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Does export affect the Economic growth? : An empirical investigation for Bangladesh

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Abstract: To reveal the answer of the central debate as economic performance is export-led, this paper examines time series evidence to investigate the response of export to the economic growth of Bangladesh during 1980 to 2018. During this period, Bangladesh changed its economic philosophy to expand export market focusing both traditional and manufacturing product. Using Granger Causality test, the study finds a unidirectional causal effect from export and terms of trade to economic growth, while there is no causal effect of economic growth to export and terms and trade. Also, this empirical study reveals a bidirectional causal relationship between export and terms of trade.

Keywords: Exports, Economic growth, Unit Root test, Granger causality test

JEL Classification: F1

Introduction

Economic progress is one of the key objective in every corner of the world. Economic growth has a plenty of contributors in which export-led hypothesis is the fundamental element of economic enhancement. In over four decades, Bangladesh has managed a tangible growth in its export of goods and services (Mamun and Nath, 2005). In the beginning, Bangladesh witnessed a robust inward-based economy ranking[1]. However, there are both theoretical and empirical analysis between economic growth and exports. Addressing these literature, the causality between exports and economic growth is ascertained by several factors. Explicitly, the growth of exports directly

[1] According to Dodaro (1991), only after Ghana, Bangladesh faced the 2nd highest position of the price distortion index among the 41 countries.

affect the economic growth as an element of GDP. Moreover, exports improve the both capital and intermediate goods by controlling the foreign exchange limitations (McKinnon 1964, Chenery and Strout 1966).

According to Helpman and Krugman (1985), exports can also support the narrow local markets of the poor economies to obtain benefits using the economies of scale. However, exports also contribute in resource allocation by enhancing its efficiency and more specially, increases the utilization forms of capital due to the over existing competition in the global market (Balassa, 1978; Bhagwati and Srinivasan, 1979; Krueger 1980). In General. There are four different comments on the causality between exports and economic growth. First view is about the hypothesis of neoclassical export-led that means the unidirectional causality from export growth to economic growth[2]. Following this hypothesis, Rodrik (1988), Grossman and Helpman (1990), Baldwin and Forslid (1996), Segerstrom et al., (1990), Ghirmay, Grabowski and Sharma (2001), and Rivera-Batiz and Romer (1991) suggest that exports of goods and services make a robust technological progress which ultimately increases the output level, improves workers and managerial skills, enhances productive capacity, ensures better utilization of the resources, and maintains proper resource allocation. Also, Abdulai and Jaquet (2002) reveal that there is a huge improvement in real wages and employment.

The second hypothesis is the unidirectional relationship from economic growth to exports. Explaining this hypothesis, Shan and Tian (1998) and Sharma et al., (1994) recommend that this causality will be accepted if the domestic demand is less than the production. However, a high level of productivity generates a lower unit cost of production which ultimately accelerates the export growth (Kaldor, 1967). The third hypothesis is the aggregation of the first and second statement in which there is a bilateral association between exports and economic growth (Wernerheim 2000, Hatemi-J. 2002). At last, the fourth hypothesis suggests no causality between exports and economic growth because these components are mainly improved for the technological progress (Yaghmaian 1994).

However, there exist a plenty of studies to determine the contribution of exports on the economic growth of developing economies. For instance, Balassa (1978 and 1985), Jung et al., (1985), Chow (1987), Shan and Sun (1988), Bahmani-Oskoee, Mohtadi and Shabsigh (1991), Bahmani-Oskoee et al., (1993), Levin et al., (1997). These studies empirically find a positive causality between exports and economic growth. Moreover, there are some cross-country analysis

[2] According to Afxentiou and Serletis (1992), Export oriented approach controls the foreign exchange limitations.

between exports and economic growth. For instance, Michaely (1977), Tyler (1981), Feder (1982), Ram (1985), Begum et al., (1998), Lopez (1991), and Edwards (1992).

To promote exports, Bangladesh takes different initiatives to improve efficiency of workers, to build export-oriented industries, to control tariff rationalization, to enhance private sector investment. More importantly, the government establishes many export processing zone, special economic zone. However, there also exist some studies about the effect of export on the economic growth of Bangladesh. For instance: Mamun and Nath (2005); Begum et al., (1998); Ahmed (2000), and Ahmed et al., (2009).

The objective of this paper is to examine the relationship between exports and economic growth of Bangladesh. The remainder of the study proceeds as follows: Section 2 describes methodology, Section 3 presents the results and discussion, and finally, Section 4 reports conclusions.

Methodology

The main objectives of this research is to examine causality between export and economic growth of Bangladesh. The study uses time-series data of 39 observations during 1980-2018. The data is collected from the World Development Indicators (WDI). To exhibit the causality, the empirical study uses a simple model to investigate the relationship between export and economic growth.

$$Y = f\ (X, Z) \tag{1}$$

Where, Y indicates gross domestic product which is used a proxy of economic growth, X is exports of goods and services, and finally, TOT is the terms of trade.

To find the relationship, after taking natural logarithm of gross domestic product we can rewrite the equation (1) as the following equation:

$$LNGDP = \beta_0 + \beta_1\, Export_t + \beta_2\, TOT_t + \varepsilon_t \tag{2}$$

Where, Coefficients β_1 and β_2 are empirically expected to be a positive indication.

Table 1. Summary statistics of the variables:

Variables	Observation	Mean	Std. Dev.	Min	Max
LNGDP	39	24.93431	0.5639586	24.07761	25.99188
Export	39	11.4238	5.138301	3.396255	20.16159
TOT	39	100.4153	29.87837	56.54478	162.2642

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Results and Discussion

Unit Root Test

The unit root test is applied to investigate the stationary of the variables. In this study, Augmented Dickey- Fuller (ADF) test (Dickey and Fuller, 1981) is employed to find a unit autoregressive root. The ADF test is based on the following regression,

$$\Delta Y_t = \alpha + \delta Y_{t-1} + \mu_t \quad (3)$$

Where, α is the constant term, δ is the slope coefficient, t is a linear time trend, and μ is the error term.

Table 2: Augmented Dickey-Fuller (ADF) test

Variables	Without trend		With trend	
	Level	1st Difference	Level	1st Difference
LNGDP	-6.848***	-3.156**	0.359	-8.199***
	(1)	(0)	(1)	(0)
Export	-1.152	-4.023***	-1.717	-5.827***
	(1)	(1)	(1)	(0)
TOT	-0.466	-3.014**	-2.677	-3.678**
	(3)	(3)	(1)	(2)

Notes: (i) figures within parentheses indicate lag length chosen by the Akaike Information Criterion (AIC); (ii) *, **, and *** denote rejection of the null hypothesis of unit root of the 10%, 5%, and 1% significance level respectively.

Following the empirical results of the Augmented Dickey- Fuller (ADF) test indicate that some variables are non-stationary at levels as the calculated T-statistics are less than the critical values but employing the first difference all the variables (such as: LNGDP, Export, and TOT) become stationary for both with and without trend.

Granger Causality test:

This study uses Granger causality test (Granger 1969) to investigate the causal relationship between exports and economic growth of Bangladesh.

$$\Delta LNGDP_t = \sum_{i=1}^{n} \beta_{11} LNGDP_{t-1} + \sum_{j=1}^{n} \beta_{12} Export_{t-j} + \varepsilon_{1t} \quad (4)$$

$$\Delta Export_t = \sum_{j=1}^{n} \beta_{21} Export_{t-1} + \sum_{i=1}^{n} \beta_{22} LNGDP_{t-i} + \varepsilon_{2t} \quad (5)$$

$$\Delta TOT_t = \sum_{j=1}^{n} \beta_{31} TOT_{t-1} + \sum_{i=1}^{n} \beta_{33} LNGDP_{t-i} + \varepsilon_{3t} \quad (6)$$

Where, i and j represent lag length.

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Table 3: Granger Causality Wald Test

Null Hypothesis	□^{2}-value	P > □^{2}	Direction of Causality
Export does not granger cause LNGDP	8.0722**	0.018	Export →LNGDP
LNGDP does not granger cause Export	0.09828	0.952	
TOT does not granger cause LNGDP	0.64114	0.726	LNGDP → TOT
LNGDP does not granger cause TOT	12.617***	0.002	
Export does not granger cause TOT	10.021***	0.007	Export ↔ TOT
TOT does not granger cause Export	6.1813**	0.045	

Notes: *, **, and *** denote rejection of the null hypothesis of unit root of the 10%, 5%, and 1% significance level respectively.

In the table 2, the probability values conclude that null hypothesis (i.e., Export does not granger cause LNGDP) is rejected as the calculate value is less than 0.05. On the other hand, the null hypothesis (i.e., LNGDP does not granger cause Export) cannot be rejected. Therefore, it indicates that Granger causality goes one way from Export to LNGDP which is called unidirectional causal relationship. Following this causality, the null hypothesis (i.e., TOT does not granger cause LNGDP) is rejected but the hypothesis (i.e., LNGDP does not granger cause TOT) is accepted with 1% significance level. There is also a unidirectional causal associationship from LNGDP to TOT. Moreover, there is a bidirectional causal relationship between Export and TOT.

Table 4. Hypotheses Assessment Summary

Null Hypothesis	Significance	Prob.	Conclusion
Export does not granger cause LNGDP	0.05	0.018	rejected
LNGDP does not granger cause Export	0.05	0.952	accepted
TOT does not granger cause LNGDP	0.05	0.726	accepted
LNGDP does not granger cause TOT	0.05	0.002	rejected
Export does not granger cause TOT	0.05	0.007	rejected
TOT does not granger cause Export	0.05	0.045	rejected

Conclusion and Recommendations

In this study, an effort was applied in order to investigate the relationship between exports and economic growth of Bangladesh through the analysis of granger causality test. The analysis of granger causality test suggests that there is a unidirectional causal effect from export and terms of trade to economic growth, while there is no causal relationship from economic growth to export

and terms and trade. Furthermore, the results of causality analysis suggest that there is a strong bilateral causal relationship between export and terms of trade. The policy implications from the empirical findings suggest that the government should concentrate on labor efficiency, export oriented industries, and easy rules and regulations for export fields to generate additional advantages for higher economic growth.

References

1. Abdulai, A., & Jacquet, P. (2002). Exports and economic growth: cointegration and causality evidence for Cote d'Ivoire. *African Development Review*, *14*(1), 1-17.
2. Afxentiou, P. C., & Serletis, A. (1992). Openness in the Canadian economy: 1870–1988. *Applied Economics*, *24*(11), 1191-1198.
3. Ahmed, H. A., & Uddin, M. G. S. (2009). Export, imports, remittance and growth in Bangladesh: An empirical analysis. *Trade and Development review*, *2*(2).
4. Ahmed, N. (2000). Export response to trade liberalization in Bangladesh: a cointegration analysis. *Applied Economics*, *32*(8), 1077-1084.
5. Al Mamun, K. A., & Nath*, H. K. (2005). Export-led growth in Bangladesh: a time series analysis. *Applied Economics Letters*, *12*(6), 361-364.
6. Bahmani-Oskooee, M. (1993). Export growth and economic growth: An application of cointegration and error-correction modeling. *The Journal of Developing Areas*, *27*(4), 535-542.
7. Bahmani-Oskooee, M., Mohtadi, H., & Shabsigh, G. (1991). Exports, growth and causality in LDCs: A re-examination. *Journal of Development Economics*, *36*(2), 405-415.
8. Balassa, B. (1978). Exports and economic growth: further evidence. *Journal of development Economics*, *5*(2), 181-189.
9. Balassa, B. (1985). Exports, policy choices, and economic growth in developing countries after the 1973 oil shock. *Journal of development economics*, *18*(1), 23-35.
10. Baldwin, R. E., Forslid, R., & Haaland, J. I. (1996). Investment creation and diversion in Europe. *World Economy*, *19*(6), 635-659.
11. Begum, S., & Shamsuddin, A. F. (1998). Exports and economic growth in Bangladesh. *The Journal of Development Studies*, *35*(1), 89-114.
12. Bhagwati, J., & Srinivasan, T. (1979). Trade policy and development, International Economic Policy: Theory and Evidence, R. Dornbusch y J. Frenkel.

13. Chenery, H. B., & Strout, A. M. (1966). Foreign Assistance and Economic Development. *The American Economic Review*, *56*(4), 679-733.
14. Chow, P. C. (1987). Causality between export growth and industrial development: empirial evidence from the NICs. *Journal of development Economics*, *26*(1), 55-63.
15. Dickey, D. A., & Fuller, W. A. (1981). Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica: journal of the Econometric Society*, 1057-1072.
16. Dodaro, S. (1991). Comparative advantage, trade and growth: export-led growth revisited. *World Development*, *19*(9), 1153-1165.
17. Edwards, S. (1992) "Trade Liberalization and Growth in Developing Countries" Journal of Development Economics, Vol. 39: 31-57.
18. Feder, G. (1983). On exports and economic growth. *Journal of development economics*, *12*(1-2), 59-73.
19. Ghirmay, T., Grabowski, R., & Sharma, S. C. (2001). Exports, investment, efficiency and economic growth in LDC: an empirical investigation. *Applied Economics*, *33*(6), 689-700.
20. Granger, C. W. (1969). Investigating causal relations by econometric models and cross-spectral methods. *Econometrica: Journal of the Econometric Society*, 424-438.
21. GROSSMAN, G. M., & HELPMAN, E. (1990). Comparative Advantage and Long-Run Growth. *The American Economic Review*, *80*(4), 796-815.
22. Hatemi-j, A. (2002). Export performance and economic growth nexus in Japan: a bootstrap approach. *Japan and the World Economy*, *14*(1), 25-33.
23. Helpman, E., & Krugman, P. R. (1985). *Market structure and foreign trade: Increasing returns, imperfect competition, and the international economy*. MIT press.
24. Jung, W. S., & Marshall, P. J. (1985). Exports, growth and causality in developing countries. *Journal of development economics*, *18*(1), 1-12.
25. Kaldor, N. (1967). Strategic Factors in Economic Development: Liberalization Attempts and Consequences. *Ballinger, Cambridge, MA*.
26. Krueger, A. O. (1980). Trade Policy as an Input to Development. *The American Economic Review*, *70*(2), 288-292.
27. Levin, A., & Raut, L. K. (1997). Complementarities between exports and human capital in economic growth: evidence from the semi-industrialized countries. *Economic development and cultural change*, *46*(1), 155-174.

28. Lopez, R., & Mundial, B. (1991). *How trade and macroeconomic policies affect economic growth and capital accumulation in developing countries* (No. 625). Trade Policy Division, Country Economics Department, The World Bank.
29. McKinnon, R. I. (1964). Foreign exchange constraints in economic development and efficient aid allocation. *The Economic Journal*, *74*(294), 388-409.
30. Michaely, M. (1977). Exports and growth: an empirical investigation. *Journal of development economics*, *4*(1), 49-53.
31. Ram, R. (1985). Exports and economic growth: Some additional evidence. *Economic Development and Cultural Change*, *33*(2), 415-425.
32. Rivera-Batiz, L. A., & Romer, P. M. (1991). Economic integration and endogenous growth. *The Quarterly Journal of Economics*, *106*(2), 531-555.
33. Rodrik, D. (1988). Closing the Technology Gap: Does Trade Liberalization Really Help?. *NBER Working Paper*, (w2654).
34. Segerstrom, P. S., Anant, T. C., & Dinopoulos, E. (1990). A Schumpeterian model of the product life cycle. *The American Economic Review*, 1077-1091.
35. Shan, J., & Sun, F. (1998). On the export-led growth hypothesis: the econometric evidence from China. *Applied Economics*, *30*(8), 1055-1065.
36. Shan, J., & Tian, G. G. (1998). Causality between exports and economic growth: the empirical evidence from Shanghai. *Australian Economic Papers*, *37*(2), 195-202.
37. Sharma, S. C., & Dhakal, D. (1994). Causal analyses between exports and economic growth in developing countries. *Applied Economics*, *26*(12), 1145-1157.
38. Tyler, W. G. (1981). Growth and export expansion in developing countries: Some empirical evidence. *Journal of development Economics*, *9*(1), 121-130.
39. Wernerheim, C. M. (2000). Cointegration and causality in the exports-GDP nexus: The post-war evidence for Canada. *Empirical Economics*, *25*(1), 111-125.
40. Yaghmaian, B. (1994). An empirical investigation of exports, development, and growth in developing countries: Challenging the neoclassical theory of export-led growth. *World Development*, *22*(12), 1977-1995.