CHAPTER II

REVIEW OF LITERATURE

This chapter is devoted for the review of a few relevant studies which are having direct or indirect bearing on the objectives of the present investigation. The reviews covers many of the pertinent studies which were carried out both in India and abroad over a period of time. They are arranged in a chronological order under the following headings:

2.1 Impact of trade liberalization on agriculture;
2.2 Performance of agricultural trade;
2.3 Growth and instability of agricultural trade; and
2.4 Comparative advantage, competitiveness and export prospects for different agricultural commodities.

2.1 Impact of trade liberalization on agriculture

Some of the studies related to effects of trade liberalization on agriculture were reviewed and are included in this section

Deshpande (2003) opined that liberalization of trade has both positive and negative impact. On the positive side, it is argued that liberalization has unwrapped the prospects for Indian agriculture to make its presence felt in the international market. Therefore, it was rightfully expected that India would emerge as a significant player of those commodities which have comparative advantage. On the negative side, it is feared that sudden import surge may occur in the market and international prices may normally guide domestic price movements which lead to price instability and increased price fluctuations.

Misra and Rao (2003) attempted to examine effects of changes in trade policy introduced during 1990’s on domestic intersectoral terms of trade being the mechanism through which the impact of macro policies such as monetary, exchange rate and trade are transmitted to the agricultural sector and on crop output and private investment in agriculture. The data from 1978-79 and 1999-00 were analysed by ARIMA method. It revealed that economic reforms influenced agricultural terms of trade positively and has raised private investment in agriculture. It has helped in increasing aggregate crop output and export over the period but it
has an adverse impact on the rural poor because of prevailing higher prices in a period of favourable terms of trade.

Reddy and Reddy (2003) studied domestic price policies in the context of trade liberalization. It argued that level playing field is necessary to get the benefits from trade liberalization for those countries which are having comparative advantage. It is observed that trade liberalization is not sufficient to stimulate agricultural exports in the absence of level playing field and it is mainly attributed to the combination of other related policies such as trade, input subsidies, output prices etc which differs from country to country. It argued that price policy in its present form has become ineffective in protecting the interest of the farmers. It suggested that enhancing productivity alone can ensure food security in the long run as well as making our agriculture competitive in the international market due to cost reduction.

Ghosh (2005) examined trade liberalization in agriculture with special reference to India and showed that trade liberalization resulted in lower prices accompanying relatively lower output and let to increased levels of export and import of agricultural commodities and there were very sharp fluctuations in the unit value of exports because of very volatile international prices.

2.2. Performance of agricultural trade

Growth and instability are the major indicators of the export performance of a country. These indices are often used to explain the temporal changes in the export earnings/quantities of various commodities from a country. Some of the studies in this direction were reviewed and are included in this section.

Coppack (1962) developed a log-variance index of instability for the total exports of eighty three countries for the period from 1946 to 1958. These indices were used to explain the causes of inter country differences by using simple and multiple correlation. Further, the effects of different explanatory variables that fall into one of the categories such as size, growth and importance of foreign trade, the direction of exports, the composition of exports, the size of the national economy, the economic level of the country prices and monetary factors were analysed. The study found that regional concentration had a negative correlation
with export instability and commodity concentration had a low positive correlation with export instability.

Michaley (1962) explored the relationship between commodity concentration and fluctuation of export prices. He covered thirty-six countries and investigated the level of instability between 1948 and 1958. He found a significant and positive relationship between export price instability and commodity concentration. After examining the simple and particle correlation between export instability, commodity concentration and primary product ratio he concluded that a country is an exporter of primary goods does not tend, per se, to increase the amplitude of fluctuations of the country’s export prices. It is only because exporters of primary goods were usually more vulnerable to violent price fluctuations.

Mac Bean (1996) used coppack’s and michaely’s data and shown that there is not much difference between the level of instability for developed countries and less developed countries. He concluded that only commodity concentration is having a slight influence on export instability.

Della valle(1979) opined that modified instability Index given b Cuddy and Della in their paper “measuring the instability of time series data” was valid but which only applicable to linear time series model. The calculation of instability index was modified for any linear or linear time series model. He added that this modified index corrects the coefficient of variation for the ratio of the unexplained variance between the linear and nonlinear trends in any set of time series data.

Murray (1978) examine the instability of export prices and volumes of various countries for the period 1951 to 1971 and the relative importance of supply and demand fluctuations there in determining earnings instability. The relative levels of instability for developed and underdeveloped countries were compared and the decline in instability in the post war period was also examined. An index namely, the Mac Bea Index (MBI) – which measures the deviations from a 5-year moving average of observed values and another index termer the Log Trend Index—which measures deviations from a constant growth rate and trend line were used in the study. The comparison of instability for developed and underdeveloped countries was based on the unweighted mean values of the indices for the two groups of countries. The
decline in instability over the period was captured by comparing mean instability levels in successive periods. The results obtained suggested that export instability in under developed countries was mainly due to volume rather than price fluctuations. Further, it appeared that the earnings variation was due to variations in supply rather than demand.

Bandyopadhyya (1982) studied economic analysis of some critical problem of tea export of India and found that two crucial problems hindering India’s tea export i.e. (a) proximate effect of rapid growth of population of India. (b) Progressive impact of keep competition in the world market upon India’s share in world export. He concluded that elements of instability will enhance to prevail in India’s export front unless the rapid growth of population is effectively checked and substantial increase in both production and productivity of high quality tea is achieved to share promise on export.

Gill and Gluman (1982) examined performance and some policy issues of India’s agricultural export. The results revealed that the share of food products and raw materials declined from 50 per cent during the first five year plan to 40.8 per cent during fifth plan period. But the share of food products increased from 28.2 per cent during first plan to 32 per cent during the seventh plan but decreased to 27.7 per cent during fifth plan. The decline in the share of raw materials has been replaced by an increase in the share of manufactured item from 50 per cent during the first plan to 58.8 per cent during fifth plan.

Sridharan (1982) studied cashew in India’s export trade and observed that up to 1965 India dominated 90-95 per cent of the world export trade and after that share has been declined continuously and it was 47.95 per cent during 1980. The main reason for declining share of the country in world export was due to the dwindling import from East African countries.

Dass (1991) studied economic aspects of India’s international trade in coffee using time series data from 1956-57 to 1985-86 on the basis of quantum, terms of trade and purchasing capacity of coffee export and compared with general exports and concluded that coffee exports from the country has done well in the past. But coffee exports was appeared unsatisfactory from the point of view of instability. He opined that the quota system tried to stabilize the quantum and unit value of coffee exports of the quota countries but at the same time it destabilized the trade with the non-quota countries.
Kaput (1991) examined whether and to what extent the declining shares of India in the world and the developing counties exports reflect the loss of its international competitiveness. Constant market share model was applied which decomposes export growth into two broad component-the structural effect and the competitive effect. The analyses revealed that India’s export were competitive in some market, for export in Italy, Belgium, Netherland and Germany.

Pal (1982), examined the magnitude of growth and instability of agricultural exports from India, various factors causing the instability in exports and the determinants of the export of agricultural products during a time span of 190 to 1989. From the growth analysis, fish and fishery products were found to have the highest compound annual growth rate (12.26) followed by animal and vegetable oils (8.94). A log linear export turn over function was devised for identifying the major determining factors of export earnings of important crops. Among the various determinants examined, lagged domestic production and relative export prices exerted a significant influence in determining the export earning s of coffee and sugar, while the volume of world trade had shown to have a significant influence on tea export earnings. It was also pointed out that the volatile world prices and policy changes have induced a very high degree of instability in the export earnings from important agricultural commodities. The study called for greater diversification and value addition of exported commodities for stabilizing the export earnings in the future.

Jeromy and Ramnathan (1993) estimated growth and instability of world pepper market during the period 1975 to 1990 and export performance of Indian pepper during the period 1950-51 to 1990-91. The exponential model has been fitted to estimate parameters using ordinary least squares (OLS) techniques. The results revealed that world pepper exports from the producing countries namely; India, Brazil, Indonesia, Malaysia, Madagascar and Sri Lanka have increased more than five times from 27.8 thousand tonnes in 1950 to 153 thousand tonnes in 1990. The growth and instability in pepper export of producing countries between 1975 to 1990 revealed that Sri Lanka recorded the highest compound growth rate of 24.59 per cent with a high degree of instability. Among the other countries, stable, positive and statistically significant growth rate has been recorded only in the case of India.
Reddy et al (1993) analysed growth and instability of production and exports of Indian tea and coffee. An attempt was made to decompose the growth in production and export revenue of tea and coffee during the period 1975-76 to 1983-84 over 1962-63 to 1974-75 periods. The results showed that there was significant increase in output and export revenue of tea and coffee. It also revealed that instability had increased during the period for both the commodities.

Veena et al (1994) studied changing direction of Indian coffee export for the period 1965 to 1990. The analysis was done by first order markov model. The results have shown that India would not retain its previous market share to the USA, Netherland, Yugoslavia and Italy. But the actual quantity exported to all these countries has increased which may be due to increased quantity of Indian coffee exports.

Jain et al (1995) studied the pattern of growth of agricultural trade of India and the world. They examined the differential in agricultural prices, India’s share in world’s export and its price efficiency and identified highly traded agricultural commodities in the world. It was found that Indian agricultural products, in general, which shared significant share of total world exports fetched lower price as compared to world average export price. They opined that quality improvement, cost efficiency in production, standard packaging and producing more value added product were needed to get higher share in trade.

Thomas and Sunderasan (1996) analysed export performance, trend in prices and scope for integration of cardamom market in India using time series data from 1970-71 to 1992-93. Coppock’s instability index and coefficient of variation were devised to understand the instability in exports in various years. To measure the relationship between the export of cardamom and its determinants, regression model has been fitted and the coefficients were estimated. The study revealed that high export instability and production were found to be a significant factor in determining export along with export and domestic price. Price analysis using market integration model given Ravalli on revealed that there was integration of Tamil Nadu market and Kerala market and the influence of price in the Kerala market on the prices of Tamil Nadu and Karnataka market.
Shende et al (1998) examined the trends in production, export and import of rice using time series data for the period 1970-71 to 1993-94. Compound growth rate was calculated by fitting exponential function to production, quantity and values of export as well as import in respect of Indian and the world. They concluded that rice export is expected to rise very significantly by 2000 AD as well as by 2010 AD. They suggested that the production of scented fine quality rice varieties like basmati should be encouraged in the countries where it has more demand in the international markets.

Jyothi et al (2003) analysed growth, instability and competitiveness and constraints for onion and potato exports during the period 1970-71 to 1999-2000 by using compound growth rate, Coppack’s instability index, net protection coefficient (NPC), and Kendell’s coefficients of concordance respectively. They found that the quantity of onion and potato exports registered a positive and significant growth rate of 6.27 per cent and 9.38 per cent per annum. The results further indicated that in both onion and potato, the unit volume of exports were found to be stable when compared to the quantity and export earnings NPC value of onion and potato were 0.8 and 0.63 which indicated moderate and high competitiveness respectively.

Sekhar (2003) attempted to determine the role of major producers/exporters in world rice markets and their likely implications for India by two sector models viz., 1962-1995 for international sector and 1970-1995 for domestic sector with the help of simultaneous equations method. The results indicated that exports have shown high growth rate due to responsiveness of export supply to the incentive effects offered by higher world prices. But in domestic sector it showed that due to inelastic supply to the likely increase in prices subsequent to liberalization, decline in per capita availability of rice in domestic market and high domestic prices.

Singh and Singh (2003) attempted to identify market avenues for agriculture under globalization and liberalization for major agricultural commodities. The total exports of agricultural and allied products have grown at the rate of 8.07 per cent during the period 1990-91 to 2000-01. It revealed that basmati rice, fruits and vegetables and processed foods got their face in the export basket along with traditional commodities like coffee, tea and spices etc. It suggested that increasing the productivity of agricultural commodities and
adoption of modern technology to respond to the changing needs of the international market would facilitate in boosting Indian agricultural exports.

Sudha (2003) analysed export performance and unit value realization of Indian horticultural products between the two periods 1993-94 and 2000-01 and indicated scope for product diversification both in fresh as well as processed form. The study identified that horticultural and plantation crops accounted for 32.67 per cent of agricultural exports during 1993-94 which declined marginally to 31.29 per cent by 2000-01 and the composition of exports appeared to have changed substantially during the period of seven years, with the fresh fruits and vegetables and their processed products surpassed the exported quantities of traditional items such as tea and spices.

Sujatha et al (2003) studied the present status, trend, potentiality and constraints in export of mangoes from India. This study was based on the secondary data from 1989-90 to 2001-02. Compound growth rate and Coppel’s instability index were used to analyze growth rate and instability respectively. This CGR analysis indicated that the rate of growth in quantity and value of export (7.92 % and 12.26% respectively) was more during post WTO period. They also found that instability in post WTO period was higher than pre WTO period both in case of quantity and value of fresh mangoes and mango pulp.

Devkota (2004) computed Instability by Instability Index and identified the causes of Export Instability in Nepal. He concluded that higher the commodity concentration and geographic concentration of exportable commodities and higher the instability in non-Agricultural sector GDP, higher will be the export instability.

Kumar (2004) studied the export performance of Indian fisheries using a time series data pertaining to the period 1981 to 2000. He main fish products selected for the study were fresh fish, dried and smoked fish, shrimps and prawns, lobsters, molluscks, etc. The growth trends in the export of fisheries products for the period under study were understood by computing the compound growth rates. The study used the export performance ratio(EPR), as suggested by Balassa to indicate the comparative advantage of the fisheries sector. Also, an export demand model was fitted by taking the major determining factors in the trade as the explanatory variables. The implications of various trade policies, agreements like Agreement
on Agriculture (AoA), Agreement on Technical Barrier to trade, Sanitary and Phyto-sanitary Measures (SPS), etc on fisheries trade were also studied in detail. The study in general concluded that the exports of fish and dish products have performed well during the period under study and various liberalization policies have augmented their growth.

Samel and Behera (2004) examined the impact of WTO on rice exports from India using time series data for the period 1990-91 to 2002-03. They showed that India has increased the exports of both basmati and non-basmati rice in volume and value terms during the study period in spite of great fluctuations in exports of non-basmati rice from year to year and concluded that India was benefitted from market access agreement and expanded its rice exports to 158 countries, which was 88 before the agreement.

Shyam et al (2004) carried out a detailed analysis on the export performance of Indian fisheries in the context of globalization. The study used secondary data corresponding to the period 1979 to 2002 ads it examined the growth, instability, structure and direction of exports of marine products and attempted to ascertain the problems and impediments faced by the exporters of marine products in the country. The index of Revealed Comparative Advantage developed by Balassa was used to ascertain the comparative advantage enjoyed by the Indian traders in the international market. Various components of change in the average export value and in the variance of export value were identified by employing a decomposition model devised by Hazell (1982). Based on the findings of the study, it was concluded that, there was a significant growth in the export quantity, value and unit value for major marine products during the study period. The decomposition analysis indicated that, the revenue had been generated primarily from the changes in the export quantities and interaction between the export quantity and export value with no sizeable contribution from the unit value. The analysis also suggested the better performance of Indian fisheries with respect to the world fisheries exports. Among the various products studied, shrimp was found to be highly competitive in the international market both in the pre and post reforms period.

Awokuse and Gempesew (2005) examined the impact of political instability in importing nations on US agricultural trade. The panel data set representing Eighty seven importing countries covering the 1990-2000 period was used to investigate how the degree of democratic practices and three types of political instability (violent, social, elite) affect US
agricultural exports. The empirical results suggested that political instability have a statistically significant effect on US agricultural export demand.

Sarada et al. (2006) investigated commodity concentration, geographic concentration, fisheries GDP and non-fisheries GDP that affect the instability on the seafood. They used co-integration and error correction modelling approach which identified that instability in export was found to be co-integrated with instability in commodity concentration, geographic concentration, fisheries GDP and non-fisheries GDP. The long run estimates suggested that the variables were positive except instability in commodity concentration. The estimated coefficient period’s disequilibrium by 54.6%. They opined that in addition to price stabilization policies, with emphasis on value added products, forward trading could be the way out to circumvent the instabilities.

2.3. Growth and instability of agricultural trade

Trend and instability in India’s trade with world through accelerating export growth and efficient important situation. Chand and Tiwari (1991) studied India’s trade in agricultural products using FAO data for 1970-71 to 1988-99. They found that annual exports of agricultural sector increase from $ 792 million during 1970-73 to $ 2325 million during 1985-88 there was a large increase in the exports of agricultural products in the mid and late seventies. However, the export of this group stagnated after 1980. The imports of agricultural sector showed almost similar increase as exports but the composition of agricultural imports witnessed tremendous change. The rate of growth in exports of agricultural sector was slightly higher than the rate of growth of imports. Among the various items of imports, pulses, sugar and honey exhibited most striking growth. The imports of cereals and preparations followed a decreasing trend. Also the imports of vegetable oils, coffee, tea, cocoa, and pulses group were estimated to be growing at a rate of about 25 per cent per annum during the period. On the export front, fish and fishery products, coffee, tea, and cocoa showed remarkable performance. Most of the agricultural products exports showed less instability than imports.

An analysis of chains in the share of India’s exports of principal agricultural commodities in the world trade attempted by Bhatia (1994), bring out that except for a few commodities, the
share of India in total world trade is very low despite the fact that India’s share in total world production for many commodities is quite substantial. He share is relatively very small especially for livestock, marine and horticultural products for which quiet substantial surpluses are available, which indicates the need to have proper assessment as well as identification of export markets. The major commodities of exports from India included fish and fish preparations, oilcakes, tea, coffee and rice. These commodities together accounted for 55 percent of total agricultural exports during 1992-93.

Rai et al (1996) in their study on export performance and potential of India’s farm commodities for 1970 to 1992 found that there had been a sizeable change in the exports and imports of agricultural commodities. However, the share of both the exports and imports had declined from 36 per cent and 29 per cent in 1970 to 6 per cent and seven per cent in 1992, respectively. Commodity wise growth rate of grapes (72 per cent) was the highest followed by rice (28 per cent), oranges (25 per cent) and potato (10 per cent). The growth rate of banana and oilseed cakes were positive whereas negative growth rate were observed for groundnut, tea, tobacco, jute, and sugar. Further, to examine the instability of growth of the trade they worked out mean negative deviation, mean positive deviation and coefficient of variation. The instability in the export earning was alarmingly high for milk and milk products, potato, wheat and cotton. The situation was moderate for rice, jute, groundnut, onion, coffee, fish, and fish products, while much stable situation prevailed for tea and coffee.

Vasudav (1998) studied India’s international trade in oil seed and byproducts from 1976-77 to 1995-96. He analysed the trend in India’s exports and imports of oilseed and oil meals to suggest the measures needed for reducing the gap between the supply of and the demand for oilseed within country. He pointed out that a wide gap existed between net availability of oil seeds and the demand, despite and increases in area, production and yield. (The production is net availability of edible oil rose from 47 lakh in 1989-90 to 73 lakh mt in 1977-98. However, the demand also rose from 58 lakh mt in the respective years). This gap is bridged through imports and increase in domestic production. Further, emphasized these imports help the processor industry and also help to exports the by-products. India exported 90,000 mt of HPS groundnut in the year 1995-96, the value of which was about Rs. 207 crores. Similarly,
India exported 70000 mt of sesame seed worth Rs 210 crores and castor oil export was 30200 mt valued Rs 650 crores in the same year.

In an inaugural address of the annual conference of the Indian society of Agricultural Economics on Agricultural State and Sustainability Development, Alagh (1999) pointed out that the Indian economy had been relatively insular and his is particularly true of its agriculture sector. India’s agricultural exports have ranged from 1.28 per cent to 1.82 per cent of gross agricultural output and imports have ranged from 1.81 per cent to 3.12 per cent of gross agricultural output. Growth of agricultural trade has been less than that of agricultural output. India has consistently exported around three quarters of a million tons of rice and around 2 million tons of tea. Interestingly, her exports of vegetables and fruits and meat have been rising. India budgets for imports of around 2 to 4 million tons of grains in bad year, although in the last decade these have not been necessary. However, she has been importing 8 to 12 million tons of vegetable oil and around 50000 tons of rubber and other agricultural raw material like raw jute, cashew kernel, hides and skin, raw silk and wool.

India began to open up for trade in a big way only after 1991. Though she began to give emphasis to promotion of exports and liberalization of imports during 1980. Nidugala (2000) studied the export and economic growth in India for the period of 1991 to 1996. He found that after the initial transition period of 1991-92, the economy responded the aim of moving from import substitution strategy to export promotion strategy. The export growth has picked up during 1993-94 by 20 per cent (in dollar terms), in 1994-95 by 18 per cent and in 1995-96 by 21 per cent. Similarly, growth of imports as also increased considerably. The growth rate of GDP has crossed six per cent during 1993-94 and 7 per cent during 1994-95 and 1995-96. This indicates the need to further strengthen and sustain the current growth and attain even higher levels of growth.

Kaushik and Paras (2000) in their study on trade liberalization and export performance of India examined the growth, variability, source of variability and the impact of export instability on economic growth and environment in the Indian case in the process of on-going policy reforms since 1984-85 to 1997-98. They found that the level of India’s export of agriculture and allied products and of manufactures had increased significantly since the inception of trade policy reforms in 1995. They found that the level of India’s export of
agriculture and allied products and of manufactures had increased significantly since the inception of trade policy reforms in 1995. Although, there were variations in growth from year to year, they argued that trade liberalization had significantly increased exports and there was thus a direct impact on agricultural and manufacture exports. Agricultural exports experienced high growth and high instability, whereas reverses were the case of manufacture exports. Finally, they concluded that the export performance, especially frequent variability in the exports growth, had an adverse impact on the country’s economic performance.

Goyal, et al (2000) in their study on India’s agricultural exports growth and instability found that of the various agricultural and allied products, tea and mate, cashew kernels, spices and coffee were the dominant exportable items during 1970s but their share later on declined. Further, it was found that during the nineties marine products, oilseed cakes, rice, fruits, etc. generated export earnings. The total agricultural exports increased at an annual compound growth rate of about 25 per cent during 1991-98. The compound growth of all the agricultural and allied products, except tea and mate and sugar and honey were higher than in the and seventies and eighties. During the period, coffee, oilseed cake, tobacco, raw cotton, rice, spices and fish and fish products exhibited high volatility in exports. Further, they pointed that to be competitive with other countries, i.e., to raise India’s share in the world exports, sustained high rate of growth of Indian exports was of paramount importance.

2.4. Comparative Advantage and Competitiveness

The terms comparative advantage and competitiveness are often used interchangeably and pertains to the relative performance of individual countries in particular commodities. There are a wide variety of factors that contribute to the changes in comparative advantage like, structural changes, improved world demand, trade specialization, etc (Batra, A and Khan 2005). Structured empirical studies on comparative advantage have started as early in 1965, when Balassa developed an index namely, revealed comparative advantage (RCA) and measured the comparative advantages of various commodities among different countries. Since then, considerable attempts have been made by various authors in this field and
numerous studies with alternate indices have been published. A review of such studies has been cited in this section.

Balassa (1965) was the first to develop a measure of Revealed Comparative Advantage. In his study on trade liberalization and Revealed Comparative Advantage he developed a method to compute market shared to assess the trade competitiveness of a country for a commodity or industry in the world or among a group of countries. Comparing the relative shares of a country in the world exports of individual commodities and indicating changes in relative shares over time cold re-evaluate the export performance of individual commodities in a particular country. In both cases the data has to be made comparable through normalization and it can be done by dividing a country’s share in the exports of a given commodity by its share in the combined exports of commodities of the groups (i.e. total export) in the world. Then the result can be expressed in index number form. Thus for a given export commodity of a particular country, an index number of 110 per cent means that the country’s share in that commodity’s export is 10 per cent higher than its share in the total exports of other goods of that category. Thus RCA index with value greater than unity would imply a comparative advantage or specialization of trade in that commodity by the country.

Vollrath (1987) and Vollrath and Vo (1988) developed a comprehensive index called Revealed Competitive Advantage (RC). According to them, for a country, profitability can be translated into maintaining and increasing market share. Hence, competitiveness for a commodity can be measured by relative share of the commodity in country’s total exports to the share of the commodity in the world exports minus relative share of eth commodity in the countries total imports to the share of the commodity in the world imports. A positive RC measure indicates that the country has a competitive edge in producing and trading the commodity.

Yeats (1990) studied what do alternative measures of Comparative Advantage reveal about the composition of developing countries exports. He conducted several empirical tests for developing countries exports of manufactured products; partly identify factors that often lead to differences between the Balassa Revealed Comparative Advantage index and indices associated with National Bureau of Economic Research (NBER). The results showed that products in which developing countries achieved a Reveal Comparative Advantage were
highly concentrated in a broad group of labour intensive products for other items; their RCAs were generally below unity.

Sachdev (1991) studied Indian agricultural exports and competitiveness and found that India’s Revealed Comparative Advantage index for agriculture as well as labour intensive products was above unity and that of capital intensive products below unity whereas the commodity composition of India’s exports showed highest per cent of capital-intensive exports compared to agricultural and labour intensive products throughout the period under consideration.

Yadav (1995) identified problems and prospects of exports of fruits and vegetables. He opined that lack of infrastructure, storage, packing and transportation facilities was a serious hindrance to export marketing efforts and lack of established linkages between production and exports coupled with low productivity made our exports uncompetitive in the international market. He added that there is need of efficiency, competitiveness and innovation both in production and marketing to increase trade in global market.

Gill and Brar (1996) studied global market and competitiveness of Indian agriculture and examined competitiveness of some selected agricultural crops in the light of empirical evidence of domestic and international prices, the world commodity structure and structure of the global market for agricultural commodities and concluded that the developing countries have substantially higher export earnings instability than the developed countries and opined that there is need for effective state intervention in the international trading of agricultural commodities to protect the small and poor farmers from international instability of prices.

Mamatha and Chengappa (1996) analysed changes in the pattern of pepper exports from India during 1988-1992 and revealed that the competition effect was maximum (74 per cent) and import growth effects was positive (41 per cent) in case of USA. It indicated that Indian pepper exports to USA have been increased during the study period.

Laursen (1998) used the Balassa’s index of ‘Revealed Comparative Advantage’ (RCA) to carry out a number of empirical studies on international specialization in trade and came up with a conclusion that, RCA should be always adjusted in such a way, so that it becomes
symmetric, to be more realistic. The conclusion is based on a theoretic discussion on the properties of the measure, but also on convincing empirical evidence, based on the Jarque-Bera test of normality of the error terms from regressions, using both the RCA and the Revealed Symmetric Comparative Advantage (RSCA). The RSCA was also compared with other measures of international trade specialization like Michaely indices and the chi-square measure. The final conclusion emerging from the analysis was that the RSCA is-on balance-the best measure of comparative advantage and can be used as an alternative in studies on international specialization.

Ravi et al (1998) examined the export competitiveness of selected agricultural commodities with particular reference to Karnataka using nominal protection coefficient technique. The export competitiveness of six crops namely jowar, maize, groundnut, sunflower, cotton and coffee were examined using NPC. Among the six commodities studied, Karnataka lacked comparative advantage in all except cotton. The export potential of jowar, maize, groundnut, and sunflower were significantly low. Even though Karnataka is the leading coffee export state, in recent times the domestic market seemed more favourable than the export market. Karnataka had an absolute advantage in the case of cotton export. He opined that India need to capitalize this by ensuring the position as a dependable long term supply source of quality cotton through progressive export advantage policies.

Nasurudeen and Sundaresan (1999) studied the impact of economic liberalization on agricultural exports and revealed that agricultural exports have increased from Rs 284 crores in 1960-61 to Rs 25,040 crores in 1996-97. It concluded that even if net gain of liberalization to the society as a whole was regarded as positive, drastic market reforms should receive precedence over other sets of reforms so that both efficiency and equity improve after reforms.

Yanagida and Tian (2000) studied the competitiveness and comparative trade advantage for selected Pacific Basin and Asian countries for the period 1976 to 1991 for the principal crops of the regions like wheat, rice, coffee, tea, spices, vegetable oils and natural rubber. They found that most of the ESCAP (Economic and Social Commission for Asia and Pacific) countries trade most of their major agricultural products with each other. They studied both Revealed Comparative Advantage and Revealed Competitiveness Indices to test the
competitiveness of these products and found that except wheat, the commodities for which countries have trade advantages are located in East Asia, South-East Asia, South Asia and the Pacific Islands in that order.

Amatya (2001) studied the export performance and competitiveness of major agricultural commodities from India to SAARC and compared with that of Non-SAARC countries. The stability of exports was examined using the instability index developed by Massel and Sen. The competitiveness of India’s exports of major agricultural commodities in the SAARC region and the rest of the world was assessed using Balassa’s Revealed Comparative Advantage Index (RCA). The result showed that India’s exports were non-competitive within the SAARC region, but it was competitive among member countries of the region.

Ferto and Hubbard (2001) examined competitiveness of Hungarian agriculture in relation to EU based on Indices of comparative advantage for the period 1992 to 1998. It indicated that the pattern of comparative advantage has remained fairly stable during the period of transition. They complemented the findings of those studies which have used price and cost based approaches in identifying competitiveness in cereals and crops.

Kumar et al. (2001) analysed competitiveness of major agricultural commodities by nominal protection coefficient. Agricultural exports witnessed an increase of about 3000 million dollars between 1990-91 and 2000-1 and started brightening up after that. The policy of trade liberalization showed a clear positive impact on export of non-basmati rice, marine products and oil meals and negative impact on pulses and edible oils.

Kumar et al. (2001) studied the trends, performance and competitiveness of livestock products in India based on the time series data pertaining to the period 1974 to 1998. The diversity of export and import of livestock was measured using the Simpson index and the export competitiveness was assessed using nominal protection coefficient. The study showed that export of meat and meat preparations showed most stable and promising performance. It was found that, despite impressive growth of exports of dairy and eggs, their export may be limited due to the lack of international competitiveness.

Vollrath and Johnston (2001) quantified the changing structure of agricultural trade in North America pre- and post-CUSTA/NAFTA by using bilateral trade intensity, commodity
complementarity and trade bias index and showed that intensification of US/Canadian (US/Mexico) complementarities from 1989 to 1998 (1994 to 1998). They also showed that the downward trends depicting US/Canada complementarities prior to 1989 revised direction thereafter. The results suggested that shifting trade pattern post CUSTA/NAFTA benefit the US., its neighbouring partners and global agriculture.

Siggel (2003) presented concepts and measurements of competitiveness and comparative advantage such as macro Vs micro, static Vs dynamic, positive Vs normative, ex-ante Vs ex-post as well as according to different uses made of the proposed measurements and also proposed an integrated approach, in which it is shown how Competitiveness and Comparative Advantage were related and how they differed.

Singh and Sain (2003) studied the prospects of agricultural exports of India on the basis of composite index approach to capture the effects of factors determining exports. Data for the period 1980 to 2001 were analysed from 46 agricultural products. Composite index for prospects (CIP) has been constructed from three performance index viz., prospects index on the basis of relative importance (PI_{RI}), prospects index on the basis of growth rate (PI_{GR}) and prospects index on the basis of international competitiveness (PI_{IC}). It clearly indicated that coffee green, coffee extracts groundnuts, milled paddy rice/rice, pepper and potatoes have bright prospects for exports from India. It suggested that to formulate a long term strategy rather than looking for short term opportunities on the basis of specific products and areas in order to harvest the benefits of liberalization of world economy.

Chattopadhyay (2004) analysed prospects for exports of horticultural product in West Bengal. He found that horticulture sector in West Bengal was not yet developed. He also assessed that although production has increased in the state it is lagging in both marketing and export front due to lack of proper infrastructure.

Utkulu and Seymen (2004) analysed the competitiveness and the pattern of trade flows/trade specialization from Turkey to the EU on sectorial levels between 1990 and 2003. The study was mainly based on different measures of Revealed Comparative Advantage (RCA) measures (in addition to simple Balassa Index). Accordingly, alternative RCA indices were calculated and the stability of different measures of RCA was also tested. The work also
explained that the on-going customs union process between Turkey and the EU had significant effects on trade patterns, comparative advantages and competitiveness.

Bhatra and Khan (2005) analysed Reveal Comparative Advantage at both two and six digit level of Harmonized System of classification for both India and China. It examined the structure of comparative advantage enjoyed by India and China in the global market, individually and in a comparative framework. The paper identified the pattern of revealed comparative advantage using the Balassa(1965) index for export data. The index has been calculated at the sector and commodity level of the Harmonized System of classification. Various sectors and commodities have been classified as those with high comparative advantage and low comparative advantage, both for India and China separately first, and then with mutual comparison. The paper also analysed comparative advantage according to factor intensity. The pattern of comparative advantage was also examined for inter-temporal variation over the period 2000-03. The analysis showed that broad similarities in the structure of comparative advantage for India and China and both enjoyed comparative advantage for labour and resource intensive sectors in the global market.

Gani and Prasad (2005) computed an Index of Revealed Comparative Advantage (IRCA) for Fiji’s 12 major export products at the three digit level of the standard international trade classification for the period 1988-2001. The results concluded that Fiji was having comparative advantage in the resource based products namely, sugar, canned fish, fresh fish, wood chips, gold, and manufacturers such as textiles, garments and footwear whereas commodities like yagone, copra and coconut oil, there was comparative disadvantage.

Amador et al (2006) introduced a simple cross country index of international specialization (B#) which is suitable to characterize the relative world export structure and identified the major changes observed since the late sixties. The time series analysis of the revealed that that the performance of the Chinese economy in high tech products has reached an export proportion that is more than twice the world unweighted average in the last years. On the contrary, in the low tech sector, significant reduction was recorded for the China from mid 80s onwards, after more than a decade of high specialization.
Zhou et al (2006) analysed dynamics and prospects of Australia-China agricultural trade by constructing and examining several important trade related indices like trade intensity index, revealed comparative advantage and trade complementarity indices. The results suggested that there are few areas where there was an overlap in the two countries’ comparative advantage and thus the two countries didn’t compete with each other in agricultural trade and indeed, the trade was very complementary.

Karim and Ismail (2007) used different indices like instability index, production similarity index, comparative production performance index, export similarity index and Revealed Comparative Advantage index to quantify the potential of intra-regional agricultural trade in the COMESA region (Sudan, Egypt and Kenya). The results showed a promising potential for intra-regional agricultural trade. The instability indices of production in cereals, pulses, and roots and tubers were more stable at regional level than national one. The results of production similarity index indicated differences in production patterns of the three countries. Export similarity indices results showed that countries were dissimilar in their export patterns. The revealed comparative advantage indices, considering each country separately, were generally higher for dominant export products. As dominant products differ among the countries, the pattern of specialization differs considerably among these countries, and therefore, there was a potential for expanding intra-regional trade in the Region. The paper concluded that the government policies of COMESA member countries, especially Sudan, should pay more emphasis to encourage market integration regionally to benefits form potential of trade and comparative advantage exists in the region.

The reviews on pertinent studies cited above have played a constructive role in the present investigation by providing valuable insights regarding the methodology to be followed, availability of data sources and by informing the latest development in the study field. There are ample number of studies which reveals the superiority of various techniques and reviews on many of them are included here. These studies have mainly confined to a few commodities and a few countries. A comprehensive analysis focusing on the total agricultural sector extending over all major commodities and all trading partners has been done in this present study for providing the necessary policy guidelines for improving
agricultural trade and taking advantage of existing and emerging national and global opportunities besides combating challenges.