

EXPORT -LED GROWTH IN INDIA: AN EMPIRICAL INVESTIGATION

Priyanka Sahni*

Prof V.N Atri**

ABSTRACT:

The present study attempts to test the mechanisms of Export - Led Growth in India by taking a time- series data from 1980-81 to 2008-09. 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 Product, Investment, Total Exports

* University research scholar, K.U.K

** Dept. of Economics(K.U.K)

INTRODUCTION:

Development economists have long recognized the potential impact of export-led strategy in the growth process of national economies. The Export- Led Growth Hypothesis (ELGH) postulates that export expansion is one of the key determinants of economic growth. It reflects the view that export- oriented policies help to stimulate economic growth. Export-expansion can be a catalyst for output growth both directly, as a component of aggregate output, as well as indirectly through efficient resource allocation, greater capacity utilization, exploitation of economies of scale, and stimulation of technological improvement due to foreign market competition. Exports provide foreign exchange that allows for increasing levels of imports of capital goods and intermediate goods that in turn raise the growth of capital formation and thus stimulate output growth (Balassa, 1978).

Furthermore, export growth may promote the diffusion of technical knowledge (Grossman and Helpman, 1991) and enhance efficiency through the international Competition (Krueger, 1980). It may allow the exploitation of economies of scale if domestic markets are too small for optimal scale. All these factors may lead to higher economic growth. The main objective of the present paper is to find out the existence of export- led growth mechanisms in India, for the period 1980-81 to 2008-09.

The Present Paper has been divided into five sections. Section- I is devoted to Survey of Literature. Section -II discusses the concept of Export- Led Growth Mechanisms. Section-III deals with Methodology and Model Building. The results of regression model are presented and interpreted in Section-IV. The main conclusions emerging out of the study are presented in the Section-V.

SECTION:-I**SURVEY OF LITERATURE**

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

Emery (1967), Ram (1976), Michaely (1977), Attri(1980), Tyler (1981),

Feder (1983), Kavoussi (1984), Ram (1987), Biswas (1991), Mallick (1996), Erfani (1999), Vohra (2001), Sudhakar and Kurein (2005), Ogbokar (2005), and Jordan (2007). These studies clearly indicate that there exists a positive and strong relation between exports and economic growth. Exports are a key factor in promoting economic growth. Generally, a rise in the level of exports leads to increase in economic growth.

The studies by Michaely, Tyler, Kavoussi and Ram (1987) find that the export- growth nexus tended to be stronger in higher income economies than in the Low income ones. The empirical findings of Feder (1983) and Vohra (2001) indicate that when a country has achieved some level of economic development only then the exports have a positive and significant impact on economic growth.

From the above literature, it is apparent that all the studies have simply focused on the relationship between exports and economic growth, not on the mechanism of Export- Led Growth (ELG) model. Only Lubitz Raymond's study (1973) has empirically examined the mechanism of export-led growth over the period 1954-1969 for 11 industrial countries by testing the two important elements of export-led growth theory: economies of scale and balance of payments effect on investment. The study confirms the positive relationship between exports and growth; but the two mechanisms of export-led growth through manufactured exports and balance of payment effect on investment are not confirmed.

Therefore, our study follows in the footsteps of Lubitz Raymond's study and attempts to test the mechanisms of Export- Led Growth (ELG), using India as a case study during the period 1980-81 to 2008-09. India has been a classic case of inward-orientation till 1990-91 and thereafter introduced trade liberalization explicitly since July 1991.

SECTION:-II

CONCEPT OF EXPORT-LED GROWTH MECHANISM

Verdoorn's law, an attempt to quantify the relationship between the rate of growth of output and the rate of growth of productivity was initially identified by the Dutch economist Dr. P.J. Verdoorn in his paper, "Factors that determine the growth of labor productivity" which appeared in the Italian Journal L'Industria in 1949. This law explains that faster growth in output increases productivity due to increasing returns. Thus an economy with a rapid increase in demand will also experience rapidly increasing productivity. If money wages do not also rise by enough to offset the productivity increase, costs will fall and the country's exports will also grow fast because of their competitiveness. This increase in exports in turn will stimulate demand and output growth, and the circle is virtuously closed through further productivity gains. Moreover, export growth ensures that balance of payments difficulties will not cause a slowing of the growth rate. And the high growth rate and comfortable balance of payments will give business the confidence to maintain high levels of investment, this leads to a more modernized capital stock, and therefore higher productivity, which also increase the underlying growth rate and maintains a strong balance of payments, closing the circle in a second way. Further Verdoorn's law is usually associated to cumulative causation models of growth, in which demand rather than supply determined the pace of accumulation.

The theoretical foundation of Verdoorn's law is the existence of economies of scale in manufacturing, that is, the fact that the average cost of production falls with an increase in the amount of goods produced. The sources of economies of scale within a firm or industry are usually divided into two categories: static or dynamic. Static economies of scale come from the fact that most processes of production incur a fixed cost, that is, a cost that has to be paid no matter whether anything is produced. As a result, the higher the level of production, the lower the average fixed cost per unit produced and consequently the higher the economies of scale. It should be noted that static economies of

scale are reversible because, if production is reduced, the average fixed cost rises. Dynamic economies of scale come from the productivity gains associated with innovations brought about by the increase in production. The intuition here is that the dynamic economies arise from learning by doing and as such are irreversible. Even if the level of production falls, the new knowledge acquired from experience does not vanish.

Nicholas Kaldor (1966) and Anthony Thirlwall (1979) have also developed models of export-led growth based on Verdoorn's Law. For a given country, an expansion of the export sector may cause specialization in the production of export products, which increase the productivity levels, and increase the level of skills in the export sector. This may then lead to a reallocation of resources from the less efficient non-trade sector to the more productive export sector, lower price for traded goods and higher competitiveness. This Productivity change may then lead to expanded exports and output growth.

Kaldor postulates that export will stimulate industries with significant economies of scale. The manufacturing sector is the carrier of economies of scale and the role of exports in maintaining the demand for manufacturing output is important. According to Kaldor, aggregate demand maintained by exports is better than consumption-led demand. Further, Kaldor proposed that three growth laws characterized economic development which are as follows:-

- i) Firstly, the faster the rate of growth of the manufacturing sector, the faster will be the rate of growth of Gross Domestic Product (GDP), not simply in a definitional sense in that manufacturing output is a large component of total output, but for fundamental economic reasons connected with induced productivity growth inside and outside the manufacturing sector. This idea can be summed up in the maxim that manufacturing sector of the economy is the "engine of economic growth."
- ii) Secondly, there is a strong positive relationship between the rate of labor productivity growth in manufacturing and the growth of manufacturing output, the "Verdoorn's law". Kaldor attributed much importance to what

he called endogenous productivity growth, i.e productivity growth that is functional to output growth.

- iii) Finally, kaldor's third law states; the faster the growth of manufacturing output, the faster the rate of labor transference from non-manufacturing to manufacturing, so that overall productivity growth is positively related to the growth of output and employment in manufacturing and negatively associated with the growth of employment outside manufacturing.

Thirlwall (1979) shows that for several countries the rate of growth never exceeds the ratio of the rate of growth of exports to income elasticity of demand for imports. This implies that growth is limited by the balance of payments equilibrium. This result is known as Thirlwall's law.

In the Present Paper, we have examined for statistical testing two important elements of export-led growth mechanisms that are essential links in the model not only for advanced industrial countries but also for developing countries:-

- i.) The first is that export growth will stimulate industries with significant economies of scale.
- ii) The second is that export growth, by ensuring a strong balance of payments will encourage investment.

The export-economies-of-scale argument is tested by comparing total exports and manufactured exports as explanatory variables of economic growth. If the manufactured exports, the carriers of economies of scale is more closely related to economic growth as compared to the total exports, then the export-led growth works through economies of scale. If the correlation with total exports is stronger, we cannot reject the export-led model, although the virtuous circle working through demand increases and economies of scale is less compelling. The second element of export-led model is that a virtuous circle operates through export demand on investment, and consequently technological progress and productivity; this mechanism is consistent with a better showing for total export variable. The significant correlation of exports and growth in an equation containing a significant investment variable weakens the second element of export-led theory.

SECTION:- III

METHODOLOGY, DATA AND MODEL BUILDING

The variables used in the present study are Total Exports, Manufactured Exports, Investment and Gross National Product (GNP). The Sample period covers time series data for the period 1980-81 to 2008-09. Investment has been defined as Gross Fixed Capital Formation. All the relevant data is obtained from Handbook of Statistics on Indian Economy (various issues), Reserve Bank of India Bulletin (Various issues), Economic Survey (various issues) etc. In order to test the mechanism of Export -led growth (ELG) in India, we have applied 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 equations or natural log transformation (i.e. log to the base e, where $e = 2.718$ approx) 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 mechanisms of export-led growth can be written as:

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

Where,

Y = Gross National Product

X = Total Exports

X_m = 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 technically as explanatory variables. Furthermore, if we take the derivative of the functional model with respect to each of the explanatory variables, the following results are expected:-

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

The results of the partial derivatives obtained above are interpreted in the following manner: we expect economic growth (GNP) to be positively related to total exports, manufactured exports and investment.

In order to test the mechanisms of export-led growth in case of India, we will examine the following functional equations:-

$$Y = f(X) \text{-----} \quad (1)$$

$$Y = f(X_m) \text{-----} \quad (2)$$

$$Y = f(I) \text{-----} \quad (3)$$

$$Y = f(X, X_m) \text{-----} \quad (4)$$

$$Y = f(X, I) \text{-----} \quad (5)$$

$$Y = f(X_m, I) \text{-----} \quad (6)$$

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 have used Natural logarithmic equations hence the study is concerned with isolating the effects of changes in explanatory variables on economic performance i.e. Gross National Product (GNP).

SECTION:-IV
EMPIRICAL RESULTS

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

Table: 1 (REGRESSION RESULTS, 1980-81 TO 2008-09)

Equation	Constant	X	X _m	I	R ²	F-Value
1.	5.51	0.73 (71.59)*	-	-	0.99	5125.07*
2.	6.29	-	0.68 (64.13)*	-	0.99	4113.08*
3.	2.86	-	-	0.87 (78.78)*	0.99	6207.35*
4.	5.80	0.45 (3.44)*	0.26 (2.10)*	-	0.99	2890.20*
5.	4.01	0.32 (3.65)*	-	0.49 (4.64)*	0.99	4526.59*
6.	4.25	-	0.28 (5.19)*	0.51 (7.32)*	0.99	6098.05*

t *- Statistically Significant at 5% level of significance.

F *- Statistically significant at 5% level of significance.

INTERPRETATION OF EMPIRICAL RESULTS:-

The Equation (1) deals with the relationship between level of GNP and level of total exports. It shows that the coefficient of total export Variable is statistically significant at 5% level with positive sign suggesting 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 volume. 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 the recent

past, with their focus on Liberalization, Openness, transparency 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 indicates that an average 1% increase in exports is associated with 0.73% Jump in Gross National Product (GNP). This implies that India's growing exports have made a positive contribution to the process of economic growth in India during the period under study 1980-81 to 2008-09.

The Regression Equation (2) shows that manufactured exports (X_m) are also positively related with Gross National Product (GNP) during the period 1980-81 to 2008-09.

The equation (3) indicates that investment variable is the most powerful factor in explaining the performance of Gross National Product (GNP) in India during the period 1980-81 to 2008-09. The value of regression coefficient took the expected positive sign and it is also found to be statistically significant indicating 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% level of significance.

In the Regression Equation (4), when we regress X and X_m together, X_m took a positive sign and it is also found to be statistically significant. It implies that manufactured exports contribute significantly to economic growth. The economies of scale mechanism operates when X_m 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) in India.

The Equations (5) and (6) presents 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 exports(X) in equation (5) and also with manufactured exports (X_m) 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 (X_m). This implies that the positive 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 V.N, "Export - Led Growth in Developing Countries;(1960-80)" published in the Indian Economic Journal,1996. As Lubitz (1973) has pointed out, if exports are supposed to promote growth because of the encouragement to investment, this effect should be accounted for by the weak investment variable when run in an equation with total exports (X) and manufactured exports (X_m) whereas the results in equations (5) & (6) represents the opposite case. The significant correlation of exports and level of GNP containing a significant investment variable weakens the second mechanism of export-led growth.

SECTION:- V CONCLUSIONS

The main conclusions emerging from the study are discussed in the present section:-

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. 1980-81 to 2008-09.

Secondly, The study supports Export-Led Growth Hypothesis (ELGH) in India over the period 1980-81 to 2008-09 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.

ANNEXURE: I

GROSS NATIONAL PRODUCT, TOTAL EXPORTS, MANUFACTURED EXPORTS
AND INVESTMENT (1980-81 TO 2008-09) (₹ crore)

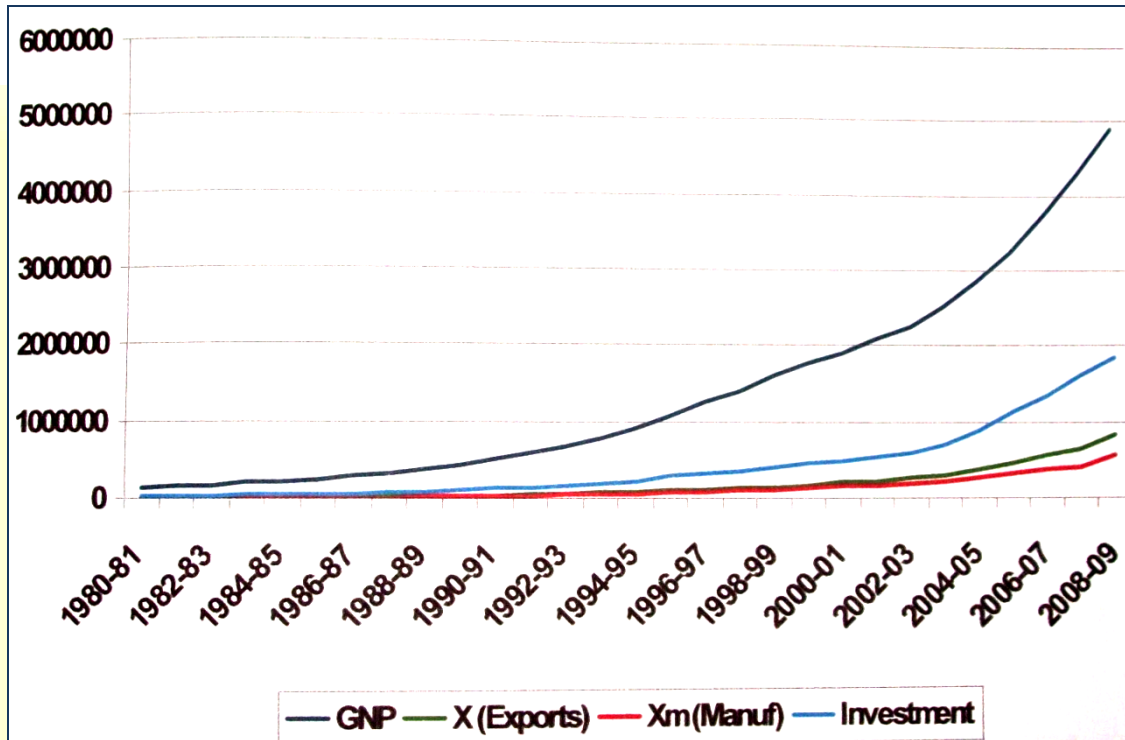
YEAR	GROSS NATIONAL PRODUCT	TOTAL EXPORTS	MANUFACTURED EXPORTS	INVESTMENT
1980-81	132865	6711	3837.54	26714
1981-82	155198	7806	4078.33	32045
1982-83	172703	8803	3985.19	36384
1983-84	201806	9771	4882.65	41537
1984-85	226270	11744	6175.17	48331
1985-86	252998	10895	6428.21	57524
1986-87	281876	12452	7851.82	65829
1987-88	318970	15674	10625.6	76382
1988-89	379294	20232	14641.4	91733
1989-90	436403	27658	19931.7	109533
1990-91	507487	32558	23319.1	131145
1991-92	584091	44042	32413.4	144486
1992-93	669872	53688	40659.8	168866
1993-94	780070	69751	52244.6	185402
1994-95	912156	82674	64067.1	224423
1995-96	1069805	106353	79433.3	291174
1996-97	1247628	118817	87377.4	318948
1997-98	1388729	130101	98659.8	351713
1998-99	1601114	139753	108506.2	398511
1999-2000	1771095	159561	128760.7	456416
2000-01	1902284	203571	156858.4	477818
2001-02	2077658	209018	159146.4	538180
2002-03	2244725	255137	194764.5	585010
2003-04	2519921	293367	222828.8	687890
2004-05	2855331	375340	272872.2	895980
2005-06	3249554	456418	321260.8	1112602
2006-07	3760285	571779	384261.4	1343843
2007-08	4281795	640172	414457.7	1605440

2008-09	4906167	840755.1	566402.2	1852354
---------	---------	----------	----------	---------

SOURCE:- Handbook of statistics on Indian economy (Various Issues), published by Reserve Bank Of India.

ANNEXURE: II

FIGURE I : GNP,TOTAL EXPORTS,MANUFACTURED EXPORTS AND INVESTMENT (1980-81 TO 2008-09)



REFERENCES

- Ahmad, J. and A. C. C. Kwan, (1991). Causality between Exports and Economic Growth. *Economics letters*, Volume 37.
- Attri, V.N (1996). *Export-Led Growth in Developing Countries (1960-80)*.
- Attri, V.N. (1980). *India's Foreign Trade and Economic Growth Since 1947*. (unpublished Ph.D Thesis, Kurukshetra University, Kurukshetra).
- Balaguer, J. and Manuel Cantavella- Jorda (2002). Structural change in Exports and Economic Growth: Cointegration and Causality analysis for Spain. WP-EC 2000-2.
- Balassa, B. (1978). Exports and Economic Growth: Further Evidence. *Journal of Development Economics*, Volume 5 (2).
- Emery, R.F (1967). The Relation of Exports and Economic Growth. *Kyklos*, Volume 20 (2): 470-86.
- Erfani, G.R. (1999). Exports and Economic Growth in Developing Countries. *International advances in economic research*, Volume. 5.
- Feder, G. (1983). On Exports and Economic Growth. *Journal of Development Economics*, Volume 12 (1-2).
- Grossman, G.M. & Helpman, E. (1991). *Innovation and Growth in the Global Economy*. Cambridge, Massachusetts, MIT press.
- Gupta, Sanjeev, (1985). Export Growth and Economic growth Revisited. *The Indian Economic Journal*, Volume 32.
- Jorrdan, A.C. and J.H. Eita (2007). Export and Economic Growth in Namibia: A Granger Causality Analysis. *South African Journal of Economics*. Volume 75:3.
- Jung, W. and P. Marshall (1985). Exports Growth and Causality In Developing Countries. *Journal of Development Economics*, Volume 18.
- Kaldor, N. (1966). *Causes of the Slow Growth in the United kingdom*. Cambridge: Cambridge University Press.
- Kavoussi, R.M. (1984). Export Expansion and Economic Growth: Further Empirical Evidence. *Journal of Development Economics*, Volume 14 : 241-50.
- Kruger, A. (1980). Trade Policy as an Input to Development. *American Economic Review*, Volume 70, 188-292.

- Mallick, S.K. (1996). Causality Between Exports and Economic Growth in India: Evidence From Cointegration based Error-correction Model. *Indian Journal of Economics*, Volume 76 (302) : 307-320.
- Michaely, M. (1977). Exports and Growth: An Empirical Investigation. *Journal of Development Economics*, Volume 4 : 49-53.
- Ogbokor (2005). Time Series Evidence For Export- Led Growth Paradigm: A Case Study Of Zimbabwe. *Journal of Social Sciences*, Volume 1 (2): 77-80.
- Ram, M. (1976). Trade – An Engine of Economic Growth: The case of India during the Planning Period. *The Indian Journal of Economics*, Volume 56 : 401-410.
- Ram, R. (1987). Exports and Economic Growth in Developing Countries: Evidence from Time-series and Cross- Sectional Data. *Economic Development and Cultural Change*, Volume 36 (1).
- Raymond Lubitz (1973). Export-Led Growth in Industrial Economies. *Kyklos*, Volume 26, Issue (2): 307-32.
- The Indian Economic Journal, Volume 43(3).
- Thirlwall, A.P. (1979). The balance of payment Constraint as an explanation of Inter-regional growth rate differences. *Banca Nazionale del Lavoro Quarterly Review* 128 : 45-53.
- Tyler, W.G. (1981). Growth and Export Expansion in Developing Countries: Some Empirical Evidence. *Journal of Development Economics*, Volume 9 (3) : 121-130.
- Verdoorn, J.P. (1949). On Factors determining the Growth of labour Productivity. *Italian Economic Papers*, Volume 2. Oxford University Press.
- Vohra, R. (2001). Exports and Economic Growth: Further Time series Evidence from Less developed Countries. *International Advances in Economic Research*, Volume 7.