Theoretical Framework and Review of Literature

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Chapter II

Theoretical Framework and Review of Literature

2.1 Theoretical Development
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Role of trade in economic development is becoming more and more important. So there are also a number of academic works examining various issues of trade. In this chapter, important theoretical and empirical works on trade performance and determinants are reviewed.

2.1 Theoretical Development

Analysis of trade behavior raises two types of issues. The first issue refers to the analysis of the determinants of trade behaviour at the various levels of trade activity, i.e., the issue of why do nations trade? What commodities do they trade, with whom they trade? etc. The second type of question is concerned with what should be the choice of commodity composition of imports and exports, choice of exporting and importing firms, choice of trade strategies or policies. Trade theory has developed in both directions, beginning from the classical analyses of Torrens, Ricardo (1821), J.S.Mill (1902), etc. Several labels have been assigned to the different schools of thoughts in trade theory, such as classical, neo-classical and modern, neo-factor-proportion, neo-technology, orthodox, modern, etc. The general features of the whole trade theory described in the label ‘Pure Theory of International Trade’ encompass all the school of thought.

The question of identifying the determinants of trade has occupied the minds of economic theorists ever since Torrens, Ricardo, Mills, etc. The Ricardian frameworks consider only one factor of production via labour and assume constant returns to scale. Ricardian theory recognizes differences in technologies and demand condition between the countries. The distortions introduced by trade policies are not recognised in it.

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After more than a century of Ricardo's theory, another landmark in trade theory is the Factor Proportion Theory associated with the works of Heckscher (1919), Ohlin (1933) and Samuelson (1948). The main contentions of this theory are that a country exports the product, which uses relatively more of a factor that is relatively more abundant in it and imports the other products. Suppose, two countries A and B, produce two goods products X and Y, country A is relatively more capital abundant i.e., $K_A/L_A > K_B/L_B$. Where $K_A$, $K_B$ denotes the capital endowments of the two countries and $L_A$ and $L_B$ their corresponding labour endowment. Let product X be relatively more capital-intensive i.e., $K_X/L_X > K_Y/L_Y$, where $K_X$ and $L_X$ and $K_Y$, $L_Y$ denote factor use per unit in the production of X and Y. The Heckscher-Ohlin-Samuelson proposition states that capital abundant country A would export the relatively more capital-intensive product X and import the relatively less capital-intensive product Y. The proposition is based on a number of simplifying assumptions like identical production function, absence of scale economies, identical demand condition, absence of tariff/ trade policies etc.

In spite of the tautological nature of the Factor Proportion Theory, much of the work in theory was spread around it. Samuelson's factor-price equalisation theorem (1948), Jones (1958) extension of the H-O theorem to cases of more than two factors and product and Leontief Paradox (1953) are based on the factor proportion theory. However, some extension of the H-O theory has provided some deeper insight into the explanation of trade behavior like human skill, natural resource with capital and labour factor. But the extension has been basically within the framework of the factor-proportions theory. However, there have been some sporadic attempts to depart from the basic premises of the H-O theorem. The thought underlying these attempts could be classified into five main groups: (i) Neo-technology (ii) Social physics school, (iii) Revealed
Comparative Advantage Approach, (iv) Approach of Effective Protection and Domestic Resource Costs and (v) others.

In the Neo-technology school, there are three main approaches to the introduction of technology factor in the analysis of trade flows. In the first one, differences in scale economies as between the product and the two trading countries are recognised as the significant determinants of trade flows: this approach is discussed by Ohlin (1967) Dreze (1960) Hafbaur (1970) and Keesing (1968). In this, the size of the market and degree of scale economies in production determine the pattern of trade. In the second school of thought, identified as the 'stage of production hypotheses', it is suggested that the degree of sophistication determines the nation’s trade flows. But this theory does not provide adequate explanations for the measurement of degree of sophistication. The third major formulation in the neo-classical school may be termed as the technology gap and product cycle theories to which major contributions are made by Tucker (1774), Kravis (1956), Posner (1961), Haufbaur (1970), Douglas (1966), Gruber- Mehta-Vernon (1967), Keesing (1967), Hirsch (1965), Vernon (1966) and Wells (1966). The main contention of this formulation is that countries pass through different phases with regard to technological levels, product diversification, product differentiation etc. Those countries, which have started early in the manufacture of new goods with differentiated characteristics, can have advantage in exporting them while those which lag behind, have to take up only standardised goods for export. The special advantage of the innovations and leaders determine the pattern of trade. The trade policy variable is omitted in this approach also. The bulk of the work in the neo technology theory exists only at a level of literary presentation. Barakakoti (1975)² has discussed the neo technology theory within the neo classical General Equilibrium framework by

presenting a sample exposition of the mechanism in which the process and product innovation dynamically generate international trade.

Fundamental departure from the premises of the factor proportion and neo technology school is found in the formulation of the social physics school. Suggestion to apply the analogy of the concept and the theory of physics to social science were first made by Marshall himself in using the concept of equilibrium, stability, statistics and dynamics. More explicit contribution in this context is made by Carey (1958) who discussed the principle of social sciences with the analogy of those of physics. Reilly (1929) and Stelwart (1947) have made significant contributions in analysing the economic phenomena, such as retail trade, interaction between social groups etc. by using the theories of physics. The first attempt in using the concept of gravitational force, gravitational energy, gravitational potential etc. in the field of interregional movement of goods and services was made by Isard and Bramhal (1957). Their model is known as Gravity model. Population, distance between two regions etc are used in the formulation of the model. An extension of this formulation was made by Pentti Poyhonen, Kyosti Pulliainen and Stig Eric Bergsteon (1961;1963) by including variables like national income, transportation cost, etc. Jan Tinbergen extended the basic Gravity model by introducing the trade policies such as preference for trade agreements, etc. Hans Linnemon (1966) extended Tinbergen's model by introducing the concept like potential supply, potential demand and trade impediments. Social physics school has made significant contribution to trade theory but this school has confined its analysis to the aggregate level (GDP, Population) and all other determinants of trade flows are not introduced explicitly.

The revealed comparative advantage theory pioneered by Balassa is the first attempt to recognise explicitly that trade flows are the final effect of a multiplicity of factors and that the pattern of comparative advantage of country
can not be identified well by examining only one or two determinants of trade flows but by analysing the observed trade flows in totality, based on the concept of revealed preference in value theory. It is suggested that observed trade flows of a country among a group of countries should be used to construct indices of revealed comparative advantage.

Development of trade theory has been enriched by the contribution of new concept such as Effective Rate of Protection (ERP) and Domestic Resource Cost (DRC). These concepts have emerged largely in the context of analysing the effect of trade policies on the domestic production activities and trade flows. Effective rate of protection is aimed at measuring the net effect of the protection policies on the production activity by taking into account their incidence both on the input and output. As against this, the degree of protection gives the incidence of protection policies only on the output side. Nominal rate of protection is measured by the implicit tariff defined as percentage excess of the domestic price of a product over its international price. Effective rate of protection of a production activity is defined as the percentage excess of the activity in domestic prices in terms of value added over that of international prices.

Thus, ERP measures the degree to which the rewards to the primary factors of production are made in the protected situation as compared with that in the free trade situation. Given the mobility of the factors of production as between the different production activities, they would move towards those activities, which have larger ERPs away from those, which have lower ERPs. The sectors, which have relatively larger ERPs, attract relatively more resources. Based on this argument, the ERP theory suggests that the different sectors should be ranked according to their ERPs so that the pattern of resource allocation introduced by the trade policies etc. can be identified. It may be noted that ERPs of the different sectors would differ from each other for the following reasons: (i) the technologies as introduced by the Leontief input coefficient are different. (ii)
Implicit tariff for different inputs is not uniform but they vary among themselves. The latter differences are largely due to the different incidence of the trade policies on the domestic price of different commodities. Thus, ERP theory implicitly recognises the role of technology factors and trade policies as determinants of resource allocation. The pattern of comparative advantage and hence the trade flows are not directly derived from the structure of ERP. It is only the net incidence of the protection system on the production activities that are measured by ERPs. However there are some attempts to estimate the exportable surplus or the import demand by using ERP estimate.

As against the ERP theory, the DRC approach is aimed at identifying the pattern of comparative advantage. DRC approach can be explained in terms of the techniques of benefit-cost analysis. The opportunity cost of domestic resources engaged in earning or saving of foreign exchange is defined as DRC. The domestic resources consist of the primary factors of production such as labour, capital and also of the non-traded inputs or the primary factors used in their production. Opportunity cost valuation is obtained by using the shadow price of the factors. The net earning or saving of foreign exchange is defined by the value of the output of tradeable products in international price minus the international value of imports used directly or indirectly in their production\(^3\).

The theoretical development and the determinants of trade according to various theories have been explained above and it is also clear that trade policy gained more importance in the modern theories.

2.2 Empirical Studies

In this section important studies related to trade performance and determinants with special focus on trade policy and trade reform is attempted. It examines both theoretical and empirical studies at aggregate, industry and firm level exports.

2.2.1 Data Structure

Pradhan and Saluja (1998)\textsuperscript{4} discussed different sources of industrial statistics in India, their limitations and the method of filling the data gaps. The source of data for the organised sector and unorganised sector of the manufacturing industry was also discussed.

Shanta and Raja (1999)\textsuperscript{5} provided various data sources available for corporate statistics. The study gives a detailed account of various databases like Central Statistical Organisation, Annual survey of Industries, Reserve Bank of India etc. The study concluded with certain suggestions to improve the existing database of Indian statistics.

Nagaraj (1999)\textsuperscript{6} examined the quality of data in Index of Industrial Production, Annual Survey of Industries, and National Account Statistics. The reliability of these data source is examined by using correlation coefficient method to time series of annual growth rate. The result showed that India's industrial data system has weakened over the years and many of the widely used indicators and presumed technical relationship have little empirical validity, which supported the perception of the deteriorating data quality.


Roy (2001)\(^7\) focused on the various dimensions of trade database and opined that India's trade database suffers from lack of consistency due to reasons ranging from sample bias to coverage of data. The article suggested that apart from adjustment in coverage and survey designs, harmonisation of data across production, trade and prices would make the database compatible with the emerging economic system. The article covers the areas like comparison of RBI and DGCI&S, advantages and limitations of DGCI&S data, production and trade data synchronisation, index of trade, etc.

Veeramani (2001)\(^8\) attempted to provide guidelines for compiling data from different sources to produce a harmonized database. It raised certain relevant research issues on international trade in relation to domestic industrial structure, attempted a critical assessment of various available data sources for empirical analysis and highlights the advantage of choosing certain specific sources like Director General of Commercial Intelligence and Statistics (DGCI&S) which provides data on India's foreign trade, Annual Survey of Industries, which provide data on industrial characteristics and PROWESS which provides data on firm characteristics.

### 2.2.2 Trade Policy and Trade Theory

Rostan (1985)\(^9\) published quantitative analysis of a sample of 52 developing countries to answer the question whether the outward orientation promoted growth. His result showed that for the period 1967-70 when world market conditions were generally favourable, there was a strong positive correlation between export orientation and growth performance. However, for the period 1973-79, when world market conditions become more favourable the

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correlation was weak. These results seem to imply that when external demand is weak, gains from openness are likely to be offset by its negative effects. On the other hand when the world demand is strong the benefits of openness clearly outweigh its dangers.

Krueger (1990)\(^{10}\) opined that despite the very significant trend towards increased liberalisation of trading regime by developing countries, little has been gained in terms of negotiated liberalisation on the part of developed countries. During the 1960s and 1970s, failure to negotiate reciprocal negotiation was probably not important due to both the small amount of trade carried out by the developing countries and the industrial countries were in any event undertaking major liberalisation of their trade and payment regime.

Meier (1990)\(^{11}\) considered political economy aspect of trade policy in the less developed countries. The study concluded that neither the old political economy nor the new political economy nor syntheses of old and the new is yet fully satisfactory. The models of the new political economy need to be made more relevant for the developing countries and more application to empirical case studies is required as the subject is in rudimentary stage.

Michaely et al. (1991)\(^{12}\) used before and after trade liberalisation approach with reference to 17 countries. They found that there occurred a fall in manufacturing output in the first period and then a recovery in the second period. The authors also found a strong correlation between trade liberalisation and rapid export growth. In most cases manufacturing export growth fell during the first years of liberalisation.


Streeten (1991) explained the structural adjustment issues like adjustment for what, of what, who benefits, who lost and how the adjustment is. He opined that the nature of adjustment policies that comprise measures additional to stabilisation such as the reduction of tariff, the elimination of control on wages and prices, the creation of institutions to facilitate export credit etc. aimed at increasing the capacity to export.

Elhanan and Rasin (1991) expanded and tested the new trade theories that have developed during the last decades incorporating the elements of industrial organization and political economy in order to study the trade structure and formation of trade policy. The study also addressed issues like trading blocks, strategic trade policy, political economy of protection, growth oriented trade policies, etc.

Thomas and Nash (1991) synthesised the conclusions of various earlier studies on trade policy reforms with a study by the World Bank analysing reform in developing countries particularly those supported by adjustment lending programmes. The article reviewed conditions these countries had before trade policy reforms were implemented and examined how such reform actually took place. The survey also considers the most important issues in designing and implementing trade policy reforms and concluded that although past reforms had positive impact, future programme should emphasise three elements; reducing the level of protection, maintaining macro economic stability and accounting for the conflict and complementarities with other policies. Attri (1992) critically

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examined the prominent existing literature on trade liberalisation in order to arrive at a set of attributes essential for successful trade liberalisation\(^\text{16}\).

Rodrik (1992)\(^\text{17}\) opined not to give more importance to trade reforms as a cure for all economic problem, just as developing countries embraced protectionist policies in the 1950s and 1960s as a holistic solution to the problem of development. The hypotheses of his study were that trade policy played a rather asymmetric role in development and concluded that the role of trade policy was not so favourable.

Bleaney (1993)\(^\text{18}\) examined whether developing countries lost the potential gain from liberalisation through adverse movement in terms of trade and concluded that a global policy shift in the developing world towards greater outward orientation may depress the price of agricultural commodities and hence worsen the terms of trade of developing countries. The direct income effect of this was likely to be small, but the indirect effects working through a tightening of balance of payment constraint could be of considerable significance and may entirely offset the expected gain from trade liberalisation.

Bhagwati and Srinivasan (1999)\(^\text{19}\) systematically examined the theoretical and empirical studies relating to the issue of growth, trade openness and related issues. The study concludes that cross- country regression methodology used for the analysis suffers from drawbacks like weak theoretical foundation, poor quality of database and inappropriate econometric methodologies. They concluded that the most compelling evidence on the issue can come only from

\[\text{\textsuperscript{16} V.N Attri (1992) "Trade Liberalisation in Developing Countries: A Literature Survey", Indian Economic Journal, and Vol.39, No.3 pp41-37.}\]

\[\text{\textsuperscript{17} Dani Rodrik (1992) "Limits of Trade Policy Reform in Developing Countries", Journal of Economic Perspectives, Vol.6, No.1, pp. 87-105.}\]

\[\text{\textsuperscript{18} Michael, Bleany (1993) "Liberalisation and Terms of Trade of Developing Countries: A Cause for Concern?" The World Economy, Vol.16, No.4, pp453-466.}\]

careful case studies of policy regime of individual entries such as those of OECD, NBER and World Bank

Harrison and Hanson (1999)\textsuperscript{20} focused on three unresolved issues with regard to the impact of trade reforms. First, many studies linking trade reform to long run growth is surprisingly fragile. Second, puzzle identified was the small impact of trade reform on employment in developing countries. Finally, they analysed evidence on the relationship between trade reform and rising wage inequality, focusing on the 1985 Mexican trade reform. It was found that wage inequality in Mexico rose after the reform, which was puzzling in a Heckscher-Ohlin context if Mexico has a comparative advantage in producing low skill intensive goods.

Panagariya (1999)\textsuperscript{21} discussed the recent trade reforms and future trade policy agenda in the four largest countries in South Asia, Bangladesh, India, Pakistan and Sri Lanka. In terms of Non Tariff Barriers (NTB), Bangladesh, Pakistan and Sri Lanka have achieved the levels comparable to their East Asian counterparts. India still lags behind underlining the need to urgently address the liberalisation of its consumer goods sector. With the exception of Sri Lanka, tariff in South Asia is high and thus there is considerable room for reduction, compression and rationalisation. A key issue that needs to be addressed adequately at least in the case of India is the simultaneous reform of domestic-tax regime especially exercises tax.

Anderson and Neary (2003)\textsuperscript{22} introduced an index of trade policy restriction defined as uniform tariff that maintains the same trade volume as a given tariff or quota structure. Their index, Mercantilist Trade Restrictiveness


\textsuperscript{21} P.Panagariya. (1999) "Trade Liberalisation in South Asia: Recent Liberalisation and Future Agenda", \textit{The World Economy}, Vol.22, No.3 pp 353-78

Index (MTRI) overcomes the problems of the trade weighted average tariff. It avoids substitution bias and correctly accounts for the general equilibrium transformation and takes import volume instead of welfare as benchmark. Empirical application to international cross section and time series components of trade policy confirmed their theoretical result. They found that trade weighted average tariff generally underestimates the true weights of tariff as measured by the trade volume-equivalent index, this in turn always underestimates the welfare equivalent index. The paper also presented an empirical application that showed how the Mercantile Trade Restrictiveness Index could be implemented in a Computable General Equilibrium framework.

Bandaru and Yu (2003)\textsuperscript{23} examined the desirability of free trade in South Asia. They examined whether SAPTA or SAFTA creates gains for its members or not, is it better for South Asian countries to promote non-discriminatory trade liberalisation than promote SAFTA. The study analysed various issues like welfare efficiency, production and export using trade data and global Computable General Equilibrium model (CGE), and concluded that while the impact of preferential trade liberalisation is very small, the impact of unilateral trade liberalisation is significant for South Asia. Under preferential liberalisation small countries will lose or gain marginally, while the biggest country in the region, India, will be the sole winner. This runs contrary to the findings of some of the previous studies that smaller countries in the region would gain from preferential trade liberalisation in comparison with India’s gain.

Bhagwati (2004)\textsuperscript{24} showed that globalisation is in fact the most powerful social goods in the world today. He is of the opinion that globalisation policies have not aggravated the social issues of child labour, women’s rights, democracy and environmental problems.


Bhagwati and Srinivasan (1976)\textsuperscript{25} examined India’s foreign trade regime in its interaction with domestic policies to assess its efficiency and growth. The study concluded that India’s foreign trade regime in connection with the domestic licensing policies in the industrial sector led to economic inefficiencies and impaired the economic performance.

Ahuluwalia (1992)\textsuperscript{26}, Rao (1992)\textsuperscript{27} and Sen (1992)\textsuperscript{28} in their paper analysed the trade policy measures that existed in India till 1991. Ahuluwalia examined the major building blocks of India’s trade policy, critical gap in the overall policy regime as it evolved up to seventies, its reorientation in eighties and a broad assessment of the performance record. The paper also discussed the new economic policy measures with special reference to the significant role that is expected about trade policy in the new design. Rao analysed the economic reforms undertaken in India in 1991. He opined that trade reform and other economic reforms are good for any country. However their usefulness depends on a credible and stable macro economic framework and the institutions and other mechanism to implement and sustain the reform. Sen examined various trade policy measures that existed in India prior to the liberalisation and also major policy changes introduced in 1991.

Bhagawati (1994)\textsuperscript{29}, Joshi and Little (1996)\textsuperscript{30}, Ahuluwalia and Little (1998)\textsuperscript{31}, Parikh (1999)\textsuperscript{32} were appreciative of the outcome of reform and support

\textsuperscript{25} Jagdish Bhagwati and T.N Srinivasan (1976) \textit{Foreign Trade Regime and Economic Development}, Macmillan Company of India, New Delhi.


\textsuperscript{27} V.L. Rao (1992) "Trade Reform: Global development and Indian Response Industrialisation in India" \textsl{In} Bibek Debroy, (ed) \textit{Global and Indian Trade Policy Changes}, pp113-123 Annapurna Publications, New Delhi

\textsuperscript{28} Pronab Sen (1992) "From Digism to convertibility, Analysis of India’s Recent Trade Policy Changes" \textsl{In} Bibek Debroy, (ed) \textit{India in Global and Indian Trade Policy Changes}, pp-163-182 Annapurna Publications, New Delhi.

\textsuperscript{29} Jagdish Bhagawati (1994) \textit{Indian in Transition: Freeing the Economy}, Oxford University Press, New Delhi

the faster implementation of the remaining issues on the reform agenda. But Ghuman (2003)\(^{33}\) and Nagraj (1997)\(^ {34}\) criticised the reform and seek rethinking on the coverage, sequencing and implementation of the reform.

2.2.3 Measures of Trade Openness

The simplest measure of trade orientation is based on actual trade flows, such as import/ GDP, export/ GDP and exports and imports as share of GDP. Balassa (1985)\(^ {35}\), Miler and Upadyay (2000)\(^ {36}\) and Jin (2000)\(^ {37}\) used these measurements. Most of these measures showed a positive association with GDP growth. Barro (1991)\(^ {38}\) and Balla and Lau (1992)\(^ {39}\) used price based measures of trade policy. They used comparison between goods sold in the domestic and international markets as a measure of trade policy.

A subjective assessment of trade policy was undertaken by Sach and Warner (1998)\(^ {40}\), World Development Report Index (1987)\(^ {41}\), Trade liberalisation index (Thomas 1991)\(^ {42}\) Heritage foundation index (Edward, 1998)\(^ {43}\). Sach and

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Warner openness index is an index based on tariffs, quota coverage, black market premium, social organisation and existence of export marketing boards. While it suffers from criticism applicable to black market premium. Trade liberalisation index by Lopez, Thomas and Nash used an index with 1 for the case of highly repressed external sector and 20 when foreign trade is fully liberalised. World Development Report Outward Orientation Index is also subjective and is based on country attributes. This index classified countries into four categories according to the level of tariff and other distortions.

Some of the studies used the observed values of the variables associated with trade restrictions like tariff averages, Quantitative Restriction (QR) averages, collected tariff rates etc. Tariff is measured as import weighted average tariff rates (Whalee, 1993). Edward (1993) used collected tariff ratio i.e. ratio of total revenue on trade taxes on international trade to total trade. He also used QRs, i.e. average coverage of Non Tariff Barrier (NTB) as a measure of openness. Some studies argued that the Black Market Premia for foreign exchange as a good proxy for the overall degree of external sector distortion.

Edward (1992) used Leamer’s openness index, which measures openness as the deviation of actual trade pattern from those predicted by the country’s endowment using Heckscher- Ohlin factor intensity model.

Dollars (1992) constructed two indices (i) index of real exchange rate distortion, measured as actual price level divided by the predicted price level (ii) index of real exchange rate variability measured by the coefficient of variation in

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the index of price level. Balla ad Lau (1992) used relative prices, the ratio of
domestic and international price as a measure of openness.

Most of the studies used trade distortions in terms of export output ratio,
import output ratio and import penetration ratios. Import penetration ratio is the
ratio of import to domestic availability. Domestic availability is output plus
import minus export. Some other studies used the direct measure of trade policy,
(legal tariff ratio, nominal rate of protection and coverage ratio (percentage of
import covered by license) eg. Kim (2000)\textsuperscript{48}. Share of export intotal demand
(export promotion) was used by Bonelli (1992)\textsuperscript{49} and Norouz (2001)\textsuperscript{50} used
import substitution (share of import in total demand).

2.2.4 Exchange Rate and External Trade

Exchange rate policy has received considerable importance as a major
policy instrument to combat with the balance of payment disequilibrium. As part
of the ongoing liberalisation process exchange rate policy in India also
underwent a significant change. One of the first measures in the process of
liberalisation was that rupee was devalued to the extent of nearly 18 per cent.
Devaluation as a policy instrument is basically intended to tide over the balance
of payment difficulties. However, the controversy that surrounds the efficacy of
devaluation/depreciation as a policy instrument in solving the problems in
external front is still unresolved.

Ahum and Sakthivel (1999), Ghosh (1992), Sarkar (1992,1994) and
Srinivasan (1998) found that the movement in exchange rate does not have

\textsuperscript{48} E.Kim (2000) "Trade Liberalisation and Productivity Growth in Korean Manufacturing Industries: 
Price Protection Market Power and Scale Efficiency", Journal of Development Economics, Vol. 62, 
pp.55-83

\textsuperscript{49} R. Bonelli (1992), "Growth and Productivity in Brazilian Industries: Impacts of Trade Orientation" 

significant influence on exports and imports of India. Ghosh (1990)\textsuperscript{51} argues that real exchange rate has only exerted a marginal influence on the growth of export in SDR terms for the period 1973-74 to 1985-86. The study concludes that the emphasis on exchange rate as a vital policy instrument in improving current account deficit may not turn out to be successful. Sarkar (1992)\textsuperscript{52} also found no significant impact of devaluation /depreciation on exports and imports for the period 1971-1990, using simple regression models. Sarkar (1994)\textsuperscript{53} used stationarity and cointegration techniques to examine the movement and relationship between exchange rate and export and import. The result showed that the movements in exchange rate do not have any meaningful association between export and balance of trade. Srinivasan’s (1998)\textsuperscript{54} analysis of India’s exports over 1963-94 also found that real exchange rate appreciation negatively affected export performance. The result also suggested that the increase in GDP and overall world export have offset the negative effect of real exchange rate appreciation. Nag and Upadhyay (1994)\textsuperscript{55} using monthly data for the period 1979 to 1993 examined the relationship between exchange rate and trade series. The study concluded that the exchange rate played an important role on trade performance of India. The stationarity test and cointegration test were used for the analysis. Sarkar (1997)\textsuperscript{56} using monthly data for the period 1991-94 reached the conclusion that the movement in real exchange rate influenced the Dollar


value of export and import. Dholakia and Saradhi (2000)\textsuperscript{57} examined the effect of exchange rate pass through and exchange rate volatility, important determinants of the effectiveness of exchange rate depreciation, in achieving the desired trade balance. The analysis was done with quarterly data from 1980 to 1996. The study used Augmented Dickey Fuller test and Philip Pernon test for the analysis and the result showed that export quantities responded positively and significantly to the exchange rate depreciation but the exchange rate and volatility do not have significant relation with the volume of import.

Marjit et al. (2000)\textsuperscript{58} examined the currency devaluation and export performance of India for the period 1951 to 1994, using import statistics by simple regression methods. The analysis showed that the impact of exchange rate devaluation was strongly realised on reported sale than of actual export to U.S. Srinivasan (2001)\textsuperscript{59} estimate the relationship between exports and the real exchange rate using a larger data set from 1960to 1998. The study also showed the REER negatively though not significantly related to the export performance.

\textbf{2.2.5 Tariff Rates Related Studies}

The review of India’s trade policy by the World Trade Organisation (WTO) in 1998 noted that about 32 per cent of tariff lines are subject to Quantitative Restriction based licencing, which for most of them act as import bans. The review also commented on escalations of tariff on the basis of extent of processing, i.e. lowest tariff on unprocessed goods (simple average tariff of 25 per cent in 1997-98 covering 12 per cent of tariff lines) a higher rate on semi processed goods (average 35 per cent in 1997-98) and a highest rate on processed goods (37 per cent covering 50 per cent of tariff lines), which ensures higher


levels of protection in the processed manufacturing sector than those reflected in the nominal rate.

Chopra et al. (1995) and Prusell (1996) made an international comparison of tariff rates. Chopra et al.\textsuperscript{60} showed that India had the second highest level of the maximum tariff (65 per cent), next to Egypt and highest level of average tariff (55 per cent). The average tariff level ranged between 10 and 15 per cent for 6 out of 13 countries (Korea, Argentina, Chile, Malaysia, Thailand and Brazil) under study. Pursell (1996)\textsuperscript{61} has undertaken a comparison across 26 developing countries for the year 1993 for 13 broad product categories. He presented for each product category, the average tariff rate (unweighted) for 26 developing countries in respect to the post Uruguay Round (UR) applied rate and bound rate. Four points emerged from the study (i) India’s actually applied rate ranks highest or second highest for all the thirteen product categories among 26 developing countries, (ii) India’s average tariff rate in absolute terms is more than twice as high as the average of actually applied rates by the 26 developing countries for all the product categories, (iii) the post Uruguay Round bound rate negotiated by India is invariably higher and for some products much higher than the average of the post UR bound rate of the 26 developing countries. (iv) for all the product categories put together, the average applied tariff rate of 51.6 per cent for India is not only the highest but also nearly three times as high as the average level of 19.2 per cent for sample countries.

World Bank (2000)\textsuperscript{62} provided the sectoral share of import affected by non-tariff barriers (NTBs). The average weighted share of imports for all the sectors covered in the study and covered by NTBs estimated come down


significantly in all the sectors classified according to activity (primary, secondary) according to industries and according to use based activities. In 1999-2000, it was still high as 56 per cent in consumer non durables, 27 per cent for consumer durables, 16 per cent for basic goods and 14 per cent for capital goods. World Bank Report also provided an international comparison of tariff for the year 1998, for large countries with population over 20 million. It showed that India had the second highest average tariff rate next only to Argentina and higher than Asian and Latin American countries.

Aggarwal (2004)\textsuperscript{63} suggested that tariff cuts are not expected to benefit India’s export to the US in a major way by using ISIC 4 digit level of disaggregation. The study concluded that increase in India’s export was mainly due to the competitive factor and the market effect of tariff reduction was small for most of the items, which displayed significant price elasticity in India’s case. Due to insignificant market penetration effect of tariff reduction a number of products of India’s exports are not price responsive despite the response of US market to the tariff changes.

\textit{2.2.6 Trade Liberalisation and Export Performance}

Ahuja (1993)\textsuperscript{64} examined the performance of India’s export after the introduction of liberalisation programme. The study covers the periods from 1990-91 to 1993-94 for major export items. The study examines the trade policy announced during the period and its effect on export and concluded that the success of liberalisation was contingent upon the way in which the units are motivated to respond to the structural changes under way in the economy. The author also opined that even though exports are given a vanguard role in the


\textsuperscript{64} Shobja Ahuja (1993) "Liberalisation of Trade in services, the Revealed Comparative Advantage Approach", \textit{Foreign Trade Review}, Vol. 38, No.1, pp43-58
scheme of development, priorities are still confronted with ill-defined policy parameters on the export sectors.

Mehta (1993)\textsuperscript{65} attempted to analyse the impact of trade policy reform. The trade performance in the post 1991 scenario was analysed in terms of selected commodities for export and import for the period from April to December 1991.

Singh (1994)\textsuperscript{66} focused attention on the positive link between import liberalisation and export promotion. The author surveyed the existing literature on import intensity in Indian industries and tried to assess the impact of import intensity on export. The study concludes that import liberalisation has a positive impact on export of chemicals and chemical products, cotton textiles and engineering industries.

Hajra and Sinate (1997)\textsuperscript{67} examined fifty years of India’s foreign trade performance since 1940. The study gave a detailed account of trade performance, policy change and balance of payment scenario of India for different decades since 1940. The paper concludes that the trade policy has positive impact on India’s foreign trade and competitiveness of India’s export in particular.

Muneesh (1997)\textsuperscript{68} presented an analytical over view of Balance Of Payments (BOP) developments and the concomitant evolution of external sector policies since Independence.

Kantawala and Padaria (1999)\textsuperscript{69} examined the critical points of trade liberalisation policy with special reference to Indian experience. The study

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\textsuperscript{65} K. S Mehta (1993) \textit{Liberalisation and India’s Export Competitiveness}, Macmillan India Ltd., New Delhi.


\textsuperscript{67} Sujan Hajra and David L.Senate (1997) “Fifty years of India’s Foreign Trade: Issues and Perspectives”, \textit{Reserve Bank of India occasional Papers}, Vol.18, No. 2 &3.

\textsuperscript{68} Muneesh Kapur (1997) “India’s External Sector Since Independence: From Inwardness to Openness”, \textit{Reserve Bank of India Occasional papers}, vol.18, Nos. 2 &3.

\textsuperscript{69} Kantawala and Padaria (1997) \textit{Trade Liberalisation in India Some Issues}, Macmillan India Ltd., New Delhi.
analyses three main issues of trade liberalisation, such as the link between policy orientation and trade regime from 1951-52 to 1993-94, the relationship between trade openness and growth of the economy and vulnerability of the economy to external shocks. The export, import, GDP and Terms of trade data were used for the analysis. The study observed a close link between policy orientation and trade regime in India. The increase in the degree of openness has not resulted into increase in the growth rate of GDP, however, it has positive impact on per capita real GDP. It is also observed that with the increase in the degree of trade openness, the vulnerability of the economy to external shock particularly in terms of income effect increases.

Hargopal (2002) examined the performance of external sector for the period of 1980-81 to 1997-98, which is divided into two as pre and post liberalisation period. For the analysis basic economic variables like export, import, trade deficit current account deficit etc. were used. The study concludes that post liberalisation policies have a major positive impact on external variable.

Kumar (2001) examined the factors that should mould India’s export over the coming two decades. The factors that will affect the demand for and supply of export of goods and service and the demand for imports were analysed. Ahuja (2001) analysed the export incentives or export promotion scheme of the Government of India (GOI) and the status of each of these incentives. It was noted that India needs to be strategic in devising its export incentives, in such a way as to give with the some incentives selectively to industries where the country has comparative advantage. Bhattacharya (2003) examined the export performance of India from 1980-2000 and concluded that India can achieve a

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rate of growth, which is almost 2-3 times higher than the global export growth rate, but the problem is the absence of sustained performance.

2.2.7 Trade Liberalisation and Manufacturing Sector of India

Empirical studies suggest that trade reforms promoted total factor productivity (TFP) during the decade of the eighties (Goldar 1986\textsuperscript{73}; Ahluwalia 1991\textsuperscript{74}; Mitra and Krishna 1998; Chand and Sen 2002\textsuperscript{75}). Das (2001)\textsuperscript{76} reported a positive impact of the lowering of NTBs in the intermediate goods sector. Although Goldar and Kumari (2003)\textsuperscript{77} reported a deceleration of TFP growth in Indian manufacturing in the 1990s, their analysis indicated that the lowering of effective protection to industries promoted productivity growth during the period 1991-98

A number of recent studies, however, contradict this view. Several studies (Krishna and Mitra 1998\textsuperscript{78}; Balakrishna \textit{et al.} 2000\textsuperscript{79}; Singh \textit{et al.} 2000\textsuperscript{80}; Norouz 2001\textsuperscript{81}; Srivastava 2001\textsuperscript{82}; Das 2003\textsuperscript{a}\textsuperscript{83}) found TFP growth in the manufacturing


sector had worsened during the nineties compared with the eighties. Norouz’s found insignificant impact of trade liberalisation on TFP for a cross section of industries. Most of the above studies estimate an average production function to evaluate productive efficiency of Indian industries.

Das (2003b)\(^{84}\) documented the effective rate of protection, import coverage ratio and import penetration rates of Indian manufacturing for around 72 three-digit industries divided into three-use based sectors for the four phases of trade reform. Observing the individual industries he found that the effective protection levels were the highest in the second phase as well as in fourth phase of trade liberalisation. Pandey (2004)\(^{85}\) showed that the protection to Indian registered manufacturing industry declined during 1980s and 1990s

2.2.8 Determinants of Aggregate Exports

Goldstein and Khan (1976)\(^{86}\) investigated the price responsiveness of both export demand and export supply using quarterly data on the aggregate export of eight industrial countries for the period 1955-1970. Two simple models of export demand and supply were introduced and these models were estimated simultaneously. The study used both equilibrium and disequilibrium models. The result showed that price elasticity of demand for export was substantially different when export supply relationship are explicitly taken into account.


Arize (1990)\(^{87}\) investigated empirically the demand and supply of export in seven Asian developing countries namely India, Indonesia, Korea, Malaysia, Pakistan, Philippines and Thailand using quarterly data for the period 1973-85. The supply and demand models were specified and the variables included were exchange rate, export unit value, domestic price of input, and index of domestic capacity and error term. The study concluded that the long run supply elasticities of Asian export was positive.

Hoekman and Djankov (1997)\(^{88}\) analysed the magnitude of the changes in trade across the Central and Eastern European countries during 1990-1995 period, focussing in particular on trade with European Union. It found that import of intermediate inputs and machinery are the important determinants of the changes in export structure. Outward processing arrangement and Foreign Direct Investment have a less impact. Wilson (2001)\(^{89}\) examined the determinants of manufactured export in Kenya for the period 1971-2001. He used cointegration and Error Correction Approach using Johansen’s procedure to estimate the model based on time series data. The study concludes that manufactured export respond positively to changes in the real exchange rate, productive capacity and regional trade. Capacity utilisation and regional trade have most the significant influence, where as real exchange rate is found insignificant. Trade restrictions are found to be detrimental to the expansion of the manufacturing sector.

Athukorala (1998)\(^{90}\) used export supply function with variables like real exchange rate, liberalisation and production capacity from 1977-1995 for Sri

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Lanka. Using Error Correction method he found that real exchange rate and liberalisation had positive impact. Krykils et al. (1998)\textsuperscript{91} used simultaneous equation model of demand and supply factors of export with the focus on price, FDI and exchange rate to discern the factors that determines the trade between Japan and European Union from 1970 to 1994. The study used 3SLS method and found exchange rate devaluation affected the bilateral trade balance. Ahmed (2000)\textsuperscript{92} used Cointegration and error correction model to determine the supply of export in Bangladesh. The study found significant impact of trade liberalisation, using the dummy to capture the trade liberalisation impact.

Camerero and Tamaril (2004)\textsuperscript{93} estimated the demand for export and import of manufactured goods for a panel-containing majority of the EU countries as well as the United States and Japan. The model included as explanatory variables other than the traditional determinants foreign direct investment also. They applied unit root and cointegration test allowing for heterogeneity. There was no evidence of cointegration when using just the traditional formulation. The results turn out to be favourable in accordance with the augmented model. Moreover the result points mainly to a complementary relationship between export and FDI.

Studies by Bhagwati and Srinivasan (1975)\textsuperscript{94}, Lucas (1987)\textsuperscript{95} Wadhwa (1988)\textsuperscript{96} Virmani (1991)\textsuperscript{97} and Krishnamurthy and Pandit (1995)\textsuperscript{98} noted the

significant price responsiveness of exports. However, Nayyar (1988)\textsuperscript{99}, Ghosh (1990)\textsuperscript{100} and Sarkar (1994)\textsuperscript{101} argued that Indian exports are not necessarily price responsive as turning points in India’s export performance were not often led by the movements in exchange rate. Panchamukhi (1978)\textsuperscript{102} showed that domestic policies have significant effect on trade behaviour of developing countries.

The study by Bhagwati and Srinivasan (1975) highlights that an inward looking policy, with capacity constraints, lack of competition, and high domestic demand, do not signal enough incentives to export. Nayyar (1988) argued that it is incorrect to say that the policy regime mainly influences overall export performance. The external constraints provide an upper limit to growth of exports from India. Roy (2001\textsuperscript{103};2002)\textsuperscript{104} provides evidence on the primacy of world demand in determining India’s exports growth. Virmani (1991),\textsuperscript{105} Joshi and Little (1994)\textsuperscript{106} and Krishnamurty and Pandit (1995),\textsuperscript{107} estimated either the

\textsuperscript{104} S.Sinha Roy (2002) “Persistence in India’s Manufactured Export Performance”, Discussion Paper No. 29, Research and Information System for the Non-aligned and Other Developing Countries, New Delhi:
demand or the supply side. In most instances, either demand function is only estimated by assuming infinite elasticity of supply of exports or supply side estimates become redundant due to inappropriate choice of factors. Sinha (2002b)\textsuperscript{108} showed the importance of demand factors such as world demand and real effective exchange rate as the determinants of India's export. Sharma (2000)\textsuperscript{109} examined the role of FDI in export performance of India using annual data for 1970-98. The study investigated the determinants of export demand and supply model in a simultaneous equation framework. The result showed that FDI has no significant impact on export performance.

\textit{2.2.9 Determinants of Export Behaviour of Firms}

Glejser et al. (1980)\textsuperscript{110} attempted to evaluate the export performance of Belgian firms. The variables selected were firm size, industrial concentration and foreign subsidiaries. The result showed that the firm size had positive influence. Hirsch and Bjaoui (1985)\textsuperscript{111} analysed the relationship between export, firm size, and R&D for Israel firms. They regressed the export to sales ratio against firm size, R&D (lag of four years) and a proxy variable for other firm characteristics. The result showed that R&D was positively and statistically significant.

Wilmore (1992)\textsuperscript{112} attempted to test the hypothesis that foreign ownership had a positive effect on export across Brazilian firms. His model contained

\begin{itemize}
  \item S.Sinha Roy (2002b) The Determinants of India’s Exports: A Simultaneous Error-Correction Approach, Discussion paper, 37/2002 Research and Information System for the Non-aligned and other Developing Countries (RIS), New Delhi
\end{itemize}
explanatory variables such as firm size, capital intensity, skill intensity, advertising and R&D in addition to foreign ownership. Foreign ownership, firm size and advertising were significant and had positive impact. Attinken et al. (1997)\textsuperscript{113} examined the role of geographical and sectoral spillovers on the exports by plants in Mexico. They found that the presence of multinational exporters in the same industry and scale economies increases the probability of exporting by Mexican firms. Robert and Tybout (1997a)\textsuperscript{114} estimated a dynamic probit model with plant random effect and found that firm size apart from firm’s prior exporting experience, its age and its affiliation to multi plant firms favourably affect the export entry decisions of Columbian firms.

Robert and Tybout (1997b)\textsuperscript{115} developed dynamic model of the export decision by a profit maximising firm and test for the presence and magnitude of sunk cost, using a sample of Colombian plants. They found that sunk costs are large and are significant determinants of export growth. Unobserved heterogeneity across plants also plays a significant role in the probability that a firm can export. Clerides et al. (1998)\textsuperscript{116} examine export participation and the effect of exporting on learning in Columbia, Mexico and Morocco. They examined the role of geographical and sectoral spillovers on the export decision for the Columbian plants and found some evidence for spillovers. Wignaraja (1998)\textsuperscript{117} examined the factors that influence firm level export performance in three industries in Sri Lanka (27 firms). The variables selected were capital,


skills, foreign ownership, and technology and firm size. The study found that physical capital, skills, foreign ownership, greater internal technological efforts and firm size are positively associated with firm level export performance. The study was based on the cross section data for 1988. Wakelin (1998)\textsuperscript{118} estimated a Tobit model as well as truncated regression model to investigate the role of innovation in determining export behaviour of a sample of 320 UK firms over the 5 year period of 1988-1992 and found that the firms probability to export positively depends upon the number of firm innovation and the level of innovation in the sector.

Bleaney and Wakelin (1999)\textsuperscript{119} used a firm-level data set to nest firm-specific and trade-theoretic determinants of export activity for a sample of British manufacturing firms using Tobit and OLS methods. Amongst the trade-theoretic variables, technological innovation, as measured by R&D expenditure, emerges as the main determinant of exports from the U.K., with much weaker support for the factor endowment theory.

Bernard and Jensen (1997\textsuperscript{120};1999\textsuperscript{121}) documented significant differences between exporters and non exporters among U.S manufacturing plants. Exporters have more workers, proportionately more white collar workers, higher wages, higher productivity, greater capital intensity and higher technology intensity and are more likely to be a part of a multi plant firm. However, these substantial cross-section differences between exporters and non exporters can not tell us about the direction of causality i.e., whether good firm become exporters or


exporters become good firms. Zeufack (2001)\(^{122}\) used a combined micro and macro level data set for investigating the determinants of export performance in Asia and Africa's manufacturing. Tobit estimations found no robust association between skill intensity and export performance in the textile and garment industries in Ghana, Kenya and India. Dijk (2001)\(^{123}\) analysed export behaviour of Indonesian companies using a unique database covering all manufacturing firms active in 1995 (28 industries at the three-digit level). Using Tobit and Papke and Woolridge (PW) model he pointed that both technology and cost related factors determine export behaviour of export intensive firms and to a lesser degree on scale intensive firms. The models do not work well in explaining export of science based and specialised supplier firms.

Lefebvre and Lefebvre (2001)\(^{124}\) examined the export performance of 3000 Canadian manufacturing firms. The study considered the factors like level of automation, the degree of modernisation of equipment and machinery and the presence of unique know-how and found that these factors had a positive influence on the export performance of Canadian firms. Sterlachini (2001)\(^{125}\) examined a variety of characteristics besides size, which are able to influence firms export behaviour, namely the propensity to take on work subcontracted by other firms, affiliation with a business group and geographical location. The study used both Probit and Tobit models for a sample of 3659 Italian manufacturing firms. The result showed that the intensity of subcontracting


depresses the export performance of small and medium sized enterprises. The intensity of R &D and the introduction of new technology are more effective for medium sized and large firms.

Alvarez (2002)\textsuperscript{126} analysed the determinants of export performance of Chilean manufacturing plants. Instead of focusing solely on the export decision he analysed factors that determine success in the exporting process. The results tended to confirm the empirical evidence that productivity, size and human capital increase the probability of remaining as an exporter. In addition, the results suggested that purchases of foreign technical licences and the participation of foreign capital contribute positively to export performance. Greenway and Yu (2004)\textsuperscript{127} investigated the interaction between exporting and productivity at the firm level, using a panel of firms in the UK chemical industry, which was technology intensive and largest exporting sector. The study found that exporters are more productive than non exporters. This superior productivity performance among exporters appeared to be caused by both self selection and learning by exporting effects. In contrast to other studies learning effects are positive among new entrants, weaker for more experienced exporters and negative for established firms.

Arnold and Hussinger (2004)\textsuperscript{128} examined the causal relationship between productivity and exporting in German manufacturing by applying a matching technique. The study concluded that high productivity firms self select themselves into export market and exporting themselves did not play a significant role for the productivity of German firms. Bernard and Jensen

(2004)\textsuperscript{129} examined the factors that increase the probability of entry into exporting using a panel of U.S manufacturing plants. They tested for the role of plant characteristic spillovers from neighbouring exporters; entry cost and government export promotion expenditure. Entry and exit in the export market by U.S plants are substantial, past exporters are apt to re-enter and plants are likely to be exported in consecutive years. However, they found that entry costs are significant and spillovers from the export activity of other plants are negligible. Buch \textit{et al.} (2005)\textsuperscript{130} provided evidence on the determinants of the activities of German multinational firms by using newly available firm-level data set from the Deutsche Bundesbank. The specific goal of this paper was to demonstrate the relative role of country-level and firm-level determinants of foreign direct investment and the result suggested that firm-level heterogeneity had an important influence on internationalization patterns as stressed by recent models of international trade. The study also found positive agglomeration effects for the activities of German firms that stem from the number of other German firms that are active on a given foreign market.

Lall and Kumar (1981)\textsuperscript{131} examined the factors that determine the Indian engineering firm’s export. Firm size and R &D were taken as the independent variables. The R & D turned out to be significant but it had a negative sign, it may be due to the dummy variable which was taken as proxy for R&D. Lall (1986)\textsuperscript{132} tested export propensities of engineering and chemical firms against a number of technological variables like age of the firm, skills, royalty license, foreign equity and R&D. Of these variables the first three were insignificant in


both industries. Foreign equity was not significant in engineering and R&D was significant in both industries. Kumar and Sidharthan (1993)\textsuperscript{133} explained export performance of Indian firms in 13 industries. He found that skill (share of high income employees in the wage bill) and technology (R&D expenditure to sales ratio) were both significant with a positive sign in four industries and capital intensity (gross fixed to sales ratio) was significant with a negative sign in six industries. Subrahmanian and Joseph (1994)\textsuperscript{134} analysed the export intensity of foreign controlled and domestic firms in Indian industry, using data collected from CMIE for the period 1990 to 1992. A sample approach of comparison of export intensity of firms showed that local firms better performed on export front than the foreign controlled firms. Results of their more sophisticated econometric analysis too did not show any relatively greater export intensity of foreign controlled firms. Patibandla (1995)\textsuperscript{135} argued that in the presence of capital market imperfections and suboptimal contractual arrangements, small firms faces transaction or selling cost in the domestic markets. One of the strategic responses by small firms towards overcoming the mobility barriers imposed by high transaction cost in the domestic market is to break into the competitive world market. Small firms that could realize a critical level of production efficiency and possible information externalities through inter-firm linkages might be able to succeed as exporters. The empirical observation derived from the analysis of firm level data provided reasonable support to the main argument.

\textsuperscript{133} Nagesh Kumar and N.S.Siddharthan (1993), Technology, Firm Size and Export Behaviour in Developing Countries: The Case of Indian Enterprises, Working Paper No. 9, Maastricht: UNU/INTECH


Subramanian et al. (1996)\textsuperscript{136} analysed the export performance of FDI firms using cross section data for the period 1991-92 to 1993-94. They could not observe a better export performance of FDI firms in terms of both actual export performance and export probability. Agarwal (2001)\textsuperscript{137} found that foreign firms have not performed better than the local firms in export in the post reform period 1996-2000. However the result is not robust across various technology grouping and the foreign ownership dummy turned out to be significant at ten per cent level only in the case of medium and high technology industries. Bhavani and Tendulkar (2001)\textsuperscript{138} examined marginal impact of scale and share of sales expenses on the probability of exporting of Textile and Garment industry in India. They divided the industry into three categories on the basis of ownership of property (single ownership, proprietary and limited companies). They found that every single determinant (scale, share of wages, share of sales expenses and technical efficiency) had an increasing marginal impact on export performance in Tobit model.

Kathuria (2002)\textsuperscript{139} found that the productivity of foreign owned firms improved in the post-reform period and Indian owned firms which invested in R&D gained from productivity growth. Kumar and Pradhan (2003)\textsuperscript{140} attributed to identify factors that played important role in the export competitiveness of Indian manufacturing firms with particular emphasis on knowledge based


\textsuperscript{137} R. Agarwal (2001), Technical Efficiency and Productivity Growth in the Central Public Sector Enterprises in India During 1990s, Discussion paper No. 28/2001, Institute of Economic Growth, NewDelhi.


\textsuperscript{140} Nagesh Kumar and Jaya Prakash Pradhan (2003) Export Competitiveness in Knowledge Based Industries: A Firm level Analysis of Indian Manufacturing, Discussion Paper, No. 43, Research and Information System for aligned and Non aligned countries, New Delhi.
industries. The study found that younger firms have export competitiveness in the high technology and low technology sub sample of Indian manufacturing where as in the medium technology, older firms are more competitive. Firm size had a non linear impact. Access to foreign raw materials is also observed as a critical factor for export success. Foreign affiliates in Indian manufacturing are found to achieve higher export success than domestic firms. The liberalisation measures are also found to be positive.

Mahambare (2004)\textsuperscript{141} found that foreign owned firms continued to be the most efficient but technical efficiency declined in the late 1990s in the case of manufacturing sector in India and the reform had positive impact in this sector.

The above literature survey shows that still there exist very few studies, which provides a comprehensive analysis of the impact of trade liberalisation on export performance of India. Most of the studies concentrate only on one aspect, either commodity composition or direction of trade at the aggregate level. The studies which deals with the performance at the industry and firm level during liberalisation is also very few. The literature survey also shows that there exists few studies, which focuses on the determinants of exports especially the role of trade policy at the industry and firm level export performance. Hence in this study an attempt is made to examine the impact of trade reform on exports of India.

\textsuperscript{141} Vidya Mahambare (2004) Trade Liberalisation and India’s Manufacturing Sector, www.cardiff.ac.uk
2.3 Importance of the Study

The present study examines the impact of trade liberalisation on India’s exports. Comprehensive reform measures were introduced in various sectors of the economy but one of the most important reform measures is the opening up of trade or trade liberalisation. The present study thus selected trade liberalisation. In order to examine the impact of trade reform, manufacturing sector exports is selected, which contribute about more than 70 per cent of the country’s exports. There were studies, which examined the impact of the trade reform measures on the exports and imports sectors but most of the studies concentrated at the aggregate level. But the clear picture of the impact can be factored out only if the study is made at a more disaggregate level at specific sectors. Though disaggregate level study was also under taken it is either for few years or for one or two firms or industry. The studies which deals with the post reform determinants of exports at the industry and firm level is also a very few. The significance of the present study is that it examines the impact of the reform as well as the determining factors of exports during the reform period both at the aggregate and disaggregates levels. In the present study thus the analysis is done at the aggregate level, industry level (for 15 industries as per ASI) and at the firm level (firms at 7 seven industries) so as to examine the impact of trade reform.

2.4 Objectives of the Study

The study tries to analyse the impact of trade policy on the export performance and determining factors of manufacturing sector export at the aggregate, industry and firm level. The main objectives of the study are to:

(i) examine the trends in India’s exports, its composition and direction
(ii) analyse the impact of trade liberalisation on aggregate exports
(iii) assess the impact of trade liberalisation on exports of manufacturing industries in India
(iv) analyse the factors that determine the exports of firms under trade liberalisation.

2.5 Hypotheses

Trade liberalisation measures are introduced to improve the export performance of the country by reducing the barriers to trade. With the opening up of the trade sector it is expected that the country can engage in more trade relations with other countries without much restrictions. The ultimate objective of trade reform measure is to improve the competitiveness and thereby better export performance. Thus the trade liberalisation measures will improve the export performance by improving the competitiveness, which will improve production by employing better techniques of production, improved quality standards, better marketing strategy, etc. But the trade policy reform will affect the different sectors of the economy in a different manner, as these strategies may be different. The impact will be different when we examine from the whole sector or the aggregate economy and from the inter sectoral or disaggregate level. There may be some sector specific factors determining the impact of reform when we take into consideration industry level and firm level export performance. The export strategies adopted by various industries will be different and the firms within each industry will be different and thereby the impact also may be different. So to assess the impact of reform the analysis is to be done at more disaggregate levels. In order to assess the impact of trade reform on the exports of India both at the aggregate and disaggregate level the null hypotheses tested is that trade liberalisation has no significant impact on export performance of India. To test the above hypotheses study has specifically used the following null hypotheses (H₀).
a) Trade liberalisation has no impact on aggregate exports

b) Industry level exports and trade liberalisation are unrelated

c) Trade liberalisation has no impact at the firm level exports.

In accordance with this the alternative hypotheses formulated is that trade liberalisation has significant impact on India's exports. Three alternative hypotheses ($H_1$) for the above null hypotheses can be formulated as (a) Trade liberalisation has significant impact on aggregate exports, (b) Industry level exports and trade liberalisation are related and (c) Trade liberalisation has significant impact at the firm level exports.