India's Export Performance and Its Determinants : An ARDL Bounds Testing Approach

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Abstract

The export-led growth strategy adopted in the aftermath of the economic crisis of 1991 has removed all sorts of bias against exports. In this context, this paper examined the export performance and its determinants during the period from 1981-2011. The export growth has been higher in the post reform period as compared to the pre - liberalization period. The higher trade GDP ratio indicates that the Indian economy is more deeply integrated with the world economy. However, declining export-import ratio reflecting a deteriorating trade balance has been a cause of concern for the country. An ARDL bound testing approach to cointegration was adopted to identify the determinants of export performance. The empirical results indicated a long run as well as short run relation between the exports and the GDP, income of foreign countries (FGDP), real and effective exchange rate (REER), trade liberalization index (TLI), and foreign direct investment (FDI). While the impact of RGDP, TLI, and REER were positive; the impact of FGDP and FDI were found to be negative. The policy implication of the negative effect of the FGDP is that the government should take initiatives to improve the quality of local products and should reduce the average cost of production to increase the share of Indian exports in the world market. To realize the advantage of FDI for export growth, the government should provide infrastructural facilities and remove all barriers to attract more export oriented FDI, as is the case with China and Singapore.

Keywords: export, autoregressive distributed lag (ARDL) approach, cointegration, trade liberalization index (TLI), foreign direct investment (FDI), exports

JEL Classification: C32, F14, F21, F23

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One of the thrust areas of India's trade policy has been the expansion of exports to achieve a high rate of economic growth. After pursuing an inward-looking policy of import substitution with public regulation in place for more than four decades, India has, since 1991, undertaken a number of measures to correct the anti-export biases of policy regimes. This change in course has come due to many factors such as adverse balance of payments, critically low foreign exchange reserves, powerful resurgence of conservative economic thinking arguing in favour of liberalization, high rate of inflation, increasing budget deficits and prescription of IMF and World bank for availment of credit facilities. It was felt that much bolder and wider opening up of our economy and freeing of foreign trade, together with more comprehensive internal de-regulation measures were needed than the somewhat hesitant, half hearted, and piecemeal initiatives of the eighties (Saksena, 2008).

Consequently, reforms were initiated on both external and internal fronts. The agenda of economic reforms consisted of reforms on account of foreign trade policy, industrial policy, exchange rate, capital market, and the financial sector. The tariff and non-tariff barriers to imports and quantitative restrictions (QR) were removed or substantially reduced, imports of essential capital goods and intermediate goods encouraged and facilitated, exports of value added industrial and agro-products promoted, industrial licensing has been virtually phased out, reservations for small scale industries are being progressively done away with, restraints and infrastructural and other constraints on expansion of existing capacities and creation of new capacities has largely been removed, foreign investment and flow of foreign capital are being welcomed and facilitated by creating a favourable investment climate. The rupee was devalued and the exchange rate was allowed to be market determined. These measures have sought to accelerate the development process through improved international competitiveness, increased efficiency in the allocation of resources, and technological up gradation. More specifically, all sorts of bias against exports have been sought to be reduced (Kaundal, 2007).

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Objectives of the Study

The export-led growth strategy has been given due recognition to maintain a sustainable development of the economy as well as to emerge as a global leader in trade and business management. In this perspective, this paper is an attempt to study the following objectives :

(1) To analyze the performance of export during the period from 1981-2011.

(2) To examine the determinants of export performance during the same period.

Data and Methodology

The present study is based on the secondary data collected from online database of UNCTAD and RBI. While the data relating to foreign GDP, GDP of India, exports, imports, FDI were gathered from the UNCTAD database, the data relating to export based exchange rate was collected from RBI. The export based indices of real effective exchange rate (REER) for the periods 1981-1992 with base 1985 =100, 1993-2004 with base 1993-94 =100, and 2005-2011 with base 2004-05 =100 were spliced with base 2004-05=100.

The export performance of India is analyzed in terms of important trade indicators like export-GDP ratio, import-GDP ratio, trade-GDP ratio, and export-import ratio. Further, the compound average growth rate (CAGR) had been calculated by using the following formula :

$$Y_t = Y_0 (1+r)^t$$
$$\Rightarrow \log Y_t = \log Y_0 + t \log(1+r)$$
$$= a + bt, \text{ where } a = \log Y_0, b = (1+r) \qquad \dots(1)$$

Estimated compound average growth rate $= r = (e^b - 1) \times 100$

In order to examine the determinants of exports, an auto-regressive distributed lag model has been estimated. Theoretically, the exports of a country depends on her income, income of foreign countries, and on the real exchange rate. A rise in real GDP of the country has both positive and negative effects on its exports through demand and supply effects. While a higher GDP raises domestic demand thereby lowering exports, at the same time, it also proxies for a higher export supply capacity. The demand for exports of the country is determined by the income of the foreign countries (FRGDP) where the exports have been directed. The variable FRGDP included the real GDP of the following group of countries to which India's 80 to 90% exports have been directed over the years- U.S., EU, Africa, Latin America, Australia, ASEAN, Saudi Arabia, UAE, Iraq, and Iran. Furthermore, a rise in the real effective exchange rate (REER) depreciates the home currency, and the demand for exports will increase. The trade liberalization policy of the country is also likely to have a positive impact on the growth of exports. Finally, the inflow of FDI is expected to expand the exports of the country as FDI would bring along it with additional capital, the attendant advantages of technology, managerial know-how, marketing expertise with access to global, regional, and expanding home country markets (UNCTAD, 2002). It is held that FDI would also help India in the expansion of production and trade, and increase opportunities to enhance the benefits that could be drawn from greater integration with the world economy (Prasanna,2011). However, the FDI specific effects vary from country to country. With these specifications, the following model for determinants of exports performance has been formulated :

EXP $= f$ (RGDP, FRGDP, REER, TLI, FDI)

Where,

EXP = Export performance measured as the share of exports in world exports.

RGDP = Real GDP of India in million dollars at constant prices of 2005.

FRGDP = Real GDP of those foreign countries where exports have been directed in million dollars at constant prices of 2005.

REER = Real effective exchange rate of rupee.

TLI = Trade liberalization index measured as the sum of exports and imports expressed as the ratio of GDP.

FDI = Foreign direct investment as the ratio of GDP.

The model is specified in the log linear form for the purpose of estimation as log linear model is superior to the simple linear specification (Shahbaz, 2010).

$$\ln EXP = \alpha_0 + \alpha_1 \ln RGDP + \alpha_2 \ln FRGDP + \alpha_3 \ln REER + \alpha_4 \ln TLI + \alpha_5 \ln FDI + U_t \quad \dots(2)$$

The model is estimated to analyze the long run relationship between the variables by using the ARDL bound testing approach to cointegration as developed by Pesaran, Yongcheol, and Smith (2001). The bound testing approach is more efficient in case of small sample size as is the case in the present study. The first step involved in the ARDL approach is to investigate the long run relationship between the variables in equation (2) by modeling a conditional error correction model as follows :

$$\Delta \ln EXP_t = \beta_0 + \sum_{i=1}^{n} \beta_1 \Delta \ln EXP_{t-i} + \sum_{i=1}^{n} \beta_2 \Delta \ln RGDP_{t-i} + \sum_{i=1}^{n} \beta_3 \Delta \ln FRGDP_{t-i} + \sum_{i=1}^{n} \beta_4 \Delta \ln REER_{t-i} + \sum_{i=1}^{n} \beta_5 \Delta \ln TLI_{t-i} +$$

$$\sum_{i=1}^{n} \beta_6 \Delta \ln FDI_{t-i} + \delta_1 \ln EXP_{t-1} + \delta_2 \ln RGDP_{t-1} + \delta_3 \ln FRGDP_{t-1} + \delta_4 \ln REER_{t-1} + \delta_5 \ln TLI_{t-1} + \delta_6 \ln FDI_{t-1} + U_t \quad .....(3)$$

To test for the existence of long run relationship among the variables, the null of no cointegration, that is , $H_0 : \delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = 0$ is tested against the alternative of $H_1: \delta_1 \neq \delta_2 \neq \delta_3 \neq \delta_4 \neq \delta_5 \neq \delta_6 \neq 0$ by conducting an F test. The calculated value of F-statistics is compared with the asymptotic critical values bound as given by Pesaran, Yongcheol, and Smith (2001). If the calculated F-statistic is above the upper bound, the null hypothesis of no cointegration may be rejected and cointegration is found. On the other hand, if the F-statistic falls below the lower bound, then there will be no cointegration. The result is inconclusive if the value lies between the LB and UB.

Once the cointegration is found, the next step is to estimate the following long-run conditional ARDL $(p_1, q_1, q_2, q_3, q_4, q_5)$ model by choosing an appropriate order based on Akaike information criterion (AIC).

$$\ln EXP_t = \beta_0 + \sum_{i=0}^{p} \delta_1 \ln EXP_{t-i} + \sum_{i=0}^{q_1} \delta_2 \ln RGDP_{t-i} + \sum_{i=0}^{q_2} \delta_3 \ln FRGDP_{t-i} + \sum_{i=0}^{q_3} \delta_4 \ln REER_{t-i} + \sum_{i=0}^{q_4} \delta_5 \ln TLI_{t-i}$$

$$+ \sum_{i=0}^{q_5} \delta_6 \ln FDI_{t-i} + U_t \quad ....(4)$$

In the final step, the short run dynamic coefficients are obtained by estimating an error correction model (ECM) associated with the long run estimates as follows :

$$\Delta \ln EXP_t = \mu + \sum_{i=1}^{n} \beta_1 \Delta \ln EXP_{t-i} + \sum_{i=1}^{n} \beta_2 \Delta \ln RGDP_{t-i} + \sum_{i=1}^{n} \beta_3 \Delta \ln FRGDP_{t-i} + \sum_{i=1}^{n} \beta_4 \Delta \ln REER_{t-i} + \sum_{i=1}^{n} \beta_5 \Delta \ln TLI_{t-i}$$

$$+ \sum_{i=1}^{n} \beta_6 \Delta \ln FDI_{t-i} + \lambda EC_{t-i} + U_t \quad ...(5)$$

India's Export Performance

The economic reforms initiated in 1991 led to significant changes in the trade regime. One element of trade liberalization was the reduction of import tariff from the high level of 355% in 1990-91 to 150 % in 1991-92. There has been a continuous decline in the peak tariff rate, which stood at 35% in 2000-2001 (Kaundal, 2007). In 2007-08, it stood at 10% (GOI, Economic Survey,2009-10). The policy measures such as elimination of quantitative restrictions on intermediates and capital goods, freeing large majority of tariff lines covering raw materials, intermediates, and capital goods from import licensing requirements and extending the facility of special import licenses to export/ trading houses have helped in strengthening export production linkages (Sharma, 1996).

In order to promote exports, the rupee was devalued twice in July 1991 leading to 20% depreciation in its value. In March 1992, partial convertibility of the rupee on the trade account was introduced subsequently followed by full convertibility on current account. With a view to promoting orderly development of foreign exchange markets and facilitating external payments in the liberalized regime, the foreign exchange management act (FEMA) was introduced from June 1, 2000, replacing the earlier foreign exchange regulation act (FERA). The FEMA is consistent with full current account convertibility and contains provisions for progressive liberalization of capital account (Virmani, 2003).

Induced by the success of China' s special economic zones (SEZ) and the Shannon free trade zone in Ireland among

others, the Govt. of India introduced SEZs under its Export-Import policy of 2000 (Tyagi & Jain, 2008). The process of globalization has enhanced the relevance of SEZs, which have become an important component in the export-led industrialization strategy, playing a crucial role in promoting the manufacturing sector, including providing an enabling investment climate for SMEs and offer platform for attracting export-oriented FDI.

In a major initiative to boost export-led growth, the new five year Foreign Trade Policy of 2004-09 lifted all quantitative restrictions on export, and announced additional incentives for SEZs as well as schemes such as the Duty Entitlement Pass Book (DEPB), advance licensing, and export promotion capital goods (EPCG). The policy also provides an incentive package for the computer hardware sector and simplifies the procedure to reduce transaction costs, besides adopting a new commodity classification for imports and exports (Tyagi & Jain, 2008).

These policy changes have been very much favourable to foreign trade. In order to examine the overall export performance in the reformed regime, comparison of the trends in exports and other trade indicators of India were made for three periods - **(a)** the pre-liberalization period (1981 to 1991), **(b)** the period of first generation reforms (1992 to 2000), and **(c)** the period of second generation reforms (2001 to 2011) in Tables 1, 2, and 3 respectively.

Table 1. Major Indicators of India's Foreign Trade : The Pre-Reform Period (1981- 1991) (Million US $)

Year	Exports (X)	% change	Export-GDP ratio %	Import-GDP ratio %	Trade-GDP ratio %	Export-Import ratio %
1981	8295	-3.39	4.21	7.82	12.03	53.80
1982	9358	12.81	4.65	7.35	12.00	63.29
1983	9148	-2.24	4.17	6.38	10.55	65.27
1984	9451	0.99	**4.35**	**7.02**	11.37	61.88
1985	9140	-3.29	**4.04**	**7.03**	11.07	57.38
1986	9399	2.83	**3.79**	**6.22**	10.00	60.95
1987	11298	20.20	**4.11**	**6.07**	10.19	67.75
1988	13234	17.14	**4.36**	**6.29**	10.65	69.28
1989	15872	19.93	**5.28**	**6.83**	12.11	77.24
1990	17969	13.21	**5.50**	**7.22**	12.71	76.20
1991	17727	-1.35	**6.12**	**7.06**	13.18	86.69

Source: UNCTADSTAT, Retrieved from unctad.org & author's calculations

Computed Annual Average Compound Growth Rate of Exports = 8.47 %

Table 2. First Generation Reform Period (1992 - 2000) (Million US $)

Year	Exports (X)	% change	Export-GDP ratio %	Import-GDP ratio %	Trade-GDP ratio %	Export-Import ratio %
1992	19628	10.74	6.75	8.11	14.85	83.24
1993	21572	9.90	7.60	8.02	15.62	94.66
1994	25022	15.99	7.69	8.25	15.94	93.22
1995	30630	22.41	8.30	9.40	17.70	88.25
1996	33105	8.08	8.51	9.75	18.26	87.25
1997	35008	5.75	8.28	9.80	18.09	84.50
1998	33437	-4.49	7.86	10.11	17.97	77.80
1999	35667	6.67	7.87	10.36	18.23	75.92
2000	42379	18.82	9.06	11.01	20.07	82.25

Source: UNCTADSTAT, Retrieved from unctad.org & author's calculations

Computed Annual Average Compound Growth Rate of Exports = 9.24%

It is observed from the Tables 1,2, and 3 that the compound annual average growth rate of exports rose continuously over the three periods. However, the yearly growth percentages have not been uniform. In the initial years of the pre-liberalization period, the growth rate was on the lower side, with a fluctuating trend due to restrictive trade policy followed by the government. It started rising from 1987 onwards because the process of liberalization, though in a

fragmented manner, was started from the mid 1980s and several incentives were provided to the exporters. However, the economy suffered from a heavy balance of payment crunch in 1990-91, and the exports witnessed a negative growth in 1991. This crisis gave an opportunity to open up the economy with an agenda of economic reforms. In the early reform period, there was a considerable buoyancy of exports when the annual growth rate of exports averaged at nearly 12% during 1993 to 1996. But exports' growth rate slowed down during the period from 1997 to 1999. That is why the compound average growth rate in the first-generation reform period has been slightly higher at 9.24% than 8.47 % in the pre-liberalization period. The declined growth rate of exports in the later part of the first generation reforms is attributed to factors such as the decline in the growth of world trade, appreciation of the rupee in the mid 1990s following the switchover to marked determined exchange rate, failure to diversify the composition of India's exports, and so forth. The East Asian crisis also put a strain on India's exports not only by shrinking demand, but also by adversely affecting international competitiveness of India's exports due to sharp depreciation of East Asian currencies (Kumar cited by Kaundal, 2007). The growth rate of exports climbed up in the period of second generation reforms, with a compound average growth rate of 21.13% as shown in the Table 3. This could be attributed to phasing out of the non-tariff barriers. The passing of SEZ Act in 2005 further accelerated the export growth. However, the exports declined in 2009 because of global economic crisis triggered by the US sub-prime crisis. In 2010, it again rebounded with the highest level of growth rate of 37.2%.

Table 3. The Period of Second Generation Reforms (2001- 2011) (Million US$)

Year	Exports (X)	% change	Export-GDP ratio %	Import-GDP ratio %	Trade-GDP ratio %	Export-Import ratio %
2001	43361	2.32	8.98	10.43	19.41	86.05
2002	50372	16.17	9.98	11.19	21.17	89.13
2003	58963	17.06	9.97	12.27	22.24	81.26
2004	76649	30.00	10.71	13.95	24.66	76.82
2005	99620	29.97	11.90	17.06	28.96	69.74
2006	121806	22.27	12.85	18.83	31.69	68.25
2007	149951	23.11	12.43	18.96	31.40	65.57
2008	194531	29.73	15.16	25.00	40.16	60.64
2009	164921	-15.22	12.19	19.01	31.19	64.12
2010	226392	37.27	13.14	20.33	33.47	64.67
2011	302644	33.68	15.58	23.87	39.45	65.26

Source: UNCTADSTAT, Retrieved from unctad.org & author's calculations

Computed Annual Average Compound Growth Rate of Exports = 21.13%

The opening up of the economy in 1991 has also improved India's trade ratios. The trade-GDP ratios are a measure of integration of the economy ; the global economy has trebled from 13.18 % in 1991 as shown in the Table 1 to 39.45 % in 2011, as shown in the Table 3. The export-GDP ratio, which was around 5% in the pre-reform period, had gone up to 15.58 % in 2011. However, the import-GDP ratio has been higher than the export-GDP ratio throughout the entire period of analysis. As a result of the export-import ratio, an indicator of the import financing capacity of exports deteriorated from 86.69 % in 1991 to 65.26% in 2011, which witnessed the highest level of 94.66 % in 1993. This is because of spurt in the import bill largely due to the steep rise in oil prices in recent years. This reflects the fact that substantial degree of trade deficit continues to prevail, even during the post liberalization period.

India's export performance in the reformed regime can be better understood by making a comparison with some selected countries. The data in the Table 4 shows the compound average growth rate of exports of some selected East Asian countries, emerging developing countries as a group, and the world as a whole for the period from 2000-08. The Table 4 reveals that the world exports have grown at 12.2%. It is seen that China, India, Thailand, and the emerging and developing economies as a group recorded higher growth rates than the rate relating to the world. China recorded the maximum growth rate (24.4%) followed by India (21%). But there exists a sharp contrast between the two countries in terms of share in world exports. In 1990, the share in world exports of China and India were 1.8% and 0.5% respectively. In 2010, their respective share stood at 10.5% and 1.5%. This growing gap between India and China calls

Table 4. Export Growth Rates of Selected Countries

Country	CAGR (2000-08)
China	24.4
Malaysia	9.9
Indonesia	9.9
Singapore	11.9
Thailand	12.4
India	21
Emerging & Developing Economies	18
World	12.2

Source: Govt. of India, Economic Survey 2011-12

for greater introspection on the part of India (GOI, Economic Survey, 2009-10).

Determinants of Exports

✏ **Unit Root Test :** Although the ARDL bound test approach is applicable irrespective of whether the variables are purely $I(0)$, purely $I(1)$ or mutually integrated, but the method is not valid if the variables are $I(2)$ or integrated of higher order. Therefore, unit root test is necessary to ensure that no variable under consideration is $I(2)$. The Augmented Dickey Fuller (ADF) unit root test had been applied to test the stationarity of the variables. The test was conducted with constant and trend at log-levels and with constant and no trend at the first differences of the variables. The results are depicted in the Table 5. The ADF test results reported in the table indicate that all the variables are integrated of order one, that is, $I(1)$. This attracts the use of bound testing approach for cointegration.

Table 5. ADF Unit Root Test of the Variables

Log Levels			First differences			
Variable	AIC lag	ADF TEST	Variable	AIC lag	ADF stat	I(d)
In EXP	1	-0.4609	Δ In EXP	1	-2.573*	I (1)
In RGDP	1	-1.684	Δ In RGDP	1	-3.649***	I (1)
In FGDP	2	-1.988	Δ In FGDP	1	-12.62***	I (1)
In REER	1	-0.6785	Δ In REER	1	-3.204**	I (1)
In TLI	2	-2.478	Δ In TLI	1	-4.438***	I (1)
In FDI	2	-2.205	Δ In FDI	1	-7.171***	I (1)

Note: *,**,*** denote respectively 10%, 5%, 1% significance level
Source: Author's calculation

✏ **Bounds Tests for Cointegration :** The bound test approach to cointegration to examine the existence of long run relationship between the export performance (EXP), RGDP, FRGDP, REER, TLI and FDI is reported in the Table 6. The calculated robust F-statistic 9.752 is much greater than the critical upper bound 4.43 at 1% level of significance. This suggests the existence of cointegration for long run relationship between export performance (In EXP) and RGDP, FRGDP, REER, TLI and FDI.

Table 6: Bound Test for Cointegration

F statistics (Robust)	1% critical value bounds	
9.752	Lower bound I(0)	Upper bound I(1)
	3.15	4.43

Source: F value - author's calculation, critical values- Pesaran et al. (2001)

The long-run cointegration relationship as given by the equation (3) was estimated by selecting an ARDL (1, 0, 0,

0, 0, 0) specification. The results are presented in the Table 7. The table reveals that the estimated coefficients of all the variables are highly significant with both positive and negative effects on export performance. The elasticity of export performance with respect to domestic real GDP (0.881758) is positive and highly significant. This implies that an increase in real GDP leads to an increase in exports through an increase in supply capacity, and positive supply effects dominate the negative demand effect of an increase in real GDP as is observed by Srinivasan (1998).

A surprising result was observed with a highly significant negative effect on export of an increase in foreign GDP of those countries, where the direction of India's exports had been mostly confined. This implies that the demand effect of an increase in foreign income over India's exports has been declining over the years. This might be due to an increased competition faced by the exporters in the world market. The real and effective exchange rate affected export performance positively on the expected line. An increase in REER depreciates home currency, thereby stimulating demand for India's exports in foreign countries. The TLI also had a positive and significant impact on export growth. The trade liberalization measures undertaken during the post reform period in the form of removal of tariff and non-tariff barriers significantly contributed to boost the export performance in the country. The coefficient of FDI, however, is negative and significant. An increase in inflows of FDI has been unable to raise the export capacity of the country. This result is confirmed by Sharma (2000). The implication of the result is that India has failed to attract the export oriented FDI. But the interpretation must be made with a caution as net inflows of FDI are considered without looking into their composition. The result may be due to the fact that most of the FDIs are confined in the tertiary sector, and we are concerned with only merchandise exports.

Table 7. Estimates of the Long Run Coefficients - ARDL (1.0, 0, 0, 0, 0) Dependent Variable ln EXP

Regressor	Coefficient	Standard Error	t - ratio	p - Value
Constant	-11.6282	2.04429	-5.6881	<0.00001***
ln RGDP	0.8818	0.12194	7.2311	<0.00001***
ln RFGDP	-0.3778	0.12665	-2.9831	0.00629***
ln REER	0.3733	0.09989	3.7369	0.00097***
ln TLI	0.2894	0.11614	2.4916	0.01971**
ln FDI	-0.04925	0.0153	-3.2193	0.00354***

Note: **and*** denote respectively 5% and 1% significance level

Source: Author's calculation

The estimates of the short run dynamic coefficients associated with the level relationship obtained from the ECM regression (5) are reported in the Table 8. The signs of the short-run coefficients correspond to the signs of the long-run

Table 8. Estimates of the Error Correction Model Dependent variable Δ ln EXP$_t$

Regressor	Coefficient	Standard Error	t - ratio	p - Value
Constant	0.0250	0.0295	0.8466	0.4059
Δ ln RGDP$_t$	0.4477	0.4054	1.1042	0.2809
Δ ln FRGDP$_t$	-0.2735	0.0776	-3.5260	0.0018***
Δ ln REER$_t$	0.2871	0.1859	1.5445	0.1361
Δ ln TLI$_t$	0.2095	0.0978	2.1418	0.0430**
Δ ln FDI$_t$	-0.0235	0.0122	-1.9322	0.0657*
ECM$_{t-1}$	-0.3703	0.1833	-2.0206	0.0551*

Notes: *,**,*** denote respectively 10%, 5%, 1% significance level
R-Squared = 0.5103,   Adjusted R-Squared = 0.3826 $S.E.$ of Regression = 0.0457
F - Statistic F (6, 23) = 3.9950 (0.0069)   Durbin-Watson = 1.4745
Akaike Info. Criterion = -94.0081   Schwarz Criterion = -84.1997
Source: Author's calculation

coefficients. However, RGDP and REER variables do not have a significant impact in differenced term. The FGDP and FDI both have a significant negative impact on exports, as in the long run, it is only the TLI that has a positive and significant effect on export performance, even in the differenced term. The equilibrium correction coefficient ECM_{t-1} is estimated as -0.37 and is significant at 5.5% level of significance. It ensures the existence of long run relationship among the variables in the model of export performance. It also implies that any disequilibrium due to previous years' shock is approximately corrected by 37% in the current year.

It is observed from the Table 9 that the regression for the underlying ARDL model (3) fits reasonably well and passes the diagnostic tests against autocorrelation, functional form misspecification as indicated by the Ramsey RESET test, non-normality, and heteroscedasticity. Finally, the cumulative sum (CUSUM) and cumulative sum of squares (CUSUMQ) tests the recursive residuals of the ARDL model, which indicates stability of the estimated coefficients at 5% critical bound over the sample period.

Table 9. ARDL Diagnostic Tests

Test	Statistic
Breusch-Godfrey LM test of autocorrelation up to order one	1.8722 (0.1890)
Ramsey RESET	0.4796 (0.6277)
J-B Normality Test	1.7702 (0.4127)
White Heteroscedasticiy	21.8156 (0.4709)
CUSUM	Stable**
CUSUMSQ	Stable**

Note: ** denotes 5% level of significance

Source: Author's calculation

Conclusion

The export led growth strategy adopted under economic reforms has removed all sorts of biases against exports. In this context, the paper attempted to study India's export performance and its determinants during the period from 1981-2011. The export growth has been higher during the post reform period, particularly in the period of second generation reforms, as compared to the pre-liberalization period. Liberalization of trade increased the trade-GDP ratio, and the Indian economy is more deeply integrated with the world economy. However, the import GDP ratio has been higher than the export GDP ratio, and as a result, the export- import ratio, an indicator of export financing capacity of exports has deteriorated, reflecting the fact that trade deficit continues to remain as a cause of concern for the economy. From a cross country comparison, growth in overall export performance of China and India has been indeed remarkable as compared to the world average. However, India is far behind China in terms of share of exports in world trade.

In order to find the determinants of export performance, an ARDL bound testing approach to cointegration was applied to examine the long run and short run relationship between the variables under consideration. The empirical evidence indicates the existence of long run and short run relationship between the export performance and real GDP, real FGDP, REER, TLI, and FDI. The coefficient of the error correction term is also significant, ensuring the long run relationship. It shows the correction of any disequilibrium in the short run by over 37% in a span of one year. The results show that while the impact of RGDP, REER, and TLI on export growth is positive, the impact of FRGDP and FDI is negative.

Research Implications

The research results indicate certain key issues to be addressed by the government. The policy implication of the negative effect of the FRGDP is that the government should take the initiatives to improve the quality of local products and to reduce the average cost of production so that the exporters can successfully compete with other players to increase the share in the world market. As far as the effect of FDI is concerned, the government should provide infrastructural facilities and remove all barriers to attract more export oriented FDI like China and Singapore. In order to sustain its key position in the world economy, India must take bold steps to increase the pace of reforms to realize the potential benefits of FDI.

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