

An Empirical Investigation of Relationship between Export and Economic Growth in India

Tarun Kumar

ABSTRACT: The present study seeks to analyse the mechanisms of Export and Economic Growth in India by taking a time series data from 1970-71 to 2014-15. It applies Ordinary Least Square (OLS) Method to investigate the relationship between Gross National Product, Total Exports, Manufactured Exports, and Investment. The results of the study supports the Export-Led Growth Hypothesis (ELGH) in India.

Keywords: Export-Led Growth, Economies of Scale, Manufactured Exports, Gross National Products, Investment, Total Export



INTRODUCTION

In this era of open economy, the nations are concerned with increasing the quality of life of their citizens. And, the quality of life mainly comes from the macro-economic prosperity. Thus, increasing gross domestic product is the most important objective of any economy. There are different approaches to achieve this target of which one of the possibilities is to promote exports. At this juncture, an important issue immediately cracks the minds of economists and researchers, that is, whether export promotion leads to the higher economic growth or economic growth promotes exports growth. Thus, the economists came up with different views at different times and the literature puts forward for researchers and policy maker since the last few decades. One school of thought argues of export-led growth hypothesis while the other school advocates for growth-driven export hypothesis. In addition, the existing literature also provide the evidence that export promotion leads to economic growth and economic growth leads to export promotion, i.e. the bi-directional causality between export and economic growth.

The export-led growth hypothesis generally reflects the relationship between export and economic growth. The proponents of such hypothesis argue that export promotion through policy such as export subsidies or exchange rate depreciation will increase economic growth. The substance of the neo-classical argument underlying the export-led growth hypothesis is that competition in international markets promotes economies for scale and increase efficiency by concentrating sector in which country have comparative advantages. These positive externalities promote economic growth (Bhagwati, 1978; Balassa, 1978; Kruger, 1978; Feder, 1982; Krueger, 1990; Vohra, 2001; Ulla et al., 2009). On the contrary, argument that economic growth promotes export growth stand in idea that gains in productivity give rise to comparative advantages in certain sector that led naturally to export growth. Also countries with high growth rate and relatively low absorption rate must necessarily export the excess output (Arnade and Vasavada, 1995; Fosu, 1996; Thornton, 1996; Henrique's and Sadorsky, 1996; Sharma and Panadioditis, 2005). In addition, some studies demonstrate that there exists the bi-directional relationship these variables such that export causes economic growth and economic growth causes export (Dutt and Ghosh, 1994; Thornton, 1997; Shan and Sun, 1998a; Shan and Sun, 1998b; Khalafalla and Webb, 2001).

It is due to such contradicting evidence about dynamic relation between export and economic growth that many developing countries are still in dilemma whether to open up their economies to promote international or whether they should concentrate on economic activities that will promote international trade. Today, there has much worldwide debate about Doha Development Agenda, trade for Aid discussion, etc. and a good number of researchers and policy maker believe that developing countries can achieve economic growth through free market while other believe that developing country should protect their industries from the importing goods and promote their economic activities which will led to economic growth.

Now, it is believed that rapid growth of china and India is mainly due to the expansion of their exports. "The success of china and India is caused by the both export-led growth and access to technology through globalization" (Stieglitz, 2007). Exports imply excess to global market and permit increased production while trade encourages efficient allocation of resources and trade contributes to economic growth by generating long-run gains (Easterly, 2007). It is against this backdrop that the present study attempts to re-investigate the issue of the relationship between growth of exports and economic growth in case of India.

The present paper has been divided into four sections. Section-I is devoted to Survey of literature. Section-II deals with Objectives, Methodology and Model building. The results of regression model are presented and interpreted in Section III. The main conclusions, policy prescription are emerging out of the study are presented in the Section IV.

SECTION-I

REVIEW OF LITERATURE

Many empirical studies have been undertaken to establish the relation between exports and economic growth. The prominent among them are:

Ullah et.al (2009) investigated Export-led-growth by time series econometric techniques (Unit root test, Co-integration and Granger causality through Vector Error Correction Model) over the period of 1970 to 2008 for Pakistan. In this paper, the results reveal that export expansion leads to economic growth. They also checked whether there is uni-directional or bidirectional causality between economic growth, real exports, real imports, real gross fixed capital formation and real per capita income. The traditional Granger causality test suggests that there is uni-directional causality between economic growth, exports and imports. On the other hand Granger causality through vector error correction was checked with the help of F-value of the model and t-value of the error correction term, which partially reconciles the traditional Granger causality test.

Ricardo et. al (2015) study the Brazilian growth experience after trade liberalization by testing both the export-led growth (ELG) and the growth-led export (GLE) hypotheses through econometric tests between exports and gross domestic output (GDP). Although the paper provides further evidence that after openness neither ELG nor GLE hypotheses can satisfactorily explain the Brazilian growth experience, when disaggregated data is adopted it is possible to identify some sectors such as intermediate goods, commodities and manufactured products whose performance is strongly correlated with real GDP. These results suggest that a disaggregated approach enhances their understanding of the Brazilian growth experience after trade liberalization.

SECTION-II

OBJECTIVES

- 1) To study the impact of export-led growth strategy (ELG) in the growth process of Indian economy for the period under study.

METHODOLOGY

The present study seeks to test the mechanism on export-led Growth in India by taking a time series data from 1970-71 to 2014-15. It applies ordinary least square (OLS) method to investigate the relationship between Gross National Product, Total Exports, Manufactured Export, and Investment. Investment has been defined as Gross Fixed Capital Formation. We would apply Ordinary Least square (OLS) method of estimation. The double log transformations for each of these models are fitted and specified. The prime objective of generating double log transformation regression equation or natural log transformation is to determine the degree of sensitivity of the dependent variable to change in the explanatory variables.

Model Building:-

The general functional model for the mechanism of Export-Led Growth can be written as:

Where

Y=Gross National Product

X=Total Exports

Xm=Manufactured Exports

I=Investment

More precisely, the variable to the left hand side of the equality symbol represents the dependent variable, while those to the right hand side are referred to the technically as explanatory variables. Furthermore, if we take the derivatives of the functional model with respect to each of the explanatory variables, the following results are expected:-

$$\partial Y/\partial X > 0, \partial Y/\partial X_m > 0, \partial Y/\partial I > 0$$

The results of the partial derivatives obtained and interpreted in the following manner:

We expect Economic Growth (GNP) to be positively related to Total exports, Manufactured Exports. In order to test the mechanism of Export-led Growth in case of India, we will examine the following equations:-

$$Y = F(X) \dots\dots\dots (1)$$

$$Y = F(X_m) \dots\dots\dots (2)$$

$$Y = F(I) \dots\dots\dots (3)$$

$$Y = F(X, X_m) \dots\dots\dots (4)$$

$$Y = F(X, I) \dots\dots\dots (5)$$

$$Y = F(X_m, I) \dots\dots\dots (6)$$

On the basis of above model, the following natural logarithmic equations are specified and estimated:-

- 1) $\ln Y = b_0 + b_1 \ln X + U$
- 2) $\ln Y = b_0 + b_1 \ln X_m + U$
- 3) $\ln Y = b_0 + b_1 \ln I + U$
- 4) $\ln Y = b_0 + b_1 \ln X + b_2 \ln X_m + U$
- 5) $\ln Y = b_0 + b_1 \ln X + b_2 \ln I + U$
- 6) $\ln Y = b_0 + b_1 \ln X_m + b_2 \ln I + U$

In the present study, instead of using linear regression equations we will use natural logarithmic equations hence, the study is concerned with isolating the effects of changes in explanatory variables on economic performances i.e. Gross National Product (GNP).

SECTION-III

EMPIRICAL RESULTS

The empirical results of regression analysis have been presented in the following table:-

$$Y = F(X, X_m, I)$$

Y- Gross Domestic Product

X- Total Export

Xm-Manufactured Export

I-Investment

The following below table is showing the independent variables and dependent variable:-

Independent variables	Dependent variable
Exports	Gross National Product
Manufactured exports	
Investment	

Independent variables

An independent variable is exactly what it sounds like. It is a variable that stands alone and isn't changed by the other variables you are trying to measure. There are many independent variables of Gross National product but the main variables are Exports, Manufactured Exports and Investment:-

a. Exports

Exports of any country play an important role in the economy. Exports act as a motivating force to speed up the growth process of the developing country like India. So, Exports act as a foundation for the economic growth in developing countries like India. Exports measure the amount of goods or services that domestic producers provide to foreign consumers. It is a good that is sent to another country for sale (May Peters and Farhan).

The total exports of India was US\$ 2.02 billion in 1970-71, which increased substantially to US\$ 8.58 billion in 1980-81, US\$ 21.32 billion in 1990-91 and US\$ 312.62 billion in 2014-15.

b. Manufactured Exports

The process of converting raw materials, components, or parts into finished goods that meets a customer's expectations or specifications. Manufacturing commonly employs a man-machine set up with division of labour in a large scale production. After manufactured these final goods sent to foreign country to get money then it is called manufactured exports.

The total manufactured exports of India was US\$ 1.02 billion in 1970-71, which increased substantially to US\$ 4.73 billion in 1980-81, US\$ 12.99 billion in 1990-91 and US\$ 192.12 billion in 2014-15.

c. Investment

An investment is an asset or item that is purchased with the hope that it will generate income or appreciate in the future. In an economic sense, an investment is the purchase of goods that are not consumed today but are used in the future to create wealth. In finance, an investment is a monetary asset purchased with the idea that the asset will provide income in the future or appreciate and be sold at a higher price.

The total investment was US\$ 94.6 billion in 1970-71 in India, which increased substantially to US\$ 140.05 billion in 1990-91 and US\$ 336.7 billion in 2010-11 but due to the impact of recession it started to decrease and became US\$ 298.74 billion in 2014-15.

Dependent Variable

Just like an independent variable, a dependent variable is exactly what it sounds like. It is something that depends on other factors. Usually, when are trying to find out what makes the dependent variable change the way it does. In this study, we have taken Gross National Product is dependent variable.

a. Gross National Product

Gross National Product (GNP) is an estimate to total value of all the final products and services produced in a given period by the means of production owned by a country's residents. GNP is commonly calculated by talking the sum of personal consumption expenditure, private domestic investment, government expenditure, net exports and any income earned by residents from overseas investments, minus income earned within the domestic economy by foreign residents. Net exports represent the difference between what a country exports minus any import of goods and services.

The Gross National Product was US\$ 780.89 billion in 1970-71, which increased substantially to 1010.76 billion in 1980-81 but decreased to US\$ 743.59 billion in 1990-91 and US\$ 509.73 billion in 2000-01. It further increased to US \$ 1068.98 billion in 2010-11 but due to the impact of recession and low demand in foreign countries it stated to decrease and became US\$ 937.82 billion in 2014-15.

Table is showing (Regression results, 1970-71 to 2014-15)

Equation	Constant	X	Xm	I	R square	F-Value
1.	6.60	0.001 (0.052)*	-	-	0.00	0.003*
2.	6.64	-	-0.01 (-0.56)*	-	0.008	0.31*
3.	4.69	-	-	0.39 (6.40)*	0.49	41.02*
4.	6.22	0.67 (0.47)*	-0.63 (-0.47)*	-	0.35	11.49*
5.	3.69	-0.14 (-10.33)*	-	0.69 (15.85)*	0.86	125.63*
6.	3.78	-	-0.13 (-11.86)*	0.65 (17.77)*	0.88	159.26*

t *- statistically significant at 5 per cent level of significance.

F *- statistically significant at 5 per cent level of significance.

Interpretation of Empirical Results

The Equation (1) deals with the relationship between level of GNP and level of total exports. It displays that the coefficient of total export Variable is statistically significant at 5 per cent level with positive sign signifying that higher exports are associated with higher economic performance. The reason may be attributed to the expansion of foreign trade and sustained growth of India's export. The entrenchment of the growth momentum in the 1990s, the opening up of the economy and corporate restructuring have enhanced the competitiveness of Indian industry. There is a far greater export-orientation of domestic manufactures, and corporate sector has been pursuing new growth strategies in response to economic reforms. Trade policy reforms in recent past, with their focus on Liberalization, Privatization and Globalization have provided an export friendly environment with simplified procedures of trade facilitation. Such continued trade promotion and trade facilitation efforts of government have also aided the current strengthening of export growth. The regression equation also specifies that an average 1 per cent increase in exports is associated with 0.001 per cent jump in Gross National Product (GNP). This indicates that India's growing exports have made a positive contribution to the process of economic growth in India during the period under study 1970-71 to 2014-15.

It is cleared from the Regression Equation (2) that the manufactured exports are negatively associated with Gross National Product (GNP) in India during the period under study 1970-71 to 2014-15.

It is cleared from the regression Equation (3) that Investment Variable is the most powerful factor in explaining the performance of Gross National Product (GNP) in India during the period 1970-71 to 2014-15. The value of regression coefficient took the expected positive sign and it is also found to be statistically significant representing the importance of investment variable in the process of economic growth. The relative importance of the investment variable is better than total exports and manufactured exports. F-test is also found to be statistically significant at 5 per cent level of significance.

In the Regression Equation (4), when we regress X and Xm together, Xm took negative sign and it is also found that it is not statistically significant. It implies that manufactured exports do not contribute significantly to economic growth. The economies of scale mechanism operates when Xm is more statistically significant than X. But here in case of India, correlation between total exports and Economic growth (GNP) is stronger in comparison to manufactured exports. Therefore, the mechanism of economies of scale is less compelling in India because the Indian manufacturing is still primarily geared to domestic consumption. Therefore, its growth is limited by domestic demand. For the increasing production to meet export demand, there needs to be substantial productivity improvement. In addition manufacturing output growth is input driven rather than efficiency driven during the period under study. The equation can still mean that a strong export performance, by fostering entrepreneurial confidence will enhance investment, saving the export-led growth hypothesis. Hence, we accept the existence of Export-Led growth hypothesis (ELGH).

The regression equations (5) and (6) present the results related with the balance of payment effect on investment (i.e. export-investment link). In these equations, investment variable has been run together with total export (X) in equation (5) and also with manufactured exports (Xm) in equation (6). In both these equations, the investment variable out class the performance of total exports and manufactured exports as the value of regression coefficient and magnitudes of t-statistics are larger than total exports (X) and manufactured exports (Xm). This suggests the negative relationship of exports to growth does not run through the effect on investment, because investment has an independent significant effect on economic growth. This is in conformity with an earlier study by Attri.

SECTION-IV

Conclusions

Export and growth relationship has been a long discussion among the researchers. In fact most of previous literatures have been found that export has positive role in economic growth whilst others found that export do not support economic growth. In that sense, the policy makers have to take into consideration this discussion. On one hand, from reviews we found manufactured products have more linkage with the overall economic growth rather than primary products. But in our study, investment has more linkage with the overall economic growth rather than manufactured and primary products.

The main conclusions emerging out from the study are discussed below:-

Firstly, The study clearly indicates that there exists a significant and positive relation between exports and Gross National Product (GNP) for the whole period under study i.e. 1970-71 to 2014-15.

Secondly, The study supports Export-Led Growth Hypothesis (ELGH) in India over the period 1970-71 to 2014-15, as the coefficient of total exports (X) in equation (4) emerge stronger and significant in relation to manufactured exports (X_m).

Thirdly, Investment emerges the most powerful variable in affecting the process of economic growth. It seems that exports play an important role, only after a particular stage of economic growth has been attained through domestic investment.

Fourthly, The study reveals that none of the mechanisms of export-led growth i.e. economies of scale (via manufactured exports) and balance of payments effect on investment (export-investment link) are not proved statistically in case of India during the period under study. Our study confirms the results of the export-led growth mechanisms in industrial economies investigated by Lubitz Raymond (1973). Exports may be the handmaiden to economic growth in India rather than the engine of economic growth.

Policy Implications of India

This study confirms that export and import growth has been instrumental in accelerating economic growth in India. The evidence of causality from exports to economic growth implies that exports can have positive effect on economic growth. Exports, for example, can boost output growth in the short-run by allowing the use of excess capacity in cases where domestic demand requires less than full capacity production. Based on outcome similar to ours, Nidugala (2000) favours the ongoing reforms regarding openness for faster economic growth and higher GDP in India. By further opening up her market and continuing the ongoing trade (Export/Import) promotion policy reforms, India can not only boost its economic growth further but can also fuel growth in the entire South Asian region.

As suggested by Kamel et al. (2002), in the long-run exports can have beneficial effect on economic growth in a variety of ways. First, export production allows economies with narrow domestic markets to overcome size limitations and to reap economies of scale. Second by relaxing the foreign exchange constraints, higher exports can permit higher imports of capital goods thereby strengthening the productive capacity of the economy. Third, exports lead to an improvement in economic efficiency by enhancing the degree of competition. Fourth, exports contribute to productivity gains through diffusion of technical knowledge and learning by doing. Further, export-oriented production and investment tend to take place in the most efficient sectors of the economy fostering a pattern of production that is consistent with a country's comparative advantages. Specialization in these sectors improves productivity in the economy leading to higher output growth, as also advocated by Thangavelu and Rajaguru (2004). The study of Kemal et al. (2002) lends support to the export-oriented policies that are hallmark of current trade regime of the major South Asian economies, and suggest that South Asian countries ought to continue the strategy of export-led growth to tackle the myriad development challenges facing their economies.

Finally, according to Thangavelu and Rajaguru (2004), in India and in several other Asian countries imports tend to have long run 'virtuous cyclical' effect on labour productivity, more than exports. They suggest that exports and imports are both important for an outer-oriented economic strategy. Similarly, the empirical evidence reported by Lee (1995) indicates that imports have a positive effect on long-run output growth. In particular, imports could be an important vehicle and source to assess foreign technology for developing countries. In an outward-oriented strategy, countries should allow greater flow of goods and services into the domestic economy by promoting both exports and imports.

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