

Liberalisation reform and export performance of India

Ramesh C. Paudel

Arndt-Corden Department of Economics

Australian National University, Canberra, ACT 0200, Australia

Email: ramesh.paudel@anu.edu.au Telephone: +61 2 6125 9693.

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Abstract

This paper examines the impact of liberalisation reform on export performance of India. The empirical analysis involves estimating an export demand-supply model for manufacturing and merchandised exports, applying ARDL approach to cointegration using annual data for the period 1975-2008. The main advantage of this approach is that, apart from providing robust estimations in small sample sizes, it needs no prior knowledge of the integration properties of the variables. The results suggest that manufacturing and merchandise export demand are mainly determined by world demand, while manufacturing export supply is determined by domestic manufacturing output, FDI and overall liberalisation- initiated in the early 1990s. Contrary to the received view, this study failed to detect a significant negative impact of trade protection on export performance; however, overall liberalisations reforms seem to have positive impact in India's manufacturing export performance but this is not true in the context of merchandised export performance.

JEL classification: F1, F3, F10, P33, O53

Keywords: Exports, Liberalization, Trade, International Trade, India

1. Introduction

Improving export performance is one of the key objectives of liberalisation reforms in developing countries. For over four decades since independence in 1947, India pursued import-substitution development strategy under stringent trade protection. During this period, export stagnation was a prominent feature of India's economic performance despite the strong wave of export promotion in global context. India remains a small player in the world trade accounting for around 1 per cent of world exports, even following the liberalization reforms when export growth has been much faster. This export scenario contrasts with the size of Indian economy.

There is a sizeable literature on Indian export trade that explored the various aspects of the Indian export performance.¹ However, a number of issues remain unanswered: has the liberalisation reform improved the export performance in India? Why India's export performance during the reform era has not matched the initial expectations of the policy makers? What are the major determinants of export performance in India during pre- and post- reform period? To my knowledge, no systematic econometric analysis has so far been undertaken to address these issues. This study aims to bridge these gaps.

This study contributes to the literature in number of ways; firstly, it has made an intensive econometric analysis of Indian exports using Autoregressive Distributed Lag (ARDL) approach of cointegration, which has not been used previously to study Indian exports. ARDL approach is more reliable to fit the small data sample, and does not need any prior knowledge about the integration properties of the variables — the common feature of time series data. Secondly, this study estimates both manufacturing and merchandised exports demand and supply model using a wider coverage of variables compared to that of other studies in the context. Finally, unlike many studies, this study uses alternate measures of liberalisation, which is measured by the average nominal protection coefficients to investigate the impact of liberalisation reform in export performance.

¹ See Section 2 for details.

The organization of this study is as follows: the next section presents a brief discussion on liberalisation reform and export performance literature in the global and Indian context. Section 3 presents an overview of Indian policy reform and export performance; section 4 discusses about the model, data and research methodology used in the paper. Section 5 analyses the result from empirical estimations, and the final section concludes.

2. Liberalisation reform and export performance

Liberalisation reform and its impact on trade, particularly exports, has been one of central issues among economists and policy makers in the global arena. The foundation of export led growth hypothesis led to pay the attention on how exports growth is possible in a country. This is the reason for shifting trade policies from adopting import substitution trade strategy to export promotion strategy since the early 1980s. This shift has created a wave of liberalisation reform in the global context with the belief that export promotion helps to create more employment, increases output, earns foreign currency, mobilises domestic resources and saving optimally so that the economic benefits reach to the wider group of people. In the liberalised economic policy regime, a country participates in international trade reducing its tariff and non-tariff barrier so that business communities perform better and a country successes to achieve the faster economic growth.

Trade is the engine of economic growth (Bhagawati (2000)). This statement seems to be realistic via export growth of the comparative advantages products that improves the overall economic performance and activities. There is an evidence that, open developing economies grew faster than closed economies during 1970-1989; further, open developed economies also grew faster than closed developed economies and the speedy growth is found in developing economies as concluded by Srinivasan (1998). The supportive argument on liberalisation says that disciplined liberal economic policy contributes to enhance the export performance by creating more competitive domestic environment, increasing saving and attracting foreign capital to improve the export performance.

Other than liberalisation and reform, there are various aspects to determine the export performance, which can be categorised as supply side and demand side factors. In the supply

side, domestic resources, labour costs, and international market accessibility are crucial; and in the demand side, international market situation play vital role. However, most concern is found on whether the liberalisation is one of major determinants of export performance and how liberalisation impact on export performance.

Recently, Athukorala (2011) studied export performance of East Asian countries and China shows that a country with more open trade policy boosts the export performance because they can benefit from the production sharing network and increase the national output in a nation, but why it has not been happened in India is important question to the trade policy makers in India. Paudel & Perera (2009) found the positive relationship of trade openness in economic growth as trade openness explores the role of trade in the economy by creating more employment and improves the export performance in Sri Lanka.

Awokuse (2008) investigated the contribution of trade openness on exports and imports to accelerate the economic growth and found that export promotion with import constraints may not contribute sufficiently to economic growth. Weiss (1999) suggests that the greater the magnitude of the trade liberalization provides the better performance of the export performance indicators, which are revealed comparative advantage measure of net trade balance, efficiency wage estimates of unit labour cost, total factor growth and export growth. These studies evidence show that if a country proceeds with clear vision on liberalisation, their export performance can be improved significantly.

There are considerable attempts to study the export of India in the past, such as, Agrawal (1978), Wolf (1982) Joshi and Little (1994), Srinivasan (1998), Sharma (2000), and Srinivasan (2002). The most consensus issue from the literature of Indian trade is that, Indian export performance is not meeting the expectation of policy makers. Riedel, Hall and Grawe (1984) studied the determinants of Indian export performance in the 1970s and concluded that domestic market conditions strongly influence to export behavior. Srinivasan (1998) estimated a reduced form of Indian exports model for the period of 1963 to 1994, and as other studies, Srinivasan also suggested that domestic policies of India are more important to enhance the export performance. In this study, the crucial variables for the export

performance in quantitative analysis were real output and real effective exchange rate. Sharma (2000) investigated the determinants of Indian export performance for the duration of 1970-1998 in a simultaneous equation framework, and found that demand for Indian export has a significant negative relation with Indian export price, and the appreciation of domestic currency (Rupees) affects adversely to the export demand while export supply is positively associated with relative domestic price. The role of FDI in export performance was not significant in the Indian context. However there are some contrary findings that India's productivity surge around 1980 was not due to liberalisation and expansionary demand, it was due to pro-business policies rather than pro-market policy (Rodrik and Subramanian 2005).

Pursell, Kishor and Gupta (2007) studied the manufacturing protection in India focusing on manufacturing trade policies and conclude that manufacturing sector is reformed and heading towards speedy openness despite the protection of the agriculture sector, which has been excluded from the liberalisation and reform process.

Athukorala (2008) investigated the export performance of India analysing the total export and manufacturing exports performance in India. India accounts about 1 percent for the manufacturing export while there is the significant rise in manufacturing export in Asia lead by China's manufacturing exports. The progress in the services and merchandise exports lead by resource-intensive manufacturing and India's performance of labour intensive exports is not satisfactory. Because of this situation unskilled and semi-skilled labour remain unemployed, and on the other hand, much of FDI has been invested in to suit the domestic market rather than targeting the export. Kalirajan & Singh (2008) suggested that India should reduce duties and taxes compared to world standard, and needs to be more liberal in service sector on which India has a comparative advantage.

Krueger (2010) stated that import substitution (IS) strategy remained as the trade policy for long time in India as a major drawback for economic growth. Indian policy makers realised India needs the rapid industrialisation, which was possible through suitable trade policy reform. Indian export grew very slowly as the focus was the domestic market to substitute the imports. However, the data shows that Indian import grew on average of about 13 percent for

the duration of 1975-2008, it was about 8 percent for the duration of 1975-1991, and it is 16 percent for the duration of 1991-2008 because of more demand in intermediate goods and raw materials. Another big problem for Indian economy had a constant nominal exchange rate in terms of US dollar until the mid-1960s and resulted the appreciation of Indian Rupees until the mid-1980s, which compelled Indian economy to introduce export incentive scheme such as concessional tariff for importing machinery to produce the exportable goods, duty exemption and concession on tax.

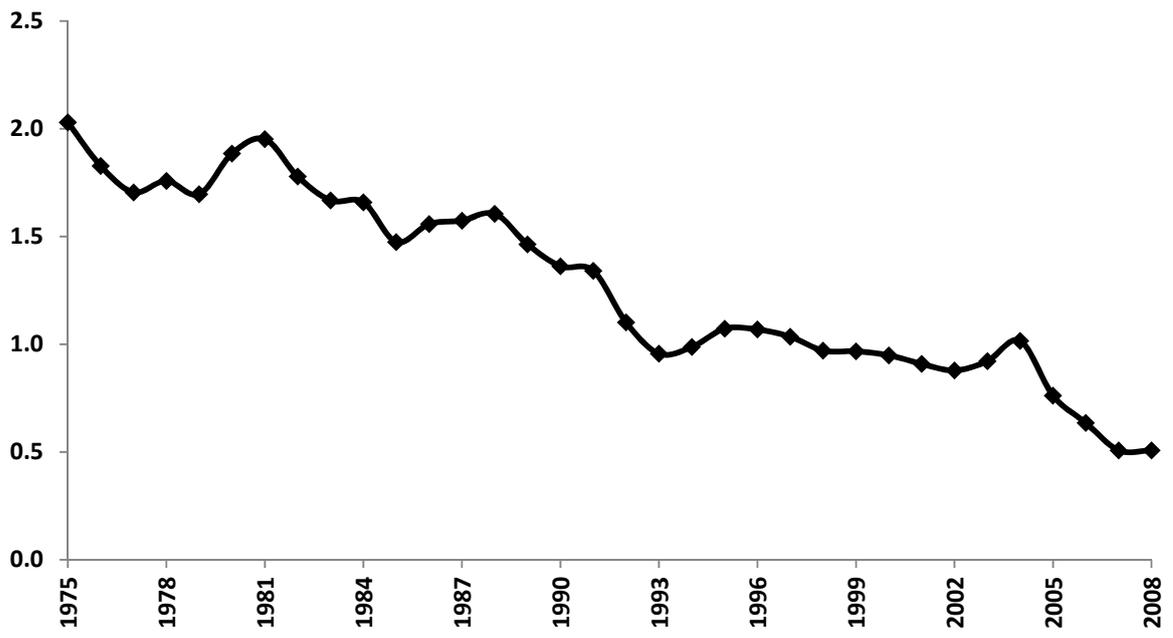
This discussion shows that, a number of studies on Indian export performance in the reform era; so far no systematic econometric analysis has been undertaken encompassing both supply and demand determinants of the export performance. This study contributes to bridge this gap in the literature analysing both demand and supply sides aspects of export performance.

3. Indian liberalisation reforms and exports: an overview

India formally started liberalisation reform with the external sector reform in the light of balance of payment crisis in 1991. The initiation was taken with the measures; devaluation of the domestic currency, reduction in tariff rates, removal of restriction on import quota, capital inflows and FDI, and abolition of import licensing system. For example, Indian currency was devaluated by about 22.8 percent in July 1991 relative to a basket of currencies, meanwhile custom tariffs were reduced by more than 40 percent, a liberal policy was adopted for FDI with a mechanism of Foreign Investment Promotion Board (FIPB) to approve the FDI proposal, and virtually it was made more open in 2001. Public-sector reform was made removing the protection and involvement of private sector, private and financial sector also were made more competitive removing the varieties of the protections and restrictions. Trade reform initiated removing quota restrictions and tariff rate were reduced substantially; and licence raj system was eliminated in different phase of liberalisation reform.

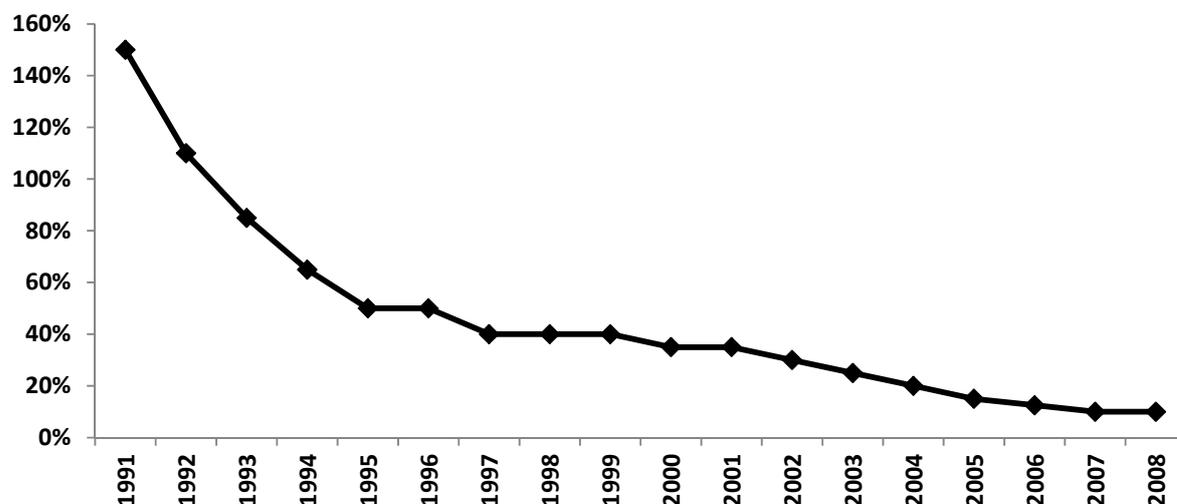
Notably, tariff coefficients are reduced significantly lower level until 2008; however these coefficients are decreasing after early 1980s as explained in the Figure 1. The sharp reduction is found in 1991-1993 and 2004 to 2007. Similarly, figure 2 shows the trend of customs tariff rates reduction since reform policy adopted; tariffs have been reduced to 10% in 2008 while the rate was 150% in 1991. More sharp reduction in the tariffs was made until 1995.

Figure 1: Structure of India's Tariff Coefficients: For 1975-2008



Data Source: Pursell, Kishor and Gupta (2007)

Figure: 2 Structure of India's Custom Tariff Rates (%) 1991-2008:



Data Source: Handbook of industrial Policy and Statistics, India

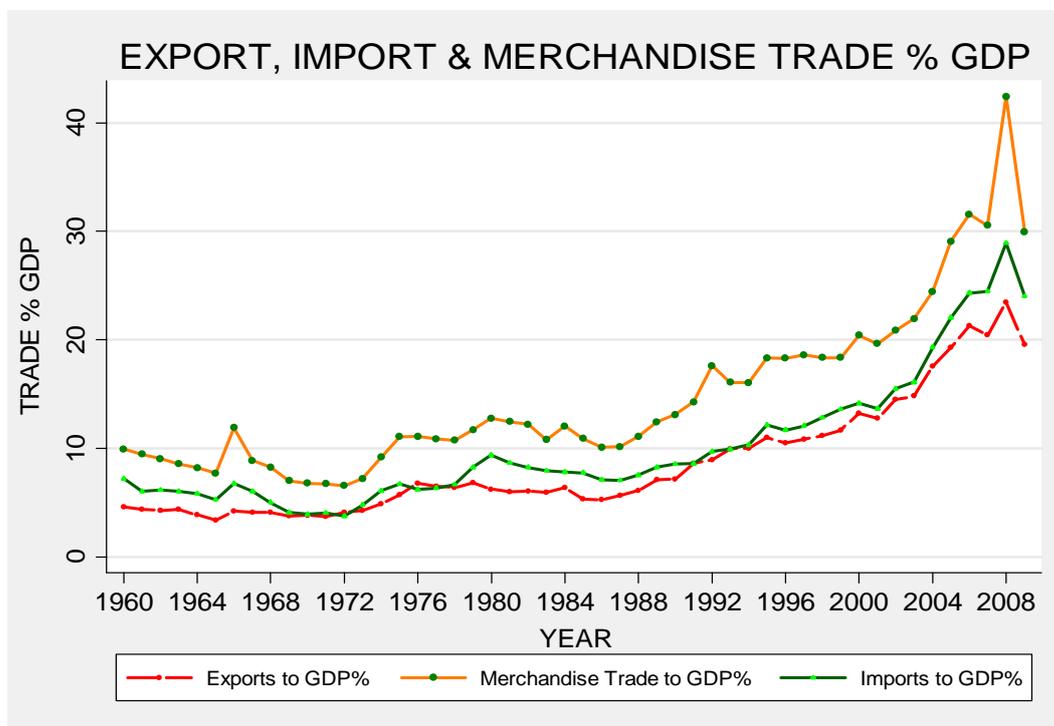
Despite the heavy reduction in tariff rate coefficients and customs tariff structure in the reform era, Indian exports accounts only 1 % of world's export share in 2008, coincidentally equivalent to the level of 1965 as explained in Table 1, which explores another important fact that Indian export performance was very weak despite the attention was given to export promotion in late 1960s. India could expand the volume of exports faster than other least developed countries (LDCs) but its relative performance remained very low, and export value has been increased since 1990 due to measures taken in reform but its export share in the world market remains deprived recording less than 1950s level and it shows that the desired fruit of liberalisation has not been achieved yet.

-Table 1 about here-

Figure 3 explains the overall trade situation of India for the period of 1960-2009 covering the data for exports to gross domestic product (GDP) percentage, import trade to GDP percentage and merchandise trade to GDP percentage. Until late 1980, Indian merchandised trade's contribution remained about 10 percentage of GDP then it started to increase until 2008 and global financial crisis (GFC) forced it to turn down in 2009. Indian import trade is well above than export trade since 1978 and this situation has not been changed even since 1960,

however the gap is different over time. Both import and export trade were limited almost 7 percentages of GDP until late 1980s and then import increased to about 25 percentage of GDP while export increased to about 20 percentage of GDP in 2008 showing the wider gap of trade balance since 2003.

Figure 3: Trade % of GDP



4. The Model, Data and Econometrics

4.1 The Model

Previous empirical studies in the context of Indian export have used single equation reduced form model. The problem of the reduced form model is that it cannot capture both supply and demand side aspects that determine the export performance. In this situation, supply side determinants and demand side determinants of export performance are hard to investigate properly and empirical result becomes more ambiguous. In such cases, mostly the variables

such as trade policy, domestic resources, price level, and international market accessibility, demand in the international market, exchange rate, are ignored. Goldstein & Khan (1978), Athukorala (1991), Joshi and Little (1994), Srinivasan (1998), Sharma (2000), and Srinivasan (2002) are representative studies to examine the export trade performance in the context. Srinivasan (1998 and 2002) used single equation approach with the major explanatory variables; log of real GDP and log of real effective exchange rate to study the Indian export performance and found that real appreciation of Indian currency adversely affects exports in the long run, while real GDP and world export have strong positive association with export performance. But relative price is more appropriate variable than real exchange rate to capture the price competitiveness, the major determinant of export performance. In this sense, the data sets used in this paper are more advanced and appropriate to examine the determinants of the export performance.

So far in my knowledge, only Goldstein & Khan (1978) used a model with demand and supply equation (simultaneous approach) with the explanatory variables for supply equation; log of the ratio of price of exports to domestic price index and log of index of domestic capacity; and in the demand equation; the log of the ratio of price of exports to weighted average of the export prices of trading partner countries and weighted average of the real incomes of trading partners to analyse the export performance. Rest of the studied applied the single equation approach to examine supply side equation factors. Considering all these facts, this paper applies a model with multi equation approach using Goldstein & Khan, as this approach has not been applied to investigate the export performance of India before; however our model is more advanced to capture the liberalisation and reform impact in the export performance.

The model has the following equations:

$$QXD_t = \alpha_1 + \alpha_2 RP_t + \alpha_3 WEXP_t + \alpha_4 LIB_t + \varepsilon_t \dots \dots \dots (D)$$

Where, QXD_t is the export demand, RP is Indian export price relative to world export price, WEXP is the world demand and LIB is the liberalisation reform measured in two ways, (i)

trade liberalisation which incorporates the tariff cuts and quota restriction and (ii) Overall liberalisation dummy (LDMY). Trade reform is one of the major steps in liberalisation that motivate the industries to import more advanced technologies to reduce the production cost and on the other hand to enhance the quality of product that helps to increase the export demand, overall liberalisation creates more export friendly environment, and ε_t is the error term, subscript t denotes to the time trend. The equations will test the semi elasticity as both natural log and original form of the variables are tested together.

The coefficient of α_2 is expected to be negative and α_3 to be positive while α_4 is expected to be negative with trade reform and positive with LDMY.

$$QXS_t = \beta_1 + \beta_2 RP_t + \beta_3 OUTPT_t + \beta_4 FDI_t + \beta_5 LIB_t + \varepsilon_t \dots \dots \dots (S)$$

Where, QXS_t is the export supply and RP is relative price calculated with the relationship of Indian export price to whole sale price index to capture the domestic price competitiveness of export with other sector in different equation. OUTPT is the real output of India, where as in the equation it appears for manufactured and total export in different variable, FDI is the foreign direct investment, and ε_t is the error term.

This study focuses on demand and supply sides factors of Indian manufactured product and Merchandised product export performance. As the fuel price has the most fluctuation, it has been excluded from the merchandised export. Based on the model as in equation (D) and (S), 4 equations are examined. Equation (1) and (2) are tested to analyse the manufacturing exports performance including demand and supply side aspects respectively; and similarly, equation (3) and (4) for demand and supply performance of total merchandised exports. For equation (1) and (2), RP1 and RP2 represent the RP of the model, referring international manufactured price competitiveness and domestic manufactured export price competitiveness that play role in export demand and export supply respectively. OUTPT of the model is replaced by manufacturing output and merchandised output so that the findings represent the more realistic situation.

$$LMEXP_t = \alpha_1 + \alpha_2 RP1_t + \alpha_3 LMWEXP_t + \alpha_4 TRDLIB_t + \varepsilon_t \dots \dots \dots (1)$$

$$LMEXP_t = \beta_1 + \beta_2 RP2_t + \beta_3 LMOUTPT_t + \beta_4 LFDI_t + \beta_5 LDMY_t + \varepsilon_t \dots \dots \dots (2)$$

In equation (3) and (4), RP3 and RP4 represent the RP of the model, referring international export price competitiveness and domestic export price competitiveness that play role in export demand and export supply respectively.

$$LTEXP_t = \alpha_1 + \alpha_2 RP3_t + \alpha_3 LTWEXP_t + \alpha_4 TRDLIB_t + \varepsilon_t \dots \dots \dots (3)$$

$$LTEXP_t = \beta_1 + \beta_2 RP4_t + \beta_3 LOUTPT_t + \beta_4 LFDI_t + \beta_5 LDMY_t + \varepsilon_t \dots \dots \dots (4)$$

In equation 1(a), TRDLIB in equation 1 is replaced by LDMY, similarly in 2(a), the LDMY is replaced by TRDLIB. Similarly, TRDLIB of equation 3 is replaced in equation 3(a) with LDMY and LDMY of equation 4 is replace with TRDLIB in equation 4(a) so that all 4 equations have used both the liberalisation measures.

4.2 Variables and Data

The model in this study includes 4 equations and 12 economic variables and 1 dummy variable (See Appendix A for details). TEXP (Total Merchandised Export of India excluding the fuel export) to measure the merchandise export performance of India, MEXP (Manufacturing export of India) to measure the manufacturing performance in India. Other variables included are; RP1, RP2, RP3 and RP4 to represent the relative price. Rest of the variables are WTEXP (world total merchandised export excluding the fuel export) to capture the world income to determine the demand of Indian exports, WMEXP (world manufactured export) to represent the demand of Indian manufactured exports, OUTPT (Real Gross Domestic Product) as a proxy of output capacity of the economy, MOUTPT (Real manufacturing value added) as a proxy of output capacity for the manufacturing output in the economy. The variables are FDI (Foreign Direct Investment Stock inflow), TRDLIB as a proxy of tariff rate and quota restriction reduction as a part of trade reform, LDMY (Liberalisation Dummy) is to capture the impact of regime shift into the liberalisation era.

The data for these variables have been compiled from the various sources (Appendix A) for the period of 1975 to 2008, some of the incomplete series have been linearly extrapolated. All

the variables are in real terms at the final stage. The major sources of the data are World Bank Development Indicators, UN monthly bulletin of Statistics, Economic survey of India and Reserve Bank of India. The variable TRDLIB is in the original form as it is the coefficient term and rest of the variables except LDMY are in the natural logarithm form. The variables FDI, TEXP, MEXP, WTEXP, WMEXP, OUTPT and MOUTPT are measured in US \$ million.

4.3 Econometrics

I have conducted the unit root test using the Dickey Fuller (DF), Augmented Dickey-Fuller (ADF), Philips-Perron and Kwiatkowski-Philips-Schmidt-Shin (KPSS) test methods. The unit root test results have been summarised in the tables in Appendix B. The test results revealed that RP1 is I (0) in the test with a constant and a linear trend in all tests, LFDI is I(0) except ADF test, while RP1, RP3, RP4, and LWTEXP are I(0) under KPSS test only. So the variables which are not I(0) in all tests have been tested in first difference and the test results from table 4, found that all the variables are I(1) with a constant a linear trend except FDI which is I(1) only considering the results of DF, PP and KPSS. All the unit root tests have been conducted at 5 percent level of significance.

Some of the variables are I(0) and I(1) in nature from the unit root test, which seeks the use of the ARDL approach to cointegration so that the results are more accurate and reliable. Thus, following I applied here the ARDL approach to cointegration with bound test method (See Pesaran, Shin and Smith (2001) for details). A simple model as in equation (m) is converted into the ECM (error correction model) version of the ARDL as in equation (ECM):

$$Y_t = \alpha + \beta X_t + \gamma Z_t + \varepsilon_t \dots \dots \dots (m)$$

Where, Y_t , X_t and Z_t are three different time series, ε_t is the vector of error term and α , β and γ are the parameters.

$$\Delta Y_t = \alpha_0 + \sum_{i=1}^p \beta_i \Delta Y_{t-i} + \sum_{i=1}^p \gamma_i \Delta X_{t-i} + \sum_{i=1}^p \delta_i \Delta Z_{t-i} + \lambda_1 Y_{t-1} + \lambda_2 X_{t-1} + \lambda_3 Z_{t-1} + \mu_t \dots \dots \dots (ECM)$$

Where, the null hypothesis is $\lambda_1 = \lambda_2 = \lambda_3 = \mathbf{0}$ shows the non-existence of long-term relationship among the variables. Alternative hypothesis is a long term relationship exists, which can be evaluated by the F-test given in Pesaran, Shin and Smith (2001). If calculated F-Statistic is greater than the upper bound of the F critical value for the selected model, we reject the null hypothesis in favour of alternate hypothesis and conclude that there is long run relationship among the variables. If the calculated F-statistics is smaller than the lower bound of the F critical value, we do not reject the null hypothesis concluding there is no long run relationship among the variables. The test becomes inconclusive when the calculated F value is in between the lower and upper bound of F-test critical value. In this case the efficient way of establishing cointegration is by applying the ECM version of the ARDL model as suggested by Bahmani-Oskooee & Nasir (2004).

I choose SBC (Schwartz Bayesian Criterion) model selection criteria to estimate the separate equations as SBC is more parsimonious than AIC (Akaike Information Criterion). Considering the number of observation, two lags have been considered.

5. Results

The estimations results are of three folds for each equation; the F-test, long run relationship and error correction results for the short run elasticity of the variables. F test and long run relationship results for manufacturing export performance with demand and supply equations have been presented in table 2. Table 3 presents the F-test and long run relationship for merchandised export performance. Table 4 and 5 present the short run elasticity results for manufacturing export and merchandised export performance.

The F-test for manufacturing export demand equation (1) is 4.80, which is well above than the upper bound of F statistics indicating the long run relationship. The long run relationship results are presented on Table 2, which shows that world manufacturing export demand is the main determinant of Indian export demand and 1 percent increase in world demand of manufactured goods results to increase the Indian export demand by more than 1.5 percent. The long run results from equation 1(a) are not significantly different the results of equation 1 but the short term results have a big difference. The relative price and import tariff coefficient

are not significant; however, all the signs of the equation are as expected, the result about the relative price contradicts with Sharma (2000). The ECM coefficient shows how quickly/slowly variables return to equilibrium and it should have a statistically significant coefficient with a negative sign. For this equation, the $ecm(-1)$ is significant at about 5 percent level of significance with correct sign stating that about 20 percentage adjustment of export demand are made in the following year as in the Table 4, the $ecm(-1)$ results are not significant.

The manufacturing export supply equation (2) has the F-test 4.94, which is above the upper bound of the F statistics indicating that there is a long run relationship among the variables. The results in Table 2 show that manufacturing output, FDI and liberalisation dummy are main variables stating that 1 percent increase in manufacturing output contributes to increase the manufacturing exports supply by 2 percentage, 1 percentage increase in FDI contributes to increase the manufacturing export by 0.2 percentage, which contradicts with Sharma (2000); and the liberalisation has contributed the manufacturing export to increase by 13 percentage. Here, all the signs are as expected. FDI is not statistically significant in equation 2(a) and equation 2 shows the better results compared to 2(a). TRDLIB in 2(a) is not significant unlike LDMY in equation 2. The domestic manufacturing export price is not significant though it has the correct sign, it means that most of the manufactured are targeting the domestic market rather than to export. The Table 4 presents the $ecm(-1)$ result is statistically significant with correct sign and shows the adjustment of manufacturing export supply very high about 70 percent in the following year. In the short run, manufacturing output and liberalisation impact significantly to the manufacturing export performance.

The merchandise export demand equation (3) has the F-test 4.47, which is above the upper bound of the F statistics indicating that there is a long run relationship among the variables. The long run relationship result from Table 3 shows the world export demand is the major determinant for the demand of Indian total export; 1 percentage increase in the world export demand results to increase the Indian total export demand by about 1.7 percent. RP3 has the correct sign but not statistically significant even in 10 percent level, referring that the poor performance of Indian export demand is not due to high price, may be more quality and trust

matter is playing role on it. The tariff cut is not significant statistically and it has the opposite sign than the expectation, while LDMY in 3(a) has significant impact but opposite than the expectation. It means that the Indian merchandised export sector has not been benefited due to tariff reduction, seems natural because almost 30 percentage of merchandised exports comes from primary sector. The ecm(-1) result from Table 5 conforms that ecm (-1) is statistically significant with correct sign with very low adjustment capacity, about 17 percentage of the fluctuation in the Indian export demand can be adjusted in the following year. Price competitiveness and world demand of exports have significant impact in the short run with correct sign. Tariff rate is not significant in both long run and short run elasticity.

The merchandised export supply equation 4 and 4(a) have the F-Test 1.68 and 2 respectively, which are lower than the lower bound of the F-statistics. It shows the variable of this equation do not have significant long run relationship, the further tests results have been present in Table 2 and 4 for the reference only, the reason may be the contribution of primary sector in the merchandised output value added.

-Tables 2-5 about here-

The model passes through all the diagnostic tests i.e. R squared for all the equations are considerably higher in aggregate and F stats are significant to show the goodness of the fit in the model. Durbin Watson test (DW test) are very close to 2 indicating the no serial correlation among the tested variables.

The findings of this study have given mix evidence to support the previous studies on the export performance of India. The finding on real output, world export and lagged of Indian exports in case of manufacturing export performance as the major determinant, supports the finding of Srinivashan (1998 and 2002), however the finding about the relative price in both cases contradicts with Srinivashan. The contribution of liberalisation reform in the export trade have not been analysed empirically in the Indian context recently but it contradicts with

the conclusion of Rodrik and Subramanian (2005). These findings about trade reform conclude that it needs to be followed by overall liberalisation.

6. Conclusion

This study analysed the impact of liberalisation reform on export performance in India considering the determinants of India's export, using annual time series data for the duration of 1975-2008. This paper has followed the standards of time series econometric analysis, conducting the unit root test applying DF, ADF, PP and KPSS method. The results showed that the variables are both $I(0)$ and $I(1)$, so the ARDL approach to cointegration with bound test method is applied to test the impact of the selected variables in manufacturing and total export demand and supply. The results revealed that the major determinant of manufactured export demand is the world demand, the proxy of world income; while manufacturing output is the major determinant of manufacturing export supply. Similarly, FDI invested in manufacturing sector is more important to boost the manufacturing exports. Liberalisation has contributed significantly to increase the manufacturing exports supply. Contrary to the received view, this study failed to detect a significant negative relationship between trade protection and export performance. Overall, liberalisations reforms' seem have positive impact in India's manufacturing export performance but not the merchandised export performance.

The major policy inferences from these findings are; India's export performance comes from the manufacturing sector, therefore, FDI in the manufacturing sector should be made more open to fulfil the capital requirement in this sector. Overall liberalisation of the economy, not just the liberalisation of trade is playing important role in export performance. Foreign investment policy reforms need to be treated as a core element of the reform process.

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Tables**Table 1: Export Value of India and its share in world Trade**

Year	US\$ billion Exports Value	Export Share
1953	1.1	1.4
1960	1.2	1.1
1965	1.7	1
1970	2	0.7
1975	4.4	0.5
1980	8.6	0.5
1985	9.1	0.5
1990	18	0.5
1995	30.6	0.6
2000	42.4	0.7
2003	59	0.8
2006	120	1
2008	195	1

Source: Anne O. Krueger (2010) and WDI.

Table 2: Long run Relationship-Manufacturing Exports

Regressor	1 Demand	1(a) Demand	2 Supply	2(a) Supply
LRP1	-0.055 (1.011)	1.67 (5.74)		
LWMEXP	1.784*** (0.308)	3.01** (1.48)		
TRDLIB	-0.060 (0.153)			0.14 (0.27)
INPT	-7.065** (3.359)	-18.31 (19.40)	-6.367*** (1.033)	-9.92** (3.67)
LRP2			0.127 (0.387)	0.68 (0.72)
LMOUTPT			2.034*** (0.380)	2.74*** (0.93)
LFDI			0.209* (0.107)	0.01 (0.23)
LDMY		0.09 (0.28)	0.133** 0.049	
F Test	4.80	4.18	4.94	4.05

Table 3: Long run Relationship-Merchandised Exports

Regressor	3 Demand	3(a) Demand	4 Supply	4(a) Supply
TRDLIB	0.09 (0.37)			-2.53 (4.85)
INPT	-5.72 (4.78)	-6.67*** (1.82)	-1.12 (9.76)	27.27 (49.43)
LFDI			0.85 (1.09)	
LDMY		-0.27* (0.14)	-0.21 (0.41)	
LRP3	-0.630 (0.47)	-0.42 (0.29)		
LWTEXP	1.74*** (0.56)	1.86*** (0.24)		
LRP4			1.13 (4.21)	-3.00 (6.54)
LOUTPT			0.06 (2.80)	-3.08 (8.73)
LFDI				0.96 (2.20)
F Test	4.47	4.69	1.68	2.0

Table 4: Short Run Relationship Results (ECM estimates) – Manufacturing Exports

Regressor	1 Demand	1(a) Demand	2 Supply	2(a) Supply
dLMEXP1	0.468*** (0.152)	1.06*** (0.32)		
dLRP1	-0.825*** (0.117)	-0.85*** (0.18)		
dLRP1 1	0.381** (0.176)			
dLWMWXP	0.851*** (0.229)			
dLWMWXP 1	-0.692** (0.269)			
dTRDLIB	-0.011 (0.030)			0.05 (0.10)
dINPT	-1.313** (0.591)	-1.47 (1.48)	-4.398*** (1.11)	-4.09*** (1.27)
Ecm(-1)	-0.186** (0.105)	-0.08 (0.16)	-0.69*** (0.18)	-0.41** (0.17)
dLRP2			-0.559 (0.35)	-0.58 (0.38)
dLMOUTPT			1.405*** (0.39)	1.13*** (0.39)
dLFDI			0.144 (0.09)	0.003 (0.10)
dLDMY		0.001 (0.03)	0.092** (0.04)	
R-Squared	0.88	0.78	0.61	0.56
F-stat.	22.34***	21.58***	4.68***	3.30**
DW-statistic	2.34	1.85	1.72	1.88

Table 5: Short Run Relationship Results (ECM estimates)- Merchandised Exports

Regressor	3 Demand	3(a) Demand	4 Supply	4(a) Supply
dTRDLIB	0.016 (0.06)			0.06 (0.12)
dINPT	-0.96** (0.45)	-1.36*** (0.29)	-0.13 (1.09)	1.58 (1.57)
Ecm(-1)	-0.17** (0.10)	-0.20*** (0.07)	-0.11 (0.09)	-0.06 (0.09)
dLDMY		-0.06** (0.02)	-0.02 (0.05)	
dLRP3	-0.675*** (0.08)	-0.65*** (0.06)		
dLWTEXP	0.293 (0.11)**	0.38*** (0.10)		
dLRP4			-0.63 (0.40)	-0.17 (0.38)
dLOUTPT			0.01 (0.32)	-0.18 (0.36)
dLFDI			0.10 (0.13)	0.06 (0.09)
R-Squared	0.86	0.88	0.37	0.41
F-stat.	38.36***	48.46***	2.94**	3.19**
DW-statistic	1.78	1.76	1.78	1.85

Note: For tables 5 -8, Significant *** indicates at 1%, ** indicates at 5%, and * indicates at 10% level of significance. The values in the parenthesis are standard error.

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Appendix A: Variables Description and Data Sources

Variables	Description	Data Sources
TEXP	Total Indian export US\$/Indian total export unit value index US\$)*100	Various Issues of UN monthly Bulletin of Statistics, UNO (Various Years)
MEXP	Indian Manufacturing Export US\$/Indian Manf. Export Unit value index US\$)*100	
RP3	Indian export unit value index\$/developing countries unit value index \$)*100, base year 2000=100	
RP1	Indian Manufactured export unit value index\$/developing countries manufactured export unit value index \$, base year 2000=100	
RP4	India's export unit value index Rs. /India's wholesale price Index Rs.)*100, Base year 2000=100	Economic Survey, Reserve Bank of India, various issues RBI (Various Years)
RP2	India's manuf. export unit value index Rs. /India's manuf. wholesale price Index Rs.)*100 , base year, 2000=100	
WTEXP	World Total Merchandise Export/world export unit value indices)*100, base year 2000=100 In this series, fuel export has been excluded.	(Worldbank 2010) And Various Issues of UN monthly Bulletin of Statistics.(UNO Various Years)
WMEXP	world Manufactured export/world manufacturing export unit value, indices)*100, base year 2000=100	
OUTPT	Real GDP of India, base year 2000=100	World Bank (2010)
MOUTPT	Real Manufactured value added, base year 2000=100	
FDI	FDI US\$ million)/GDP Deflator (Deflators base year 2000=100)	UNCTAD (2010)
TRDLIB	Average of nominal protection low and High coefficients. Data series obtained from the source until 2004 and onward to 2008 calculated based on the Handbook of Industrial Policy and Statistics 2007-2008 for India)	Pursell, Kishor and Gupta.(2007) RBI (RBI 2007-2008)
LDMY	Liberalisation Dummy, "0" until 1990 and "1" onward	Dummy Variable

Note: In the model, you see the different variables, Please replace M=Manufacturing and T=Total for the variable i.e. EXP in the model refers MEXP and TEXP for manufactured Export and Total Export.

Appendix B**Table B1: Test of integration of Variables (Level)**

Variables	Test with a constant			
	DF	ADF	PP	KPSS
<i>Level</i>				
LTEXP	0.98	1.56	1.13	0.51
LMEXP	1.25	1.16	2.75	0.68
LRP3	-1.83	-1.96	-1.31	0.47
LRP1	-3.14*	-2.14	-3.23*	0.5
LRP4	-1.67	-2.18	-1.73	0.42*
LRP2	-0.63	-1.11	-0.62	0.66
LWTEXP	0.23	0.49	0.55	0.66
LWMEXP	1.6	2.24	1.49	0.68
LOUTPT	1.97	1.98	4.27	0.68
LMOUTPT	0.76	1.36	1.54	0.68
LFDI	-0.38	1.94	1.48	0.65
TRDLIB	-0.11	-0.23	-0.45	0.68
<i>Critical Value 5%</i>	-2.97	-2.97	-2.95	0.46

Table B2 : Test of integration of Variables (Level)

Variables	Test with a constant and a trend			
	DF	ADF	PP	KPSS
<i>Level</i>				
LTEXP	-0.48	-0.16	-1.17	0.19
LMEXP	-1.94	-2.05	-0.39	0.19
LRP3	-1.11	-1.37	0.84	0.14*
LRP1	-4.08*	-3.95*	-4.26*	0.1*
LRP4	-1.01	-1.52	-1.61	0.12*
LRP2	-2.29	-3.54	-1.92	0.07*
LWTEXP	-1.73	-2.74	-1.82	0.14*
LWMEXP	-1.57	-1.09	-0.97	0.19
LOUTPT	-0.35	-0.16	-1.16	0.19
LMOUTPT	-2.4	-3.57	-1.7	0.16
LFDI	-5.91*	-1.68	-5.14*	0.14*
TRDLIB	-2.81	-3.53	-2.84	0.07*
<i>Critical Value 5%</i>	-3.57	-3.57	-3.55	0.15

Table B3: Test of integration of Variables (First difference)

Variables <i>Difference</i>	Test with a constant			
	DF	ADF	PP	KPSS
LTEXP	-3.21*	-3.7	-3.72*	0.37*
LMEXP	-4.7*	-3.17*	-5.04*	0.37*
LRP3	-5.61*	-5.01*	-4.6*	
LRP4	-2.98*	-3.41*	-2.01	
LRP2	-3.98*	-4.55*	-3.65*	
LWTEXP	-5.48*	-5.90*	-5.60*	
LWMEXP	-4.43*	-4.1*	-4.8*	0.3*
LOUTPT	-4.18*	-3.27*	-5.46*	0.52
LMOUTPT	-4.05*	-4.74*	-4.68*	0.31*
LFDI		-4.19*	-7.26*	0.48
TRDLIB	-5.05*	-4.72*	-5.64*	
<i>Critical Value 5%</i>	-2.97	-2.97	-2.95	0.46

Table B4: Test of integration of Variables (First difference)

Variables <i>Difference</i>	Test with a constant and a trend			
	DF	ADF	PP	KPSS
LTEXP	-4.21*	-4.53*	-4.51*	0.09*
LMEXP	-5.01*	-3.59*	-6.4*	0.14*
LRP3	-6.88*	-6.09*	-4.53*	0.11*
LRP4	-3.91*	-4.33*	-3.51*	0.14*
LRP2	-3.6*	-4.53*	-3.86*	0.13*
LWTEXP	-5.73*	-5.75*	-5.76*	0.07*
LWMEXP	-5.24*	-5.53*	-5.72*	0.08*
LOUTPT	-4.8*	-3.86*	-7.86*	0.08*
LMOUTPT	-3.88*	-4.95*	-6.32*	0.13*
LFDI		-3.87*	-6.77*	0.13*
TRDLIB	-4.87*	-4.55*	-5.62*	0.12*
<i>Critical Value 5%</i>	-3.58	-3.58	-3.56	0.15

Note: For Tables 1-4 * indicates Significant at 5% level of significance