.40	1052.94	76.59	76.64	0.99
Mean	-	-	-	-	0.97
1995-96	170.58	1052.94	66.33	88.11	0.75
1996-97	163.00	1426.59	74	87.52	0.85
1997-98	160.30	1696.14	76	105.81	0.72
1998-99	194.00	1727.92	83	89.07	0.93
1999-2000	165.00	1364.07	79	82.6	0.96
Mean	-	-	-	-	0.84

Reference Price - FOB (Export Unit Value) Rs./kg; Domestic price - Robusta (Rs./kg)

*Summary and Conclusion*

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## CHAPTER - VI

# SUMMARY AND CONCLUSIONS

Challenges posed by the liberalized agricultural trade have to be addressed on priority basis considering the agricultural exports and growth linkages, changing price scenarios, poverty and export competitiveness of the agricultural commodities. Now the question is how best the country can develop expertise to increase exports of agricultural commodities with safety considerations and capitalize the comparative advantage in most of the agricultural commodities without affecting the basic objective of food security. Therefore, the country has to map out measures to protect the domestic economy and at the same time the advantage of trade openness in a dynamic setting has to be exploited to ensure agricultural viability. This study is contemplated to address some of the issues with the specific objectives to assess trade openness of the economy and agricultural trade openness in particular; analyze export performance of major agricultural commodities during pre and post reform periods; examine the relationship between agricultural exports and agricultural growth; analyze the trend in rural poverty and the relationship between agricultural exports, agricultural growth and rural poverty in the context of liberalized agricultural trade; study the price variability in domestic and world markets and the extent of transmission of world price instability to the domestic market in the pre and post Liberalisation periods; and assess the export competitiveness of India's agricultural production in the context of liberalized trade. Several possible econometric models were tried to obtain consistent estimates using mostly the secondary data collected from published sources and the estimates were used to draw meaningful inferences.

## 6. 1. SALIENT FINDINGS

### 6.1.1. Trade openness

#### 6.1.1.1. Trade Openness in the Overall Economy

Trade policy reforms have led to increase in the proportion of trade (exports + imports) in GDP. The ratio grew steadily from 17 per cent in 1991–92 to 21 percent in 1990–2000. The ratio of exports to GDP rose to about eight per cent in 1991–92 and got further momentum as economic reforms progressed. At present about nine per cent of GDP goes as exports. The average annual growth rate of about 18 per cent per annum in rupee terms that India's exports witnessed during the liberalisation period reflects increasing openness of Indian economy. The annual growth rate of real exports during the liberalisation period is also significant and it is observed that the real export exhibited higher rate of growth in the reform period. GDP at current prices has also grown from about 13 to 16 per cent in the reform period as compared to earlier period. Further, it is noticed that the degree of trade openness represented by the ratio, exports to GDP, showed fluctuations and increased significantly from 6.81 per cent in 1990–91 to about nine per cent in 1999–2000 revealing that trade openness denoted by ratio of exports to GDP behaved very closely to the export policies implemented by the government.

The change from import substitution to import liberalisation is reflected in the ratio, import to GDP as it increased marginally from nine per cent in 1990–91 to 11 percent in 1999–00. The ratio of imports to GDP further shows that the government to protect domestic market has pursued import restrictions. Total imports grew at the rate of about 17 per cent in rupee terms and 12 per cent in dollar terms in the earlier period (1970-71 to 1990-91). However, total imports witnessed about 20 per cent and 13 per cent at current prices in rupee and dollar terms respectively in the post reform period.

### 6.1.1.2. Trade Openness in Agriculture

Agricultural trade openness, reflected in the ratio of agricultural exports to agricultural GDP, which was four per cent in 1990–91, increased to a maximum of seven per cent in 1995–96 and thereafter there was a slow down to about five per cent in 1999–2000. Though growth of agricultural exports (16.85 per cent) was more than the growth of agricultural GDP at current prices (14.13 per cent), the ratio almost remained constant. Agricultural exports share to total GDP was also found less and almost remained constant over the period though it declined to 1.38 per cent in 1999–00. The agricultural–export growth were found higher in the 1990s and export of agricultural commodities recorded 17 and 10 per cent respectively at current prices in rupee and dollar terms. It is evident that agricultural exports also grew significantly in the post reform period and this could be attributed to the trade liberalisation policies followed in agriculture.

The ratio of agricultural imports to total GDP was less and it was around one per cent. During the post reform period agricultural imports grew exponentially at the rate of 16 per cent in rupee terms and nine per cent in dollar terms, which is not faster than exports. Balance of trade in agriculture at current prices was Rs.1419 crores in 1991 and it increased to a maximum level Rs.9827 crores in 1996–97 and at present it is Rs.8509 crores. The ratio of balance of trade to GDP in agriculture has also improved in the post-liberalisation period due to higher export growth. The ratio of agricultural trade (Exports and Imports) to agricultural GDP was less than 10 per cent in 70s and 80s, but the ratio tended to increase in 90s and reached maximum of 12 per cent in 1995–96. There was a fluctuation in the ratio during 90s and at present the ratio is eight per cent indicating that the country switched to liberalised trade policies comprising of import liberalisation and export promotion measures.

### **6.1.2. Commodity Composition and Growth of Agricultural Exports**

India exports a wide range of agricultural and allied commodities. Of the various agricultural and allied items, tea and mate, cashew kernels, spices and coffee were the dominant exportable items during the 1970-71, but their share declined in the later period due to the increase in the share of non-traditional commodities. These traditional agricultural commodities constituted about 93 per cent of the total value of agricultural and allied products exported in 1970-71 and its share increased to 96 per cent in 1980-81. The shares of these commodities declined during 90s and at present it forms 85 per cent. Diversification of export basket of agricultural commodities comprising of marine products, oil cakes, floriculture products, castor oil, rice, guar gum meal etc. increased substantially during 1990s.

#### **6.1.2.1. Coffee**

Coffee exports in value and unit value terms grew at the rate of 23.77 percent and 14.82 percent, respectively in the reform period, which were higher than the growth rates recorded during 1980s. The growth in coffee exports in value terms was contributed both by increase in quantity and unit value. Variability in quantity of export was stable during the reform period as compared to the other decades. However, post-reform period exhibited higher variability in value term.

#### **6.1.2.2. Tea**

The growth rates revealed that tea exports in quantity and unit value terms in constant rupees as well as in dollar terms have made only very low growth in the post reform period. Tea exports witnessed higher instability both in quantity and value terms and such instability has increased in the reform period as compared to the earlier period. In quantity terms, tea exports recorded 18 per cent variability, while

value terms registered 29.64 per cent variability. However, variability in unit value of exports showed a significant decrease in the reform period. The variability in value terms was mostly attributed to the variability in quantity than unit value.

#### **6.1.2.3. Rice**

The growth in value of export earnings from rice was contributed by growth in quantity exported whereas the unit value realization experienced a negative growth in the post Liberalisation period unlike earlier period. The growth in rice exports in the post Liberalisation period is contributed more by the non-basmati rice exports whose unit value is less when compared to basmati rice. Post liberalisation period registered higher variability of rice exports both in quantity and value term. However variability in quantity terms recorded very high instability with 118.79 percent, while the value terms recorded 78.59 of variability. Reduced variability in unit value of exports of rice in post reform period contributed for lesser variability in value of rice exports as compared to that of exports of rice in quantity term.

#### **6.1.2.4. Spices**

Spices recorded a high growth rate of 7.49 per cent in 70s in quantity term but there was a decline in growth (2.71 per cent) during 80s and again it jumped to 6 per cent during the reform period. Similar phenomenon was also observed in value of spices exports and it increased at the rate of 23 per cent and 14 per cent annually both at current and constant prices respectively during 1990s.. The rise in unit value of exports of spices contributed more than the quantum of exports for increase in export earnings. There was higher variability in quantity of spices export, particularly during the post reform period. Variability in value of exports was relatively lower and post-reform period witnessed lesser variability as compared to earlier period.

#### **6.1.2.5. Cashew kernel**

Performance of India in export of cashew kernel was impressive during the reform period. Export in quantity terms recorded 5 per cent growth, which is almost similar to that of 1980s, and in value terms it increased at the rate of 14 per cent per annum. The increase in export earnings was mostly contributed by increase in unit value, which recorded a growth of 9 per cent during 1990s. Export variability was less both in quantity and value term during the reform period.

#### **6.1.2.6. Sugar**

Erratic behavior in domestic production is observed in export growth as it was noticed that there was 11 per cent decrease in exports during 80s and 2 percent decrease in 90s in quantity terms. It is also evident from the instability indices that sugar exports witnessed very high variability both in quantity, value and unit value terms. Variability in sugar exports was very high during 80s recording more than 300 percent in quantity terms and there was a marginal decline in the variability during the reform period. So it is clearly evident that India is an occasional importer/exporter of sugar and this has the possible repercussions on the international prices of sugar.

#### **6.1.2.7. Cotton**

Exports of cotton in the reform period declined substantially at the rate of 16 per cent per annum, while in value terms the decrease was much lesser at the rate of 3 per cent per annum due to increase in unit value at the rate of 15 percent. Cotton exports exhibited high variation in all the periods and the instability was higher during 1980s as compared to 1970s and post-reform period. Cotton exports was most unstable due to fluctuations in domestic production and adhoc policy of the government.

#### **6.1.2.8. Oilcakes**

The export of oilcakes recorded very high growth rate of 20 percent and 44 percent in quantity and value terms in the post reform period though it was slightly lower than the growth rates recorded during 70s and 80s. The export unit value of oilcakes, showed high growth rate of 11 percent during the reform period which is mainly due to price competitiveness of oil meals particularly soymeal. The instability in export of oil cake in quantity term decreased to 21 per cent in reform period while instability in value terms was high in post-reform period which was 44 per cent and this was due to increase in variability of unit value (26 per cent).

#### **6.1.2.9. Tobacco**

It is noticed from the growth rates that quantity of exports grew at the rate of 6 per cent, value at the rate 14 per cent and unit value at the rate of 18 per cent. There is also high instability in tobacco exports during the reform period as it is evident from the Koppock's instability index constructed for quantity (48.33 per cent), value (46.92 per cent) and unit value (16.17 per cent).

#### **6.1.2.10. Marine products**

The share of marine products in the value of agriculture and allied products exports has increased substantially to 21 per cent during 1999-00 and forms the major export item in the agricultural export basket. There was reduction in growth of unit value during 1980s and 90s. Hence contribution of increase in quantity was the main cause for the increase in value of exports of marine products. Variability in export of marine products was less and the maximum instability index of 17.4 was noticed in reform period for quantity and 15 for value.

### 6.1.3. Export led growth

The export led growth hypothesis was tested using Johansen maximum likelihood method of multiple cointegration in a Vector Autoregressive framework. From the analysis it was inferred that variables, per capita agricultural GDP, agricultural exports, gross capital formation in agriculture, index of agricultural production and trade policy are cointegrated with three cointegrating vectors and that the series are causally related.

The dynamic adjustments that occur in the short run leading to stable long-run relations was established in a Vector Autoregressive model by conducting Variance Decomposition (VDs) tests of the forecast errors at different time horizons which break down the variance for each variable into components that can be attributed to each of the endogenous variable. Forecast error variance decompositions of per capita agricultural Gross Domestic Products (PAGGDP) showed that per capita GDP growth is largely explained by its own shocks. Further, it is noticed that more than 74 per cent of the variance is explained by its own shocks even after ten year period. This indicated that PAGGDP is endogenous to the system.

Gross capital formation in agriculture has considerable impact on output growth as it increased from about six per cent in time period two to 16 per cent for the time period four and remained almost at a constant level of 15 per cent even as the forecast horizon was extended upto 12 years. Exports account for 1.36 per cent for time period two and it explained 3.26 per cent of GDP growth after 12 years horizon. The variance explained by trade policy dummy variable increased from three per cent in period two to five per cent in time period 12 and the growth was more than that for exports. This established that more than exports, trade policy orientation is what

determines per capita GDP growth. The variance of per capita agricultural GDP explained by index of agricultural production was less than agricultural exports and trade policy. So to increase per capita GDP, production was not sufficient, but exporting the production and outward oriented policies are more important for GDP growth.

The agricultural exports forecast error variance decomposition showed that it is more explained by own innovation (67 per cent in period two to 52 per cent in period 12). The effect of agricultural production was also high in explaining the variance of agricultural exports and it increased from 14 per cent in time period two to 22 per cent in time period 12. The trade policy forecast error variance decomposition showed that it was more explained by its own innovation though it declined from 76 in period two to 60 per cent in period 12.

The postulated relationship between trade orientations, export growth and per capita GDP growth is the primary element of the exports promotion story. The finding that trade policy and export growth could alter real per capita GDP growth in agriculture to some extent is consistent with the assumptions of exports promotion strategy, though it could not fully establish the export led growth hypothesis. In the case of per capita agricultural GDP, though it is endogenous, it is influenced more by trade policy orientation than by exports. The strong relationship among agricultural exports and agricultural production showed that agricultural exports are more influenced by production for exports.

#### **6.1. 4. Trade, agricultural growth and poverty**

The important question is that how has increased participation in international trade affected the economic growth rate, and what implications has this had for the

distribution of income and the incidence of poverty? In India, per capita GDP growth in agriculture in the post-1990s accelerated from nine percent a year in the early 1990s to 13 per cent at current prices. This acceleration in growth is even more remarkable given the inflation rate. At constant prices, per capita GDP grew more than two per cent in the post reform period, while in the earlier period the growth was less than one per cent. There was a sizable reduction in poverty in the post reform period and it was estimated that rural population below poverty line declined by three per cent in the 1990s, while it was less than one per cent in the early 1990s. Similarly, percentage of population below poverty line also declined in the reform period, which is almost two percent more than the earlier period.

#### **6.1.4.1. Trends in Rural Poverty**

Rural poverty shows a slow decline in the 1970s and a faster decline in the 1980s till 1990–91. Post reform period was marked by near stagnation in the growth of aggregate real output. Per capita availability of food grains also declined over the years. There was a slow down in the agricultural production structure during the reform period. However, there was decline in poverty during the post reform period. A higher growth of output in the 1980s, than in the 1970s was largely responsible for this outcome. To provide an evidence for asserting a trend in increase or decrease in rural poverty over the period, Planning Commission (1998) estimates were used. These results indicate an evidence of presence of discernible trend in the incidence of rural poverty in India. The analysis shows that the presence of any discernible trend in the incidence of poverty obviously implies an increase in the absolute numbers of people in poverty because of the growth in rural population over the period.

#### 6.1.4.2. Export led growth and poverty

The relationship between export and growth was examined in the recursive system. Export was found to be an important factor determining output growth and the estimated elasticity (0.0658) is statistically significant at 10 per cent level of probability. The coefficient of the variable Per Capita Agricultural Gross Domestic Product PAGGDP is not statistically significant and deviated from *a priori* expectation. However, introduction of lagged PAGGDP improved the explanatory power of the equation ( $R^2 = 0.92$  increased to 0.93) and then regression coefficient of lagged PAGDPAP is negative and was significant (Probability level = 0.0408) indicating that the incidence of poverty depends also on the level of PAGGDP in the previous year. Introduction of the time variable has improved the explanatory power of the equation ( $R^2 = 0.99$ ) and both the current and lagged PAGGDP have *a priori* expected signs and PAGGDP was highly significant. The results further suggest that there is an underlying time trend in the incidence of poverty after allowing for changes in poverty incidence associated with changes in PAGGDP. There is clear evidence of an inverse relationship between rural poverty and agricultural performance.

After inclusion of price variables, the results show that the explanatory power of the independent variables or regressors moved up substantially ( $R^2=0.93$  improved to 0.99). When Consumer Price Index of Agricultural Labourers for Food and Consumer Price Index of Agricultural Labourers (general) were included,  $R^2$  remained 0.99. But in both the cases the coefficient of current year per capita GDP turned negative and highly significant. When WPIF was included, current year GDP remained significant and negative. These results suggested that after allowance is made for the changes in the incidence of rural poverty associated with other variables,

there is definite negative relationship between the incidence of rural poverty and agricultural growth in India. By and large the results revealed that there is a positive link between trade liberalisation and economic growth and such linkage would help the country to eradicate poverty in the long run.

### **6.1.5. Price instability and Transmission**

#### **6.1.5.1 Instability of Prices**

It was observed that during 1970s international prices of coffee, sugar and rice showed higher fluctuations as compared to other selected crops like tea, tobacco, cashew and cotton. Among the selected agricultural commodities, sugar witnessed highest variability of 70 per cent variability during 1970s followed by rice (38 per cent) and coffee (34 per cent). The high international price variability of sugar, rice and coffee was explained by the fact that there was inter and intra year price fluctuations. One distinguishing feature of the price trends in other commodities was that annual price movements were relatively gentle during 1990s. Domestic prices were unstable during 1980s as compared to 1970s. Particularly in the case of coffee, price variability increased to 55 per cent in 1980s from 6 per cent in 1970s. Similarly there was an increase in instability in domestic prices of pepper during 1980s as compared 1970s as it increased from 16 to 33 per cent. In most of the other commodities there was significant decline in instability during 1980s.

It is observed that in most of the commodities *viz.*, coffee, sugar and to some extent in cotton, international price variability is almost equal or lesser than the domestic price variability during the reform period. Moreover, variability in both international and domestic prices had declined in most of the commodities during the reform period. During 1970s and 1980s, domestic prices of rice and sugar witnessed

much lower variability than the international prices due to the government intervention through support prices, procurement and buffer stocking, and such intervention has been quite effective in insulating the domestic prices from the effect of instability in international prices. Sugar has been an important item of public distribution in India and government has been playing an active role in sugar trade through domestic intervention, export - import policy and tariff on imports. So it is a clear indication that the domestic prices of rice and sugar remained less volatile than international prices and there is no indication that international price would impart instability to domestic prices of these two commodities. Compared to international prices, domestic prices of sugar, rice and cotton show remarkable stability in the post reform period. Sugar and rice prices in India deviated from the trend by 4 to 6 per cent during the reform period, while deviation from trend of international prices varied from 21 to 11 per cent, respectively. Though the domestic price variability of coffee and pepper was lesser than the international price variability during the reform period, they deviated from the trend almost by 25 per cent. International prices and EUV more or less followed the same pattern of instability. EUV instability of coffee, tobacco and cotton has increased in the liberalisation period, while for tea, cashew and pepper it decreased.

Residual trend linear regressions estimated for international prices revealed positive and significant trends only for tobacco in the post reform period. The trends for the absolute value of the price trend residuals indicated that there is less systematic increase in the absolute variability in the world prices of many of the commodities during the reform period. The international price variability in 1980s were sizable for tobacco, pepper and chillies. From the results it is found that there is no evidence of systematic increase in instability in prices of major agricultural commodities and

opening up of Indian agriculture to free international trade could have repercussions on the Indian and international prices. The residual trends for Export-Unit Value (EUV) showed significance only for tea and implies that there is a significant variability in EUV of tea.

#### **6.1.5.2 Transmission of Price Instability**

Repercussion of possible trade Liberalisation through transmission of price instability from international prices is not evident in most of the commodities except rice in the reform period. The coefficient of cross products trend for rice was significant at 5 per cent level of probability indicating that movements in international prices affect the domestic prices. There is no such evidence to show that there was a transmission of instability even during 1980s except in tobacco and sugar. So there is a clear indication that Liberalisation of trade has not imparted instability to domestic prices for most of the commodities. The cross product trend for EUV and World Price revealed that none of the coefficients for agricultural commodities were significant in the post reform period. But in 1980s, the cross product trend were significant for pepper and sugar. It is unlikely that world price instability has been transmitted to domestic prices.

#### **6.1.5.3. World market instability and variability in producer prices**

The results of the variance decomposition analysis decomposes the variance of producer price,  $V(PP)$  into five variability components namely variance of Export Unit Value in dollars (EUV\$), variance of real exchange rate [ $V(RR)$ ], covariance between export unit value and real exchange rate [ $Cov(EUV$, RR)$ ], residual (R) and variance of error term  $u_t$  ( $\sigma^2 u$ ).  $\sigma^2 u$  was estimated from the  $u_t$  of the regression with producer price (PP) as a function of Export Unit Value in rupees ( $EUV_{Rt}$ ).

$\sigma u^2$  is that part of  $V(PP)$  not explained by the  $V(EUV\$)$  and  $V(RR)$  and explained by the government policy, the effects of domestic market and market intermediaries. The results revealed that  $\sigma u^2$  is not only an important source of  $V(PP)$  both in the pre and post liberalisation periods but also the dominant source with more than 50 per cent in almost all the commodities in both the periods except in the case of tea, pepper and cashew. Commodity wise analysis revealed that about 95.57 per cent of variation in producer prices of sugar was explained by these domestic factors in the reform period followed by cashew (89.70), cotton (81.89), tobacco (74.75), tea (59.01) and coffee (59.12).

The variation in producer prices, explained by  $V(EUV\$)$  decreased during 1990s as compared to 1980s for most of the commodities. It is inferred that domestic factors are a much greater source of variability in producer prices than the variability in world prices in the reform period and variance estimates of EUV in most of the commodities were less than one.

Variability in the real exchange rate,  $V(RR)$ , is an important source of variation in produce prices for commodities like sugar, cotton, tobacco, chilli and tea during 1980s. The variability in real exchange rate increased substantially from 0.89 to 6.00 in the case of tea, 2.41 to 10.05 in the case of tobacco, 7.16 to 10.05 in the case of sugar between the pre and post reform periods and found that exchange rate was also one of the major source of variation in producer prices during the reform period for these commodities. In the case of coffee, cashew, pepper, chillies, the variability in exchange rate was minimal in both the period. The variability in real exchange rate decreased from 5.88 in 1980s to 4.70 in the reform in the case of cotton.

## **6.1.6. Price Competitiveness of Agricultural Commodities**

### **6.1.6.1. Pepper**

The NPCs demonstrated that the country has distinct advantage in exporting pepper. The NPCs for many years have been less than one in the reference years and showed fluctuations and it was more than one during 1997-98 and 1998-99.. It was also noted that when there was an increase in domestic price the quantum of export has decreased. For instance NPC worked out to 0.91 during 1996-97 and the export was 45361 tonnes with the domestic price ruling at Rs 80.27 per kg and international price at Rs 97.83 per kg. Exports reduced to 31502 tonnes in 1997-98 due to increase in the domestic price to Rs 157.74 per kg which was higher than the international price (Rs 144.20 per kg). Though NPC is almost close to one in the reform period, there was steady increase in both domestic and international prices till 1999-2000, but 2000-01 recorded lower price. As a result export has declined sharply to 19250 tonnes.

### **6.1.6.2. Chillies**

The NPCs for dry chilli revealed that chilli has price advantage in the international market as NPCs were less than one in many years. In the post-Liberalisation period international prices increased substantially compared to domestic prices and NPCs were lesser and NPC was lowest (0.64) in 1997-98. Though the prices of chillies fluctuated in the international and domestic markets, international prices were always ruling higher than the domestic prices and there was a steady increase in exports from 505051 metric tonnes in 1996-97 to 68019 metric tonens in 1998-99 and thereafter there was a marginal decline in exports.

### **6.1.6.3. Cashew**

There was a steady increase in international prices of cashew as a result of global shortage. International prices were almost equal to the domestic prices and in some of the years, prices were 20 to 25 per cent higher in the domestic market as compared to the international prices but there was an increase in exports with a view to capture the markets. NPCs are almost equal to one in many of the years and in some years NPC coefficients were more than one. Cashew prices have declined during 1999-2000 and it was found that considering the inflation prevailing in the developed countries, the nominal prices for cashew kernels are very much below the potential market level.

### **6.1.6.4. Tea**

Estimates of Net Protection Coefficient were less than one in all the reference years and it was found that tea was most competitive in the period between 1994 and 1996 as it was nearing 0.70. Price of tea decreased to Rs 69.32 per kg from Rs 80.58 kg between 1999 and 2000 in North India registering about 14 per cent decline and in South India price has gone down to Rs 44.64 per kg from Rs. 57.09 between the same periods witnessing a fall of 22 per cent. There is also high volatility in tea prices, which ranged between 12 to 41 per cent (February 2000 to January 2001) in the case of CTC leaf and Darjeeling tea, respectively.

### **6.1.6.5. Coffee**

About 80 per cent of coffee produced is exported. Indian coffee will have nominal effect on world supply, as Indian contribution is only around four per cent of the world output. Except in 1990-91, NPCs were less than one but they are closer to one in many of the reference years. Due to 1994 severe frost in Brazil, the

international coffee price has shot up which resulted in increased demand for coffee in the international market. During this period exports from India increased to 1.71 lakh tonnes from 1.37 lakh tonnes between 1994-95 and 1995-96. The EUV increased from Rs 39.92 per kg to Rs 76.64 per kg in the period between 1993-94 and 1994-95. The recent sharp fall in international coffee prices due to surplus coffee supply has adversely affected the Indian coffee exports.

## 6.2. IMPLICATIONS

### Economy Specific:

- The results of the study revealed that trade openness denoted by ratio of exports to GDP behaved very closely to the export policies implemented by the government. The ratio of imports to GDP further shows that the government to protect domestic market has pursued import restrictions. It is evident that agricultural exports also grew significantly in the post reform period and this could be attributed to the trade Liberalisation policies followed in agriculture. These results clearly emphasise the need to adopt export promotion measures to stimulate trade, production and investment so that the targeted growth rate of over four per cent per annum by 2005 can be attained and sustained even in the presence of endemic weakness of Indian agriculture.
- The postulated relationship between trade orientations, export growth and per capita GDP growth is the primary element of the exports promotion story. The finding that trade policy and export growth could alter real per capita GDP growth in agriculture to some extent is consistent with the assumptions of exports promotion strategy, though it could not fully establish the export led growth hypothesis. In the case of per capita agricultural GDP, though it is endogenous, it

is influenced more by trade policy orientation than by exports. The strong relationship among agricultural exports and agricultural production showed that agricultural exports are more influenced by production for exports. Therefore, to capitalize the steady exports, agricultural production technologies are to be reoriented to increase production of exportable crops.

- Traditional agricultural commodities constituted about 93 per cent of the total value of agricultural and allied products exported in 1970-71 and its share increased to 96 per cent in 1980-81. The shares of these commodities declined during 90s and at present it forms 85 per cent. Diversification of export basket of agricultural commodities comprising of marine products, oil cakes, floriculture products, castor oil, rice, guar gum meal etc. occurred substantially during 1990s. Therefore areas of potential advantages of these commodities are to be identified and private sector participation should be promoted through contract farming and land leasing arrangements.
- There was a sizable reduction in poverty in the post reform period and it was estimated that rural population below poverty line declined by three per cent in the 1990s, while it was less than one per cent in the early 1990s. Similarly, percentage of population below poverty line also declined in the reform period, which is almost two percent more than the earlier period. Overall the results revealed that there is a positive link between trade Liberalisation and economic growth and such linkage would help the country to eradicate poverty in the long run. Therefore, it is necessary to implement a politically feasible comprehensive agricultural Liberalisation programme to eradicate poverty by promoting exports.
- It is observed that in most of the commodities *viz.*, coffee, sugar and to some extent in cotton, international price variability is almost equal or lesser than the

domestic price variability during the reform period. Moreover, variability in both international and domestic prices had declined in most of the commodities during the reform period. Government intervention through support prices, procurement and buffer stocking and such intervention has been quite effective in insulating the domestic prices from the effect of instability in international prices. From the results it is found that there is no evidence of systematic increase in instability in prices of major agricultural commodities and opening up of Indian agriculture to international trade could have repercussions on the Indian and international prices. There is also no indication that international price would impart instability to domestic prices. Therefore, Government has to play an active role through domestic intervention, export - import policy and tariff on imports to protect the domestic industry within the framework of WTO.

**Commodity Specific:**

- Since NPCs for many of the agricultural commodities are less than one in the reference years indicating the price competitiveness for Indian products, the following suggestions are given for each commodity for increasing exports.
- In case of pepper though the area under the crop has increased at a steady pace in India it has been nullified by stagnating productivity. As a result production growth is insignificant in India. The productivity of pepper in India is very less. India has greater advantage of cashing in the opportunities by increasing productivity through re-plantation, focus on organic cultivation and value addition and such increase in productivity will reduce the unit cost production and further it will improve the price competitiveness. Demand for organic spices is more in western countries and organic cultivation increases the quality of pepper. Targeting western markets also increases India's export earnings.

- Pesticide residues and aflatoxin levels pose a significant threat to exports. Production of specific varieties of chilli for different international markets on committed demand will improve the export of dry chillies. There is a need for producing quality chilli free of pesticide residue, which are in demand in US and Europe. For maintaining good quality, right farming/growing practices and proper packaging practices are essential.
- To bring about an increase in the availability of cashew to meet the requirement of cashew industry, large tracts of rainfed and marginal lands should be brought under cashew cultivation. Cashew cultivation must be improved in a more scientific way. Scientific management of these plantations will produce adequate surplus for processing and export. India may lose its premier position as major supplier of cashew kernels unless it steps up raw cashew nut production.
- The country always had about 200 million kg surplus of tea for export. With export-oriented unit allowed to import tea for the blends and re-export it. As this value addition happened, the demand for South Indian tea was affected. The South Indian tea was normally used as a mix in blended tea. The imported tea largely substituted this. The average cost of imported tea was Rs 25 per kg. Prevailing market price does not cover even the production cost and average production cost of tea had risen from Rs 57 in 1999 to Rs 65 in 2000. It is suggested that productivity has to be increased in order to reduce cost of production and quality of tea has to be improved to meet both domestic and international market. Appropriate tariff rate has to be imposed, which must be within the level of prescribed rate, so that surge of imports of cheap tea can be curbed.

- The recent sharp fall in international coffee prices due to surplus coffee supply has adversely affected the Indian coffee exports. Such depression will hamper the income of the small farmers who cultivate 65 per cent of the total area and produce 60 per cent of total production. These farmers need to have a hedging mechanism to protect them from such adverse condition. Variability in quantity of export was less during the reform period as compared to the other decades. However, post-reform period exhibited higher variability in value term emphasizing the need to improve the quality for better price and become more competitive.

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**APPENDIX - I**  
**ECONOMIC LITERATURE ON EXPORT LED GROWTH HYPOTHESIS**

Study	No. of countries considered	Period of Study	Methodology					Conclusions
			Data Set	Economic Growth	Exports	Econometric Technique	Other Variables	
Emery (1967)	50	1953-1963 Averages	Cross-section	GNP growth	Export growth	OLS	Current Account	Support for the export-led hypothesis
Syron & Walsh (1968)	50	1953-1963	Cross-section	GNP growth	Exports	OLS		Support for the hypothesis but the results are sensitive depending on the type of country under scrutiny LDCs or developed countries.
Serven (1968)	50	1953-1963	Cross-section	GNP growth	Export growth and/or export change/output	OLS		Support for the hypothesis and recommends the use of export growth and export change/output.
Kravis (1970)	37	1835-1966	Cross-section	GNP	Export growth	Spearman rank correlation	None	Supports the export-led hypothesis; however, indicates that LDCs that have been capable of diversifying their exports have been more successful in terms of growth.
Michaely (1977)	41	1950-1973	Cross-section	Per capita GNP growth	Growth of export share in GDP	Spearman rank correlation	None	Support for the export growth hypothesis and suggests the existence of a threshold effect. The link is more pronounced in a sub-sample of middle income countries.
Balassa (1978)	111	1960-1973	Cross-section	Real GNP growth	Real export growth	Spearman rank correlation, OLS, production function	Labour force, domestic investment and foreign investment output	Support for the export growth hypothesis.
Heller & Porter (1978)	41	1950-1973	Cross-section	Output growth rate GNP	Per capita exports	Spearman rank correlation	None	Little support for export growth causing growth.

Fajana (1979)	1	1954-1974 Nigeria	Time series	GDP growth	Export share of GDP and export change / GDP	OLS, two-gap model	Foreign capital	Supports the export-led hypothesis and suggests that it is due to changes in domestic investment resources.
Tyler (1981)	55 & 49	1960-1977 Middle-income LDCs	Cross-section	Real GNP growth and GNP per capita	Real export growth	Pearson and Spearman rank correlation, OLS, production function	Labour force growth, investment growth	Supports the export growth hypothesis and suggest the existence of an threshold effect.
Feder (1983)	32	1964-1973	Cross-section	GDP growth	Export growth and export change/output	OLS, production function	Labour force growth, investment/output	Supports the export growth hypothesis.
Kavoussi (1984)	73	1960-1978 Low-and middle-income LDCs	Cross-section	Real GDP growth	Real export growth	Spearman rank correlation, OLS, production function	Labour growth, capital growth	Support for the hypothesis, however, the effects tend to diminish according to the level of development.
Balassa (1985)	43	1973-1979 Semi industrialized countries	Cross-section	Real GNP growth	Real export growth	OLS, production function	Savings, labour GDP per capita, share of exports (manufactured products)	Supports the hypothesis and suggests that outward trade orientation is beneficial.
Jung & Marshall (1985)	37	1950-1981 LDCs	Time series	Real GNP or GDP	Lagged real export growth	OLS, Granger causally test	Lagged GNP and GDP growth	Only in 4 cases out of 37 was there evidence that supported the export-led hypothesis (Indonesia, Egypt, Costa Rica and Ecuador).
Ram (1985)	73	1960-1970 1970-1977 Low-and middle-income LDCs	Time series two-sub periods	Real GDP growth	Real export growth	OLS, White test for specification bias and heteroskedasticity	Labour force growth and investment growth	Supports the export growth hypothesis and suggests the existence of an threshold effect.

Darrat (1987)	4	1955-1982 Four-little dragons	Time series	Real GDP growth	Lagged real export growth	OLS, White test, bivariate model	None	Rejects the export growth hypothesis in 3 out of 4 cases. Is able to support it in only one case (Republic of Korea) on the basis of the causality test.
Heitger (1987)	36	1950-1970 Averages	Cross-section	real GDP per capita	Export share of GDP	OLS, production function	GDI/GDP effective rate of protection, labour force, technological adaptation and adult literacy	Supports the case for trade liberalization. Higher export shares have a stimulating impact on capital accumulation and thus stimulates economic growth.
Ram (1987)	88	1960-1972 1973-1982 Low-and middle- income LDCs	Cross-section two sub- periods	Real GDP growth	Real export growth	OLS, production function	Government size, GDI/GDP, labour growth	Supports the export-led hypothesis but asserts that the huge intercountry differences and diversity suggest caution when interpreting the results.
Moschos (1989)	71	1970-1980 Averages	Cross-section	Real GDP growth	Real export growth	OLS, production function	Labour growth, real domestic investment growth	Supports the export-led growth hypothesis and suggests the existence of an threshold effect. The rate of growth seems unaffected by labour because of its magnitude, while capital has limited effects owing to its low productivity levels.
Colombatto (1990)	47	1971, 1978 and 1985	Cross-section 3 separate years			OLS, correlation coefficients	Government consumption, agricultural exports and degree of openness	Rejects the export-led growth hypothesis.
Fosu (1990)	28	1960-1970 1970-1980 African countries	Pooled cross- sectional two periods	GDP growth	Rate of growth of merchandise exports	OLS, production function	Rate of growth of GDI, labour growth	Supports the export-led hypothesis.

Kugler (1991)	6	1970(1)-1987(4) industrial countries	Time series	GDP with the exception of the USA, where it is GNP	Real export growth	ADF unit roots, Johansens procedure, VARs	Consumption (durable, non-durable and services), investment (business fixed)	There is only weak empirical evidence supporting the export-led growth hypothesis. In only 2 cases out of 6 is a long-run relation verified (France, West Germany).
Afxentiou & Serletis (1991)	16	1950-1985 industrial countries	Time series	Real GNP growth	Real export growth	Phillips-Perron unit roots, EG procedure, Granger causality tests	None	No systematic relationship between exports and GDP is verified. Only in 2 cases out of 16 was a bidirectional causality manifested (US and Norway).
Salvatore & Hatcher (1991)	26	1963-1973 1973-1985 4 groups by trade policy orientation	Time series	Real GDP growth	Real export growth	OLS, production function	Labour input growth capital input growth. Growth in industrial production	Support for export growth hypothesis.
Sengupta (1991)	5	1967-1986 South-East Asia (Republic of Korea)	Time series	Real GNP growth	Real export growth	OLS, production function	Labour growth and capital growth.	Supports the export-led hypothesis and suggests the positive externality effects of exports on growth.
Serletis (1992)	1	1870-1985 Canada	Time series	Real GNP growth	Real export growth	ADF unit roots, EG procedure, Granger causality tests	Imports	Supports the export-led growth hypothesis in the short run. however, no cointegration between the variables was found.
Khan & Saqib (1993)	1	1972-1988 Pakistan	Time series	GDP growth		3 SLS, production function	Labour growth, capital growth, World GDP Index, relative prices	Supports the hypothesis of a strong association between exports and growth performance.

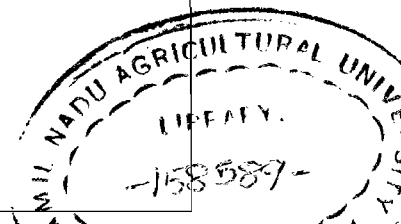
Lussier (1993)	24 & 19	1960-1990 African economies	Cross-section and panel data	GDP growth	Real export growth	OLS, 4 versions of production function	Labour growth, GDI/GDP, export share of GDP	Supports the hypothesis in panel data but fails to find any positive association when using export growth as a share of GDP.
Sheehy (1993)	31 & 65	1960-1970 Semi- industrialized countries	Cross-section	GDP growth	Real export growth	OLS production function	Labour growth, GDI/GDP, export share of GDP	Inconsistent evidence of higher productivity in the export sector compared with the non-export sector; thus, suggests caution when analysing empirical results.
Figuerola de la Barra & Letelier Saavedra (1994)	1	1979(1)- 1993(4) Chile	Time series quarterly	Real GDP	Real exports and export change/output	ADF unit root, VARs, Johansen's procedure	Labour force, capital, exports + imports/GDP	Supports the hypothesis of export-led growth. The results do not change independently of the indexes of outward orientation used.
Greenaway & Sapsford (1994)	19	1957-1985 1970-1985 1971-1985	Time series	Real GDP growth	Real export growth and export change/output	OLS, 3 versions of production function	Labour growth, rate of growth of investment, dummy for liberalization episodes	Little support for the export- led growth hypothesis and for the positive liberalization effects on growth.
Lee & Cole (1994)	73	1960-1970 1970-1977	Cross-section two sub- periods	Real GNP growth	Real export growth	2 SLS, production function, Hausman's test	Labour growth, GDI/GDP	Supports the existence of a bidirectional causality between exports and growth.
Van den Berg & Schmidt (1994)	17	1960-1987 Latin America	Time Series	Real GDP growth	Real export growth	Phillips-perron unit root, EG two-step procedure, OLS, VARs, production function	GDI/GDP, population growth	Points to a positive long-run relationship between exports and growth in 11 of the 16 cases analysed. Costa Rica is among those countries where the hypothesis was verified.

Bhat (1995)	1	1950-1951 to 1993-1994	Time series	GNP	Real exports	Cointegration error correction model granger causality test	None	Exports and GNP are cointegrated. Existence of a bidirectional causal relationship between export and economic growth found.
Jin (1995)	4	1976(2)-1993(2) Four little tigers of Asia	Time series	Real GDP	Real exports	F-tests, ADF, impulse response function, VARs, EG two-step procedure	Real exchange rate, foreign price shock, output shock	Bidirectional causality was found in the short run but no cointegration was detected; therefore, no long-run relationship is proved.
Ramakrishna (1995)	1	1960-1990 India	Time series	GDP	Exports	Multiple rank F test method	None	Unidirectional positive causation between exports and GDP found. No evidence for the influence of GDP on exports.
Henriques & Sadorsky (1996)	1	1870-1991 Canada	Time series	Real GDP growth	Real export growth	ADF unit roots, VARs, Johansen's procedure, Granger causality test	Terms of trade	No support for the export-growth hypothesis but failed to reject it.
Al-Yousif (1997)	4	1973-1993 Arab Gulf countries	Time series	Real GDP growth	Real growth of exports and export change/output	ADF unit roots tests, white test, production function	Labour force and GDI/GDP	Evidence that supports the hypothesis in the short run; however, it fails to find any long-run relationship, i.e. does not find cointegration.
Greenaway, Morgan and Wright (1997)	32 & 44	1985-1995 Liberalized & Non-liberalizer	Time series Panel data	Real per capita GDP growth	Real merchandise exports	Panel estimation approach instrumental variable approach	Growth of the capital stock, growth in the labour force	Liberalization have been associated with a deterioration in growth.
Begum & Shamsuddin (1998)	1	1961-1992 Bangladesh	Time series	Real GDP	Export growth and export change/output	OLS, VAR production function, MLE estimation and arch model	Labour force, GDI/GDP, dummy and trend	Supports the hypothesis.

Islam (1998)	15	1967-1991 NICs of Asia	Time series	Real GDP growth	Export growth and export change/output	ADF unit root tests cointegration granger, causality test, error correction model	Imports, government non-defence expenditures, trade orientation, investment, instability in exports earnings	Evidence that supports the hypothesis in the short-run but only in 5 cases was a long-run relation (no cointegration) found.
Onafowora and Owoye (1998)	12	1963-1993 Sub-saharan African countries	Time series	Real GDP per capita	Ratio of merchandise exports to real GDP	Vector Error correction model. Johansen maximum likelihood test	Ratio of gross domestic investment to GDP, index of trade orientation	Variables are causally related in the long-run. Real economic growth can be stimulated through an outward-looking strategy of export expansion.
Shan & Tian (1998)	1	1990-1996 Shanghai province of China	Time series Monthly	Real GDP	Exports	Granger-no causality procedure in a vector autoregression model (VAR)	Labour, investment, imports EDI	One way causality from GDP to exports.
Shan & Sun (1998)	1	1978(5)- 1996(5) China	Time series monthly	Real industrial output	Export growth	Ad hoc production function, VAR	Labour force, investment and energy consumption	Indicates a bidirectional causality between export and real output. Therefore, the export-led hypothesis defined as a unidirectional causal ordering from exports to growth is rejected.
Chaudhri, Chowdhury & Wilson (1999)	13	1968-1969 Asian countries	Time series	Growth in total GDP and sectoral GDP	Growth in exports	Granger causality test F test	None	Direction of causation from growth in trade to growth of GDP in 10 out of 13 countries. The relationship between the agricultural sector and the trade series indicated direction from trade to agricultural sector in seven cases including India.

## Appendix - I Contd....

Mohsen Bahmari - Oskee and Farhang Niroomand (1999)	59	1960-1992	Time series	Real GDP (Exports + Imports/ GDP)	Trade openness	Johansen maximum likelihood approach	-	Positive long run relation between openness and economic growth				
Dhawan and Biswal (1999)	1	India 1961-93	Time series	Real GDP	Real Exports	Johansen maximum likelihood approach Vector Auto Regression	Terms of trade	Evidence of one long run equilibrium relationship causal relationship from growth in GDP and terms of trade. Causality from exports to GDP appears a short run phenomenon, suggesting that recent export promotion strategies adopted in India have the potential of bearing growth in the future				
Smith (2001)	1	1950-1997 Costa Rica	Time series	Real GDP	Real exports of goods and services	Johansen maximum likelihood approach engle and granger two step procedure-ECM	Real gross domestic investment or real gross fixed capital formation, population	Evidence that exports operated as an additional engine of growth and there exists a long run relationship but the impact was relatively small.				
Ghirmay, Grabowski and Sharma (2001)	19	30 years Less developed countries	Time series	Real GDP	Real Export revenue	Johansen maximum likelihood approach Granger causality Error correction model	Investment	Export expansion causes economic growth by either increasing the volume of investment or by improving efficiency or both				



## APPENDIX - II

## MAJOR TRADE POLICY CHANGES SINCE INDEPENDENCE

YEAR/PERIOD	TRADE POLICY
1949	<ul style="list-style-type: none"> <li>• Devaluation of Currency</li> </ul>
1949-50 to 1951-52	<ul style="list-style-type: none"> <li>• Restrictive Import Policy</li> </ul>
1952-53 to 1956-57	<ul style="list-style-type: none"> <li>• Liberalisation of Foreign Trade</li> <li>• Import licenses granted in a liberal manner</li> <li>• Export control released and duties reduced</li> </ul>
1956-57 to 1965-66	<ul style="list-style-type: none"> <li>• Reorientation of Trade Policy</li> </ul>
1956-57	<ul style="list-style-type: none"> <li>• Export incentive schemes introduced</li> </ul>
1961-62	<ul style="list-style-type: none"> <li>• Very restrictive import policy with import controls. The foreign exchange crisis of 1956-57 speeded up the introduction of heavy inward oriented policy</li> <li>• Vigorous export promotion with scheme such as export subsidies, import entitlement licenses by way of Replenishment Licenses, Duty Exemption etc., and emphasis on import substitution with a view to reducing dependence on other countries and attaining economic self reliance.</li> <li>• The role of State Trading Corporation (STC) and the co-operative federation were emphasised as canalising agencies for agricultural exports. Public sector agencies were given an equally important role in the imports of inputs, particularly fertilizer. In agriculture trade, policy was designed to pursue twin objectives of food self sufficiency and promotion of exports of commercial crops.</li> </ul>
1966	<ul style="list-style-type: none"> <li>• Devaluation of rupee by 36.5 per cent in June 1966. The devaluation was also accompanied by the removal of the import entitlement schemes for exporters and the abolition of a number of cash subsidy scheme for exports.</li> </ul>

	<ul style="list-style-type: none"> <li>• Before the June 1966 devaluation, exports had been taxed lightly. Following the devaluation, however, large export taxes were imposed on a wide variety of traditional exports, especially coir and coir manufactures, jute manufactures, black pepper and tea. Apart from the desire to exploit monopoly power in trade, which was the standard argument for export duties, the several other reasons for the imposition of export duties were to stabilize domestic prices, to extract windfall profits to lower domestic prices for the benefit of consumers and to encourage further processing of raw materials. In a perverse development, although the devaluation increased the profitability of tradables in relation to non-tradables, it also raised the rupee price of imports by more than that of exports: that is, import substitutes were encouraged more than exports. The government subsequently acknowledged the inadequacy of this devaluation and introduced a further series of measures to promote exports.</li> <li>• The cash compensatory support (CCS) was introduced in August 1966. CCS was designed to compensate for unrebated indirect taxes paid by exporters on inputs that enter into their export production, neutralise disadvantages implicit in freight rates, etc., and to provide assistance to finance the initial promotional costs in the case of new products and markets.</li> <li>• Agricultural products received little export incentives in the form of cash incentives</li> </ul>
1966-67 to 1974-75	<ul style="list-style-type: none"> <li>• Initially devaluation did not improve BOP but it started showing results during the 1970s.</li> <li>• Export promotion councils were set up and bilateral trade agreements with socialist countries signed.</li> </ul>
1975	<ul style="list-style-type: none"> <li>• In September, the rupee was untied from the pound sterling and was tied to an unspecified basket of currencies.</li> </ul>
1975-1979	<ul style="list-style-type: none"> <li>• Number of committees and task forces set up to review various dimensions of trade policy.</li> </ul>
1975-76 to 1984-85	<ul style="list-style-type: none"> <li>• Policy of import liberalization adopted with a view to encourage export promotion</li> </ul>

1977	<ul style="list-style-type: none"> <li>• Emphasis on stimulating economic growth and export promotion via import liberalization</li> <li>• When foreign exchange reserve were considered adequate, the government began to release import controls and quantitative restrictions.</li> </ul>
1978-79	<ul style="list-style-type: none"> <li>• The most important change in the import policy was the move to a negative list system</li> <li>• The basic change which applied to raw materials, manufactured inputs, consumer goods etc. involved a switch from "positive" lists of allowable imports to a system of "negative" list of restricted imports.</li> <li>• The complex policy regarding import of capital goods and technology was also liberalized but on an adhoc basis. All items not specifically restricted or banned, were listed under the Open General License (OGL) category and could be freely imported. There was no change in the policy which banned most consumable good imports.</li> </ul>
1978	<ul style="list-style-type: none"> <li>• The Committee on Import-Export Policies and Procedures (Alexander Committee) on trade policy, appointed by the ministry of commerce had suggested in 1978 an overhauling of India's import and export control policies, especially through declicensing of imports.</li> <li>• Following this, trade policy took a turn towards a more liberal regime with the significant change being greater access to Open General License for actual users.</li> </ul>
1979-80	<ul style="list-style-type: none"> <li>• A step backward from liberalization. Although the structure of 1978-79 was retained, the policy represented a step away from the permission of 1978-79 to import competitive imports. A number of steps were taken to limit such imports</li> <li>• In mid 1979, the Dagley Committee report on "Government controls and subsidies" suggested even greater liberalization for better capacity utilization, quality improvement and higher volume of exports</li> </ul>
1980-81	<ul style="list-style-type: none"> <li>• Increased relative incentives for exporter.</li> <li>• As the balance of payments position worsened and pressure from domestic producers grew there was a further tendency</li> </ul>

1982	<p>to restrict the import of competitive products while retaining the basic innovation of the 1978–79 policy. At the same time, exporters were again given increased relative incentives.</p> <ul style="list-style-type: none"> <li>• The bonded manufacturing scheme (known as 100 per cent Export Oriented Unit (EOU) scheme) was introduced in 1981. The EOUs were treated as operating outside the domestic tariff area and hence had the right to import all their requirements free of import licensing controls and import duties.</li> <li>• The Committee on Export Strategy for Eighties headed by Tandon came up with a package of export promotional measures in 1982 which included subsidies, and fiscal concessions to exporters which underscored the need for trade policy reforms with the twin objectives of achieving a favourable trade balance and efficiency in resource use.</li> </ul>
1984	<ul style="list-style-type: none"> <li>• Supplementary measures were recommended by the Hussain Committee on Trade policies which reiterated the need for trade policy reforms, for achieving both improved trade balance and efficiency in resource use. Stress was laid on export promotion, import liberalisation and especially, on a greater access to free flow of technology from abroad, presumably by means of an easier access to foreign equity participation in India.</li> <li>• Recommendations offered by the official committees influenced the broad goals of the successive long term import export policies announced in March, 1985, March 1988 and March 1990.</li> </ul>
1985–90 (Seventh plan)	<ul style="list-style-type: none"> <li>• Efforts were made to identify sectors, industries and products which have a good export potential and to provide a suitable policy framework. Fourteen broad sectors were identified by the government in consultation with the export promotion councils and commodity board, for making special thrust in the overseas markets without minimizing the importance of increased exports from other sectors as well. The fourteen thrust sectors included agricultural and allied commodities like tea (especially in packaged and value added form), cereals (particularly wheat); processed foods (including fruits and juices, meat and meat products</li> </ul>

1985	<p>and fresh fruits and vegetables); marine products (especially in the value added forms) etc.</p> <ul style="list-style-type: none"> <li>• New long term export-import policy announced on a three year basis.</li> <li>• A general move towards liberalisation of imports especially of capital goods and raw materials, and the emphasis on export incentives (provided through preferential import licenses) dominated the major policy changes.</li> <li>• The basic aim was to facilitate production through easier and quicker access to imported inputs, impart continuity and stability to EXIM policy and facilitate technology upgradation.</li> <li>• There were attempts to reduce administrative delays and multiplicity of schemes.</li> <li>• List of items importable under Open General License expanded by replacing over one thousand items under OGL in the context of trade policy for 1985–88 which resulted in an import led export growth.</li> <li>• The impact of import liberalisation measures, viz., widening the coverage of the OGL list and reduction in tariff rates, had been very significant in food sector.</li> <li>• In order to streamline Automatic Licence (AL) procedure, a new Import-Export Passbook scheme was announced in April 1985.</li> <li>• A more realistic and export oriented exchange rate policy was pursued from 1985 onwards, and as a result, the exchange rate of the Rupee <i>vis-à-vis</i> the US \$, which had remained relatively steady throughout the period 1966-1984, moved from the level of US\$ 1 = Rs.10.3 prevailing in 1984 to the level of US \$ 1 = Rs.20.5 that prevailed before July 1991 devaluation.</li> <li>• Rationalization of tariff rates on selected items of capital equipment, materials and components, while some rates were increased. Net overall impact was a reduction in tariff levels.</li> </ul>
1986	<ul style="list-style-type: none"> <li>• 29 machine tool items and 43 machinery items placed under Open General License.</li> </ul>

1987-88	<ul style="list-style-type: none"> <li>• Import and excise duty concessions granted for leather, chemicals, coffee etc.</li> <li>• Export promotion measures involving supply of raw materials at international prices, use of upto 10% of foreign exchange earnings for export promotion, imports of machinery duty free or at low rates, fuel remission of excise duties and domestic taxes introduced for 14 sectors.</li> <li>• 9 items removed from Open General Licence</li> <li>• Import monopoly by public agencies over certain products removed</li> <li>• Authorization given for exports of wheat and wheat products under specified conditions.</li> <li>• Liberalization of some exports, such as olive green textiles and some hand knotted woolen carpets</li> <li>• Liberalized export licensing policy announced for next three years</li> <li>• Duty drawback rates for 800 items increased to provide greater export incentive.</li> <li>• Export duties abolished on 12 items</li> <li>• Export of wheat seed and paddy seed canalized through National Seeds Corp. Ltd.</li> <li>• Exporters of cotton yarn allowed to import raw cotton</li> <li>• Blanket permit scheme liberalized by which exporters can use their foreign exchange holdings</li> <li>• Reduction of duties on various capital goods from 100% to 85%</li> <li>• Suspension of raw cotton exports extended</li> </ul>
1988-91	<ul style="list-style-type: none"> <li>• Further liberalization of import and export controls announced on 30 March as part of Foreign Trade Policy for the next 3 years</li> <li>• New policy removed controls on imports of 745 more items</li> </ul>

1990-91	<ul style="list-style-type: none"> <li>• Export drive and an appropriate orientation of trade policy were introduced as an additional goal in Long term EXIM policy of 1988</li> <li>• Allowed recognized export and trading houses to import capital goods through the use of export related licenses (Additional Licenses)</li> <li>• This revision was caused by concern over the costs and difficulties to small firms of importing directly</li> <li>• The main innovation in the 1988-91 policy was that the import replenishment (REP) licenses were given for all exports and could be used to import any item in limited permissible and canalized lists.</li> <li>• Effective from April 1989, profits from exports were fully exempted from export tax.</li> <li>• A New Three-Year Import-Export Policy for 1990-93 was announced terminating the earlier policy for 1988-91, a year in advance</li> <li>• The endeavour of the Government had been to frame a policy conducive for export promotion, especially because of the significant changes taking place in global trading in terms of both, commodity mix and direction of trade</li> <li>• To simplify and streamline procedures for import licensing and export promotion</li> <li>• To promote efficient import substitution and self reliance.</li> <li>• Two major tendencies were found in the different trade measures adopted       <ol style="list-style-type: none"> <li>1. A general move towards liberalization of imports, entailing successive expansions in the OGL list.</li> <li>2. Linking up of export expansionary efforts to import liberalisations, by means of import licenses exclusively granted to exporters. Such licenses included the REP and additional (import) licenses both of which could be used to import non-OGL capital goods, raw materials and components from the limited permissible and canalised lists.</li> </ol> </li> </ul>
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Trade Policy 1991	<ul style="list-style-type: none"> <li>• In addition, blanket advance licenses issued to export house, could be used for import of nearly all types of goods other than those mentioned in the restricted list. Transferability of these licenses, issued on an actual user basis, provided additional incentives to the exporters especially with the high premiums fetched by these licenses in the market.</li> <li>• The rupee was devalued by 24 per cent against the dollar</li> <li>• Export controls were reduced to the barest minimum and imposed only in few selected commodities</li> <li>• Exporters were issued export-import (EXIM) scrip</li> <li>• The list of items that could be freely imported had been widened.</li> <li>• The scope for canalization of exports and imports had been narrowed.</li> <li>• The rupee was made partially convertible i.e. convertibility on current account but not on capital account.</li> <li>• Relaxation of controls over foreign exchange transaction.</li> <li>• The basic rate at which eximscrip was issued against exports was generally 30 per cent of the FOB value.</li> <li>• The rate of 40 per cent was offered for exports of certain products such as value added agricultural products, marine products etc.</li> </ul>
Union Budget 1991- 92	<p>Reduction in Tariff Rate</p> <ul style="list-style-type: none"> <li>• The 1991-92 budget reduced the tariff rate from more than 300 to 150 per cent. These rates were further lowered to 110 per cent with the exception of passenger's baggage and alcoholic beverages in the 1992-93 budget. The customs duty for agricultural products was reduced from 110 per cent in 1991-92 to 75 per cent after April 1, 1992. The revised tariff structure had took care of the losses arising from devaluation of the rupee, removal of Cash Compensatory Scheme (CCS), losses in International Price Reimbursement Scheme (IPRS) and due to convertibility of the rupee.</li> </ul>

December 1991	<ul style="list-style-type: none"> <li>• The Board of Trade of the Ministry of Commerce identified 34 products for a special export thrust targeting for achieving a 30 per cent growth in value/volume and called them as "Extreme Focus Products". The extreme focus products were grouped as             <ol style="list-style-type: none"> <li>i) "Star products" such as drugs and pharmaceuticals, dyes and intermediates, textiles and garments and gold jewellery.</li> <li>ii) "Sunrise products" such as auto components, aquaculture products, bicycles, cut-flowers, fresh fruits and vegetables and internal combustion engines, and</li> <li>iii) "India products" such as basmati rice, granite and spices. The detailed groups set up by the Ministry of Commerce to examine constraints in these extreme focus products in their recommendations placed emphasis on supply side problems particularly issues pertaining to taxation, finance, foreign exchange insurance, export-related imports, procedural problem and infrastructure.</li> </ol> </li> </ul>
March 1992	<ul style="list-style-type: none"> <li>• The Liberalized Exchange Rate Management System (LERMS) replaced the system of exim scrips. Under the LERMS, there was a dual exchange rate mechanism and it was allowed a greater role to market forces in the determination of the exchange rate. Under the LERMS, exporters were required to surrender 40 per cent of the foreign exchange earning at the official rate. The government would use the amount to import essential items such as petroleum, fertilizer and life saving drugs. The exporters were allowed to sell the remaining 60 per cent of the foreign exchange or use it to finance other own imports.</li> </ul>
March 1, 1993. (1992-1997) EXIM Policy	<ul style="list-style-type: none"> <li>• Unification and market based determination of exchange rates</li> </ul> <p>The principal objectives of the EXIM policy were</p> <ul style="list-style-type: none"> <li>• To establish the framework for globalisation of Indian foreign trade</li> <li>• To encourage the attainment of high and internationally accepted standards of quality and thereby enhance the image of India's products abroad</li> </ul>

- To augment India's exports by facilitating access to raw materials, intermediates, components, consumables and capital goods from the international market.
- To promote efficient and internationally competitive import substitution and self-reliance under a deregulated framework for foreign trade.
- To eliminate or minimise quantitative, licensing and other discretionary controls in the framework of India's foreign trade.
- To foster the country's Research and Development (R and D) and technological capabilities.
- To simplify and streamline the procedure governing exports and imports.

#### Salient features

- Eliminated licensing, quantitative restrictions and other regulatory and discretionary controls.
- Under the Export Promotion Capital Goods (EPCG) scheme, the duty on import of capital goods was reduced from 25 to 15 per cent, subject to an export obligation of three times the c.i.f. value of imports and the period of achievement was increased from 4 to 5 years.
- The government also introduced a system of value-based advanced license to export houses, trading houses and star trading houses, which permitted duty free imports of necessary raw materials as components upto a stipulated percentage of the value of anticipated exports.
- The Export Oriented Unit (EOU) and Export Promotion Zone (EPZ) schemes were liberalized and extended to agriculture, horticulture, aquaculture, poultry and animal husbandry. Cent per cent equity participation in EOU/EPZ units were allowed.
- Special Import Licenses (SIL), which could be traded in the market were issued to certain categories of exporters.
- An Exporters Grievance Cell was set up by the Ministry of Commerce to facilitate action in the problems found by exporters.

July 1992	<ul style="list-style-type: none"> <li>• The Eighth Five-Year Plan Document proposed further liberalisation of the trade regime.</li> <li>• It was proposed that by the terminal year of the plan i.e., fiscal year 1996-1997, the negative list of imports should contain only items, which would be banned for reasons such as environment and safety.</li> <li>• By mid 1990s, the average tariff rates were proposed to be brought down to about 25 per cent.</li> </ul>
November 1992	<ul style="list-style-type: none"> <li>• The Reserve Bank of India instructed scheduled commercial banks that at least 10 per cent of the net outstanding credit be allocated for exports by 1 July 1993 at an interest rate of 14 per cent.</li> <li>• EOU status was given to units in exports of agriculture and allied products, which exported atleast 50 per cent of their produce as against a minimum of 75 per cent from other sectors.</li> <li>•</li> </ul>
EXIM Policy 1993	<ul style="list-style-type: none"> <li>• Many measures were initiated to accelerate the growth of agricultural exports like.</li> <li>• Removals of minimum export price (MEP) on basmati rice, pepper, guar gum, orchids and meat of sheep, goat and buffalo.</li> <li>• Decanalization of exports of milk and milk products.</li> <li>• Permission to export superfine non-basmati rice subject to a MEP of</li> <li>• \$ 200 per tonne.</li> <li>• Exports of mustard seeds and rapeseeds were allowed against quota.</li> <li>• Exports of high value durum wheat and of non-fair average quality of jowar, subject to ceiling.</li> <li>• Waiver of cess on sugar and pepper exports.</li> </ul>

<p>Current Account Convertibility</p>	<ul style="list-style-type: none"> <li>• Permission to avail duty-free import of capital goods under the EOU/EPZ scheme even if they export only 50 per cent of their output.</li> <li>• Negative list was pruned</li> <li>• Import duties on specified capital goods for export thrust areas such as textiles, leather, marine products, food processing, horticulture and floriculture were reduced.</li> <li>• In March 1993, the foreign exchange budget was abolished, the exchange rate was unified and transactions on trade account were freed from exchange control. The determination of the exchange rate of the rupee was left to the market.</li> <li>• The Tax Reforms Committee (TRC) headed by Raja Chellaih recommended the following import duty structure for agricultural commodities.</li> <li>• Essential commodities like wheat and rice should be imported at zero per cent duty.</li> <li>• Commodities like oilseeds and pulses should attract 10 per cent duty.</li> <li>• Non-essential agricultural goods like almond and cashew nuts should be imported at five per cent duty.</li> <li>• All this transformation in import duties were to be achieved by 1996-97 or the latest by 1997-98.</li> <li>• The maximum tariff rate was further reduced to 85 per cent from 150 per cent.</li> </ul>
<p>1994-1995</p>	<ul style="list-style-type: none"> <li>• In continuation of the policy objective to promote exports and simplify import procedures, the following measures were undertaken.</li> <li>• Third-party exports were given benefit under the Duty Exemption Scheme (DES) and the export promotion capital goods scheme.</li> <li>• The scope of item importable under special import licenses (SILs) was increased.</li> </ul>

<p>August, 1994</p>	<ul style="list-style-type: none"> <li>• A new category of super star trading houses was created which inter alia, were entitled to membership of apex consultative bodies concerned with trade policy and promotion.</li> <li>• EOU status was given to units engaged in exports of agriculture and allied, which exported at least 50 per cent of their produce as against a minimum of 75 per cent requirement for other sectors.</li> <li>• Streamlining of value addition formulae for EOU/EPZs.</li> <li>• With the formulation of these measures, the trade policy focus has aimed at providing both the institutional and infrastructural back up to promote exports.</li> <li>• India accepted the obligations under article VIII of the IMF's articles of agreement and the Indian rupee was made fully convertible on current account transaction.</li> </ul>
<p>31 December 1994</p>	<ul style="list-style-type: none"> <li>• In line with the new obligations on antidumping and subsidies and counter vailing measures, amendments were made to the customs tariffs act through an ordinance. Rules concerning disputes settlement mechanism (DSM) were made time bound, automatic and judicial in approach.</li> </ul>
<p>1995-96</p>	<ul style="list-style-type: none"> <li>• In July 1991 out of 5021 HS tariff lines at the six digit level 4000 (80 per cent) were subject to import licensing restriction. As of 1 December 1995 more than 3000 tariff lines covering raw materials, intermediates and capital goods were freed from import licensing requirements.</li> <li>• Items covering 1487 tariff lines in the restricted list were allowed under the category of freely tradable Special Import License (SIL), which were granted to the export houses, trading houses, star trading houses and super star trading houses.</li> <li>• 488 items were removed from the restricted list of the Open General License (OGL.)</li> <li>• Controls on exports had been liberalized except for a few items in the negative list, which were being regulated because of strategic considerations, environmental and ecological grounds, essential domestic requirements, employment generation and on ground of socio cultural heritage.</li> </ul>

1996-97	<ul style="list-style-type: none"> <li>• In the category of agricultural and food exports, only beef and tallow were in the negative list.</li> <li>• Quantitative ceiling and minimum export price in respect of rice was abolished.</li> <li>• Exports of wheat upto 2.5 million tonnes in case of non durum wheat was permitted.</li> <li>• In case of coffee, free sale quota was raised to 70 per cent for large procedures and 100 per cent for small produce.</li> <li>• Fruits, vegetables and flowers emerged as export products. EOUs in floriculture facilitated export of the perishable products. Air freight subsidy provided a boost to these export items.</li> <li>• The EXIM policy 1992-1997 was reviewed and revised in several ways to include measures for trade promotion as well as further simplification of procedures.</li> <li>• A number of items from the negative/restrictive list were permitted free for import and many others were shifted to the list of items which could be imported under the (SIL) scheme.</li> <li>• 40 items were removed from the negative list and made freely importable and 14 others shifted to SIL list on 21<sup>st</sup> August, 1996. Similarly, a notification was issued on 13<sup>th</sup> September 1996 whereby two restricted items were made free for imports and 55 restricted items were permitted against SIL. By another notification issued on 10<sup>th</sup> February, 1997, as many as 69 items in the SIL list were moved to the free list and another 95 items taken of the restricted list and placed on the SIL list.</li> <li>• In an effort to promote trade with Latin America, a notification had listed forty-three south American countries, and made exports undertaken after April, 1996 to these countries eligible for double weightage benefit for recognition as export house/trading house/star trading house/super star trading house.</li> </ul>
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1997-98	<ul style="list-style-type: none"><li>• Minerals and Metals Trading Corporation (MMTC) was the only canalising agency for import of Urea until October, 1 1996. In an effort to bring about progressive decanalization, the state trading corporation and Indian Potash Ltd, apart from the MMTC, were also authorized to import urea from October, 1996.</li><li>• Given the domestic demand/supply imbalance in wheat; export of wheat products, which had been earlier allowed without any restriction, was subjected to a quatitative ceiling from October, 1996. For the period October, 1996 to March, 1997, a ceiling of 1.5 lakh tonned has been announced for export of wheat products and placed at the disposal of APEDA for further disbursement.</li><li>• Goods including those in the negative list of imports or negative list of exports were allowed to be imported for re-exports with a license subject to conditions like a minimum value addition of 10 per cent.</li><li>• The concept of regional advance licensing committees were introduced with a view to provide licenses to exporters and readresal of their grievances quickly and at their doorsteps.</li><li>• The principal objective of the policy were to accelerate the countrys transition to a globally oriented vibrant economy with a view to deriving maximum benefits from expanding global market opportunities.</li><li>• To stimulate sustained economic growth by providing access to essential raw materials, intermediates, components, consumables and capital goods required for augmenting production.</li><li>• To enhance the technological strength and efficiency of Indian agriculture, industry and services thereby improving their competitive strength while generating new employment opportunities and encouraging the attainment of internationally accepted standards of quality</li><li>• To provide consumers with good quality products at reasonable price.</li></ul>
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**Important schemes/measures of import liberalization**

- As on 1 April 1997, the residual import restrictions, for BOP purpose aggregated to 2714 tariff lines. With an improvement in India BOP, the country was under pressure to eliminate the QRs
- The restricted list of imports had been substantially pruned. Imports of 542 items had been liberalized which includes about 150 items that could be imported against Special Import License (SIL).
- About 60 items had been moved from SIL to the OGL list. Restrictions were placed on five times on grounds of environment safety, strategic importance, public health and security.
- The Export Promotion Capital Goods (EPCG) scheme was further streamlined. Capital goods, including spares upto 20 per cent of the Cost, Insurance, Freight (CIF) value of the capital goods, may be imported at a concessional rate of customs duty subject to an export obligation to be fulfilled over a period of time. For agriculture and allied sectors, it was zero duty and the threshold limit for EPCG zero duty scheme was brought down to Rs 1 crore from 5 crore and the export obligation on FOB basis was 6 times CIF value of Capital Good to be fulfilled over a period of 6 years.
- Changes were made in the method of calculation of credit rates under Duty Exemption Pass Book (DEPB) scheme and it was modified to neutralize not only the basic customs duty but also the special customs duty.
- Permission was given to set up private bonded warehouses for exports and imports.
- Uninterrupted movement of export consignments.
- Exports of oilseeds for consumption and vegetables were made free without any quantitative and licensing requirement.
- Changes in the minimum net foreign exchange earning criterion for agricultural and allied sector export oriented units (EOUs) and such units situated in export processing zones (EPZs).

<p>The union budget 1997-98</p>	<ul style="list-style-type: none"> <li>• Changes in depreciation limit, value addition norms, threshold limit for export houses and various trading houses.</li> </ul>
<p>January 1997</p>	<p>Rationalization of tariff structure</p> <ul style="list-style-type: none"> <li>• Reduction in the peak rate of duty from 50 per cent to 40 per cent except for passenger luggage, alcoholic beverages, dried grapes and a few other products accompanied by rationalization and reduction in duty rates in various sectors of the economy. The peak rates for imports of raw materials and capital goods for projects were reduced to 30 per cent and 20 per cent respectively. However, the special custom duty was raised from two to five per cent on all imported goods except petroleum products and certain project imports.</li> </ul>
<p>IX FIVE YEAR PLAN 1997 -2002</p>	<ul style="list-style-type: none"> <li>• GOI set up an export committee to assess the 'Impact of Removal of Quantitative Restrictions on Agricultural Commodities <i>vis-a-vis</i> WTO Requirements'.</li> <li>• The initial deliberations of the committee revealed that these zero tariff bindings for some commodities like rice, plums, fresh grapes, and dried skimmed milk were committed in 1947 (Geneva Protocol 1947).</li> <li>• Some other commodities like maize and millet, were bound at zero import duty in Torquay protocol of 1951.</li> <li>• Sorghum was bound at zero import duty in Geneva Protocol of 1962 (Dillion round)</li> <li>• As per the committee India was to open up this issue with WTO and ask for their upward revision once the BOP cover to India was withdrawn.</li> </ul>
	<ul style="list-style-type: none"> <li>• The major constrains affecting agro-exports were identified as volume insufficiency, quality deficiencies, stringent legislation relating to health and safety standards in importing countries, procedural bottlenecks and lack of adequate post-harvest infrastructure.</li> <li>• The major thrust areas for development as per the plan document were infrastructure development, quality and packaging, value addition and encouragement of export oriented production.</li> </ul>

1998-99	<ul style="list-style-type: none"> <li>• Reduction in the rate of interest on pre-shipment and post-shipments credit from 11 per cent to nine per cent.</li> <li>• Promotional measures and procedural changes like extension of holiday for EOU/EPZ to 10 years, sub contracting facility for Domestic Tariff Area.</li> <li>• To give a boost to export of processed foods, horticultural and floricultural products etc., the duty on mobile cooling equipment and other cold chain equipment was suitably revised to reduce the cost of such equipments.</li> <li>• Exemption of exports under all export-promotion scheme from the applicability of the special additional duty of four per cent introduced in the 1998-99 budget.</li> <li>• Extension of the EPCG scheme to cover specified biotechnologies and small scale engineering industry.</li> <li>• Simplification of bond furnishing procedures for exporters.</li> </ul>
1 August 1998 South Asia Free Trade Area (SAFTA)	<ul style="list-style-type: none"> <li>• India unilaterally removed all QRS on imports of 2,300 items from SAARC countries with effect from in order to promote trade among SAARC countries.</li> </ul>
28 December 1998	<ul style="list-style-type: none"> <li>• A free trade agreement was concluded between India and Sri Lanka on, which would result in zero import tariffs for most commodities on both sides by 2007.</li> </ul>
March 1999	<ul style="list-style-type: none"> <li>• Discontinuation of the convention of publishing negative list for exports and imports. 814 items were added to the list of freely importable items and 414 items were added under SIL. Only 667 items were in the restricted list.</li> <li>• Special status to manufacturing and merchant exporters with proven track records under 'green card' and 'golden status' schemes, respectively.</li> <li>• Extension of additional incentives to the export of products from sectors such as biotechnology, textiles etc.</li> </ul>

1999	<ul style="list-style-type: none"> <li>• Following the third round of negotiations held under SAARC preferential Tariff Agreement (SAPT), the Revenue Department notified on 11 August 1999 concessional customs duties, ranging from 25 to 60 per cent for least developed countries (Bangladesh, Maldives, Nepal and Bhutan) and 10 to 50 per cent for other three countries - covering items in 1,800 tariff lines which accounted for 60 per cent of imports.</li> </ul>
1999-2000  Measures in the Budget 1999-2000	<ul style="list-style-type: none"> <li>• Reduction in the existing seven major ad valorem rates of custom to five basic rates and rationalisation of import duty.</li> <li>• Revamping of the scheme of export credit in foreign currency to revitalize exports and to make available pre-shipment and post-shipment credit at internationally competitive rates and to bring about a major simplification of procedures.</li> <li>• Setting up of High Powered Committee to investigate the issue of high transaction costs for exporters and to make concrete recommendation for reduction of such costs.</li> </ul>
EXIM Policy 1999-2000	<ul style="list-style-type: none"> <li>• Removal of Quantitative Restrictions. Import of 894 items made license free and another 414 items could be imported against SIL.</li> <li>• Free Trade Zones (FTZ) to replace export processing zones and these were to be treated as outside the country's customs territory.</li> <li>• Duty Exemption scheme was made more flexible</li> <li>• Institution of Ombudsman for faster resolution of exporters problems,</li> <li>• Green card for exporters exporting 50 per cent of their production.</li> </ul>

<p>2000-2001</p>	<ul style="list-style-type: none"> <li>• No additional customs duty on import of capital goods under zero duty.</li> <li>• Export Promotion Capital Goods Scheme (EPCG) for marine sector.</li> <li>• Golden status certificate for Export and Trading Houses, which means that an exporter, who has been a status holder for three terms, will acquire this status permanently.</li> </ul> <p><b>Customs</b></p> <ul style="list-style-type: none"> <li>• Reduction in peak protective customs tariff from 45 per cent to 40 per cent.</li> <li>• To bring out a more rational and simplified duty structure the seven major advalorem rates of customs duty, namely five per cent, 10 per cent, 20 per cent, 25 per cent, 35 per cent and 40 per cent were rationalised to five advalorem rates namely, five per cent, 15 per cent, 25 per cent, 35 per cent and 40 per cent.</li> <li>• A uniform surcharge at the rate of 10 per cent of basic duty was imposed on all commodities excluding crude oil and petroleum products, items attracting 40 per cent rate of basic duty and certain GATT bound items.</li> </ul> <p><b>Other measures</b></p> <ul style="list-style-type: none"> <li>• To encourage trade with SAARC countries, wide ranging concessions on preferential basis in customs duties on imports from these countries have been effected by the Ministry of Finance.</li> <li>• In order to reduce financing cost of imports and to provide credit at reasonable terms, the monetary and credit policy announced by the RBI in October, 1999, has withdrawn the interest rate surcharge of 30 per cent on import finance. Also the maximum interest rate of 20 per cent on overdue export bills has been withdrawn.</li> </ul> <ul style="list-style-type: none"> <li>• Peak rate of basic customs duty was reduced from 40 per cent to 35 per cent and the total number of slabs in customs</li> </ul>
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Union 2000-01	Budget	<p>duty rates was rationalized from five to four (i.e., 35, 25, 15 and 5 per cent).</p> <ul style="list-style-type: none"> <li>• Duty on various items (mostly consumer goods and agriculture products) on which quantitative restrictions have been lifted have been placed at peak rate (35 per cent plus surcharge) to accord adequate protection to these items. A number of agricultural and horticultural products placed on the free list of import in the earlier years have also been brought to the peak rate to ensure adequate protection to farmers.</li> <li>• For sensitive agricultural products such as wheat, rice, sugar and edible oils, suitable enabling provisions to fix statutory tariff rates at appropriately high levels have been made, providing the necessary flexibility for adjusting the applied rates to facilitate suitable supply management of these commodities.</li> <li>• Continuation of tax holiday for another two years for Export Oriented Units in backward areas.</li> </ul>
EXIM 2000	POLICY	<ul style="list-style-type: none"> <li>• The Government of India, announced modifications in the EXIM Policy 1997-2002 on March 31, 2000.</li> <li>• The modification in the EXIM Policy 1997-2002 focused on four major areas. <ol style="list-style-type: none"> <li>1. Efforts were made to remove the restrictive export-import related regulations: An important step in this regard was the proposal to set up Special Economic Zones (SEZ) with fewer rules and regulations governing imports and exports subjected to the condition that what they produce would be exported.</li> <li>2. QRs on 714 items were removed 1 April 2000. A significant number of items (208) for which QRs have been removed belong to agriculture belonging to commodity groups like fish and fish products, cotton etc. The number of items under Special Import License (SIL) was reduced from over 600 to 16. QRs and SIL were to be phased out by 31 March 2001.</li> </ol> </li> </ul>

<p>Other measures</p> <p>2001-02 EXIM POLICY</p>	<ol style="list-style-type: none"> <li>3. Initiated measures to simplify and decentralise the procedures associated with administration of India's foreign trade. This included steps like. <ul style="list-style-type: none"> <li>• Removal of threshold limit for Export Promotion Capital Goods Scheme (EPCG) and extension of such facilities to all sectors.</li> <li>• Extension of uniform norms for deemed exports to all sectors.</li> <li>• Only positive value addition norms for Export Oriented Units (EOUs) in Export Processing Zones (EPZs) with an investment of Rs. 5 crore and above in fixed capital,</li> </ul> </li> <li>4. Policy announcements were made to provide special incentives to certain categories of Indian exports. Further, the policy also envisaged motivating and involving state governments in export promotion efforts. Scheme for granting assistance to states based on their export performance for development of export related infrastructure. For providing impetus to exports Rs.250 crore was made available to the states. <ul style="list-style-type: none"> <li>• A high powered standing committee on reduction of transaction costs of Indian exports was set up.</li> <li>• Remaining Quantitative Restrictions removed (715 items) - mostly consumer items, agricultural products.</li> <li>• War-room established to play a watchdog role in monitoring about 300 sensitive import items.</li> <li>• Import of farm products such as wheat, rice, maize, other coarse cereals, copra and coconut through state trade agencies only.</li> <li>• Export promotion schemes such as Export Promotion Capital Good (EPCG) and Duty Exemption Scheme (DES) to be extended to agricultural exports.</li> <li>• Farm-to-port approach in the agriculture economic zones and a new agricultural exports policy on the anvil.</li> <li>• Market Access Initiative scheme outlined to boost exports</li> </ul> </li> </ol>
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IMPORT POLICY OF IMPORTANT AGRICULTURAL COMMODITIES		
(As on 29.06.2001)		
Commodity	Duty on import	Import Policy
Rice	upto 80 per cent	Canalised through FCI Rice with 505 or more broken is allowed freely
Wheat	50 per cent	Import is canalised through FCI Import by Roller Flour Mills (RFMS) was also allowed freely till recently From 1st December 1999, a duty of 50 per cent was imposed STC/MMTC/PEC are permitted to import wheat on behalf of RFMS
Maize, Sorghum, Barley, Jowar	50 per cent	Import is canalised through FCI and OEC Ltd. Import of maize for manufacture of poultry and animal feed is permitted freely on actual user condition subject to registration of import contract/letter of credit with NAFED Import of maize for supply to poultry and animal feed manufacturers and for starch industry upto 50,000 MT each by NAFED has been permitted

Oil seeds (except Copra)	35 per cent	Import is allowed freely
Rapeseed oil; Sunflower oil, soya oil, cotton seed oil	35 per cent	Import is allowed freely
Crude oil for refining	75 per cent	Import is allowed freely
Crude palm oil (edible grade)	75 per cent	Import is allowed freely
Refined vegetable oils of edible grade	85 per cent	Import is allowed freely
Soyabean oil	38.5 per cent	Import is allowed freely
Pulses	5 per cent	Import is allowed freely
<b>Vegetables</b> (except onion)	15 per cent	Import is allowed freely
Onion	0 per cent	Import is allowed freely
<b>FRUITS</b>		
Grapes	35 per cent	Import is allowed freely
Fresh grapes	25 per cent	Import is allowed freely
Apples	50 per cent	Import is allowed freely
<b>COTTON</b>		
Cotton not carded or combed	5 per cent	Import is allowed freely except from Pakistan
Cotton waste including yarn waste and garnetted stock	25 per cent	Import is allowed freely except from Pakistan
Cotton, carded or combed	35 per cent	All import contracts (cotton carded, not carded or combed)
Cotton yarn	20 per cent	Shall compulsorily be registered with Textile Commissioners

## APPENDIX - III

## AGREEMENT ON AGRICULTURE - SUMMARY OF PROVISIONS

	Particulars	Provisions
	Implementation period	1995-2004
I.	<b>MARKET ACCESS</b>	<ul style="list-style-type: none"> <li>♦ This deals with policies having an impact on market access</li> </ul>
A.	<b>Tariffs</b>	
	Base period	1986-88
a.	Ordinary customs duties	<ul style="list-style-type: none"> <li>♦ Reduction commitments to be implemented on the duty level as in 1986-88</li> </ul>
b.	Other border measures (including Non Tariff Barriers)	<ul style="list-style-type: none"> <li>♦ Tariffication of all non-tariff barriers such as QRS, quota import restrictions through permits, import licensing etc. to provide the same level of protection.</li> <li>♦ In the case of unbound tariffs have the option to offer ceiling bindings not necessarily equal to the tariff equivalents of the base period NTB or the level of unbound tariff</li> </ul>
c.	Tariff reductions	<ul style="list-style-type: none"> <li>♦ The resulting duties from (a) and (b) are to be reduced on an average by 24% with a minimum of 10% for each tariff line</li> </ul>
B.	<b>Minimum access (for importers)</b>	
	Base period	<ul style="list-style-type: none"> <li>♦ 1986-88</li> </ul>
	Minimum access for each commodity	<ul style="list-style-type: none"> <li>♦ one per cent of base period consumption in 1995 increasing to two per cent in 1999 and four per cent in 2004</li> </ul>

II.	<b>DOMESTIC SUPPORT REDUCTIONS</b>	
	<p>Base period  Reduction Commitment of Aggregate  Measure of Support  Exemptions</p>	<ul style="list-style-type: none"> <li>♦ Aimed at identification of acceptable measures of support to farmers and to discipline trade distorting support to farmers</li> <li>♦ 1986–88</li> <li>♦ 13 per cent</li> <li>♦ Green–box measures (measures which have no or minimal trade–distorting effects on production such as resources retirement schemes, domestic food aid, safety net programmes, advisory services, government assistance on research, pest and disease control and the like</li> <li>♦ Blue box measures are direct payments under production limiting programme</li> <li>♦ Special and Differential Treatment for <ul style="list-style-type: none"> <li>i. Investing subsidies which are generally available to agriculture</li> <li>ii. Agricultural input services generally available to low income and resource poor producers.</li> </ul> </li> <li>♦ If product specific support does not exceed 10 per cent of a product (or product group) this support need not be included in the AMS nor be reduced (<i>de minimis</i> level)</li> <li>♦ The same as above for non–product specific support which does not exceed 10 per cent of the value of agricultural production.</li> </ul>

III.	EXPORT SUBSIDY REDUCTIONS	
	<p>Base period</p> <p>Reduction Commitments Expenditure for each commodity (subsidy value)</p> <p>Quantity for each commodity (subsidised quantity)</p> <p>The Agreement on Application of Sanitary and Phyto-Sanitary measures (SPS)</p> <p>Agreement on Technical Barriers to Trade</p>	<ul style="list-style-type: none"> <li>♦ 1986-90</li> <li>♦ 24 per cent</li> <li>♦ 14 per cent</li> <li>♦ provides for the use of international standards developed by or under the FAO / WHO codex Alimentarius commission (food safety), the office international des Epizooties (animal health), and International Plant Protection Convention (plant health and quarantine)</li> <li>♦ covers other aspects of governmental and non-governmental technical regulations and requirements</li> </ul>

## APPENDIX – IV

DEFINITION OF PRICE SERIES USED IN THE ANALYSIS OF PRICE  
VARIABILITY AND TRANSMISSION

Commodity	Domestic Price (wholesale prices)	World Price
Pepper	Mean of Malabar Garbled – Cochin, Nadan and Wyanadan	MG 1 – New York
Sugar	Mean of Delhi, Madras and Hapur	Caribbean - New York
Cotton	Mean of Bombay and Tirupur	Cotton – Outlook 'A' index middling cif/Europe
Rice	Mean of Kakinada, Raipur, Varanasi	Thai 5% brocken
Coffee	Coimbatore and Mangalore Plantation 'A'	Arabicas and other milds - New York
Tobacco	Andhra Pradesh and Uttar Pradesh	US – all markets
Cashew	Kollam	New York W 320