
Deepak K. Srivastava* and Garima Kapoorn

*Assistant Professor, Institute of Management, Nirma University, Ahmedabad INDIA

bDoctoral Student, Institute of Management, Nirma University, Ahmedabad INDIA

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Abstract

India has been one of the world’s fastest growing economies in recent years; so success or otherwise of export-led growth is of great interest for trade policy purposes. This study examines the relationship between export and economic growth in the Indian economy from 1951 to 2004. To test this, the study employs Granger causality test using annual time series data. The estimation results do not support the export-led growth hypothesis for India, while results show the unidirectional causality from economic growth to export. Growth-led export strategy can be thought to be suitable for large economy like India in view of its large internal market. Results are not surprising as India has been characterized by inward-oriented economy which gave importance to import substitution over export promotion. Perhaps the effect of this strategy has been so deeply rooted that trade liberalization of 1990 is yet to be manifest in export-led growth for India.

Key words: Export; Economic growth; Granger causality test

1. Introduction

The relationship between exports and economic growth has been one of the most debated topics in the recent past. The basic issue is whether strong export performance stimulates the growth or growth stimulates the export. This question is of great importance since the determination of the causal pattern between export and growth will determine the nature of policies and strategies adopted for nation’s export promotions.

Two strategies have been developed while discussing the role of export strategies in economic growth viz. export-led growth and growth-led export. In export-led growth strategy, export promotion encourages the production of goods and services. Export performance affects output positively through various channels. First, exports contribute to diffusion of technology through other countries. Second, exports cause economies to scale for developing countries due to penetration into the world market.

While in growth-led export strategy, the production pattern is influenced by domestic demand. Growth-led export strategy has a special significance for developing countries like India, as the domestic demand of India is vast enough to sustain faster economic growth. The objective of this study is to investigate the causal relationship between exports and economic growth for the period of 1951-2004 in Indian context. If the causality runs from export to GDP, which implies that exports oriented policies contribute to the economic growth. On the other hand, causality running from output to export, which implies GDP growth promotes exports. This study tries to fill an important gap in the literature as it is the comprehensive study, takes a longer time period (since 1951 till 2004) in account.

2. Literature Review

Most studies focus on the causal link between exports and output growth in developing nations. The studies by Michaely (1977), Heller and Porter (1978), Balassa(1978) and Feder(1983) support the view that export growth promotes overall economic growth. Love and Chandra (2005) have produced mixed results without any conclusive evidence in favor of export-led growth for South Asia region.

Some researchers have examined the export-led hypothesis with emphasis on industrialized countries (Sertelis 1992; Henriques and Sadorsky 1996; Yamada 1998). Export-led growth hypothesis has been widely tested in different economies such as UK, Canada (Henriques, Sadorsky 1996), Slovenia (Jani 2003). The econometric methods employed in such hypotheses testing have been significantly influenced by the work of Granger (1969, 1988), Sims (1972), Engle and Granger (1987), Johansen (1998, 1995), and Johansen and Juselius (1990), among others.

Some like Yagahmaian and Ghorashi (1995) oppose the neoclassical theory of export led growth and state that both high export performance and economic growth are result of continuous process of structural change. Batra and Pattanaik (1971) produced the paradoxical proposition that an exogenous improvement in the terms of trade can
worsen, rather than improve, welfare if a country has distor tionary wage differential.

Few studies testing the export-led growth hypothesis have been done with respect to India as well. Sharma and Panagiotidis (2005) have used the co-integration and causality tests to test the validity of export-led growth hypothesis for period from 1971-2001, the result states that export-led growth hypothesis does not hold true for India only big export shocks results in some influence on the GDP. Dhawan and Biswal (1999) after studying the relationship, with the help of multivariate co-integration technique, between real GDP, real exports and terms of trade for India during the period 1961-93 conclude that causality from exports to GDP appears to be a short run phenomenon. However, Nidugala (2001) uses an augmented production function with exports as a regressor. Nidugala finds evidence in support of the export-led growth hypothesis for the case of India, particularly in the 1980s.

3. Methodology

To test the stationarity, a test based on the autocorrelation function (ACF) was employed. The ACF at lag k denoted by is defined as

\[ \rho_k = \frac{\gamma_k}{\gamma_0} \]

where \( \gamma_k \) is the covariance at lag k, and \( \gamma_0 \) is the variance. Since both covariance and variance are measured in the same units of measurement, \( \rho_k \) is unit less or pure number. Its value lies between -1 and +1.

Correlogram is obtained by plotting \( \rho_k \) against k. If the correlogram of a time series resembles the correlogram of a white noise time series i.e. auto correlations at various lags hover around zero, then the time series can be said to be stationary. For a typical non-stationary series autocorrelation coefficient starts at a high value and declines very slowly towards zero as the lag lengthens. Moreover, ADF unit root test was applied to verify the stationarity of series (table 1).

Another important point to be considered is the determination of the optimal lags. As the direction of causality is dependent critically on the number of lagged terms included. As including too many lagged terms will consume the degrees of freedom and also increase the possibility of multi-collinearity. On the other hand, too few lags will lead to the specification errors. Lag-length is chosen on the basis of trial and error method as starting from one lag till non-auto correlated residuals are obtained.

4. Granger test of causality

This test assumes that information relevant to the prediction of the respective variable, GDP and Export, is contained solely in the time series data on these variables. The test involves estimating the following regressions:

\[ X_t = \sum \alpha_i X_{t-i} + \sum \beta_j GDP_{t-j} + \mu_{1t} \]

\[ GDP_t = \sum \lambda_i X_{t-i} + \sum \delta_j GDP_{t-j} + \mu_{2t} \]

where \( i = 1, 2 \ldots \ldots n \) and \( j = 1, 2 \ldots \ldots n \)

Where it is assumed that disturbances \( \mu_{1t} \) and \( \mu_{2t} \) are uncorrelated. Equation (i) postulates that the current GDP is related to past values of GDP itself as well as of Export, and the second equation (ii) postulates a similar behavior of Export.

Unidirectional causality from Export to GDP is indicated if the estimated coefficients on the lagged Export in first equation are statistically different from zero as a group (i.e. \( \Sigma \alpha_i \neq 0 \)) and the set of estimated coefficients on the lagged GDP in second equation is not statistically different from zero (i.e. \( \Sigma \delta_i = 0 \)). Conversely unidirectional causality from GDP to Export exists if the set of lagged Export coefficients in first equation is not statistically different from zero (i.e., \( \Sigma \alpha_i \neq 0 \)) and the set of the lagged GDP coefficients in second equation is statistically significant from zero (i.e. \( \Sigma \delta_j \neq 0 \)).

5. Data analysis and results

Calculated ADF values of both the variables are more than critical value at second level (table 1). Therefore, both variables are integrated to the second order. It can be seen that F-statistics for export-led growth is insignificant at 95 percent level of confidence, while F-statistics for growth-led export is significant at 95 percent level of confidence (table 2). Thus, results indicate a unidirectional causality from GDP to Export.

6. Conclusion

Results support to the growth-led export hypothesis for Indian economy. Results are not surprising as India has been characterized by inward-oriented economy since independence which gave importance to import substitution over export promotion. Growth-led export strategy can be thought to be suitable for large economy like India in view of its large internal market. Finding of growth-led strategy for India implies that country size may be an important consideration for this strategy. India followed growth-led exports strategy for few reasons. First, since Indian market

Table 1. ADF Test for Unit Root

<table>
<thead>
<tr>
<th>Variables</th>
<th>ADF I (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>-8.138*</td>
</tr>
<tr>
<td>GDP</td>
<td>-4.204*</td>
</tr>
</tbody>
</table>

*Significant at 95% level of confidence

Table 2. Direction of Causality

<table>
<thead>
<tr>
<th>Direction of causality</th>
<th>No. of lags</th>
<th>F</th>
<th>Calculated value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export</td>
<td>2</td>
<td>1.93</td>
<td></td>
</tr>
<tr>
<td>GDP</td>
<td>3</td>
<td>3.32644*</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 95% level of confidence
itself is vast, it does not encourage looking outside markets for demands. Second, export-led growth strategy makes vulnerable to the nations for the international economic shocks. However, a balance of payments crisis in 1991 led to the initiation of an ongoing process of trade liberalization, which has led to the openness in the Indian economy. Perhaps the effect of the growth-led export strategy has been so deeply rooted that open market regimes of 1990 is yet to be manifest in export-led growth for India

References