Export and Economic Growth Nexus in Sri Lanka: A Time Series Analysis

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Introduction

The nature of the relationship between exports and national output growth has been one of the most debated in the recent past. However, still a little consensus in the theoretical and empirical literature in international trade and development economics can be seen. Central to this debate is the question of whether strong economic performance is export-led or growth-driven. This question is important because the determination of the causal pattern between export and growth has important implications for policy-makers' decisions about the appropriate growth and development strategies and policies to adopt. Aiming at a rapid economic growth, governments of the developing world have pursued export promotion strategies, with the belief that export might overcome natural limits and constraints to economic growth which exists in their domestic economies. Sri Lanka is not an exception to this case, which implemented export oriented strategies, particularly after opening up the economy in 1977.

The Export-Led Growth (ELG) hypothesis suggests that there is a strong positive linear relationship between a country's exports and economic growth. This interesting question has been the subject for a number of research works in the recent past. Many econometric analyses have been performed to identify the export causality towards economic growth with varying degree of results.

Objective

The main objective of this paper is to examine the relationship between export and economic growth in Sri Lanka during 1977-2014. The paper also attempts to identify the recent trends, developments and obstacles for exports in Sri Lanka.

Methodology

Annual time series data on gross domestic production, export, gross fixed capital formation, employment and inflation, which cover the 1977–2015 period, have been used in this study for the analysis. The data are taken from sources such as economic surveys of Sri Lanka, World Bank Reports, Central Bank Reports of Sri Lanka, UNCTAD (United Nations Conference on Trade and Development) Reports, and IMF reports. All data figures are expressed in rupees millions, unless otherwise percentage. In order to achieve the objective the following general version of time series model is used:

$$GDP_t = \beta_0 + \beta_1 EXPO_t + \beta_2 GFCF_t + \beta_3 EMP_t + \beta_4 INF_t + \mu_t \qquad (1)$$

Where dependent variable is gross domestic production (GDP) and the independent variables are export (EXPO), gross fixed capital formation (GFCF), employment (EMP) and inflation (INF). μ_t is the white noise error term. Log transformation of the model can be written as follows.

$$LGDP_t = \beta_0 + \beta_1 LEXPO_t + \beta_2 LGFCF_t + \beta_3 LEMP_t + \beta_4 LINF_t + \mu_t \quad (2)$$

First, we used ADF unit root test to check the stationarity property of the time series data and then Johansen Co-integration test was adopted to examine the number of co-integrating equation. Vector Error Correction model (VECM) was employed to investigate the short-run, long-run relationship as well as long-run equilibrium of the model. Finally, Granger casualty test was rented to identify the direction of the causality.

Results and Discussion

Augmented Dickey Fuller test was used to determine the order of integration of the variables in the model. The result of unit root test is presented in Table1.

Table 1: Augmented Dickey-Fuller test of unit root (1977-2015)

Variables	Level		1st Differences	
	Intercept	Trend and Intercept	Intercept	Trend and Intercept
	t - stat.	t -stat.	t - stat.	t - stat.
LGDP	-1.0986	-0.3148	-4.2280**	-4.6197**
LEXPO	-1.0888	-1.9916	-6.5917***	-6.5824***
LGFCC	-1.4426	-2.4658	-5.4013***	-5.4165***
LEMP	-1.4471	-2.5759	-4.7832***	-5.4029***
LINF	-4.0396**	-4.6448**		

Note: Significant levels - at 1% denotes *** , 5 % denotes ** and 10 % denotes * respectively.

The estimated results show that none of the variables are stationary at their level form except inflation whereas all the variables are stationary at their first difference with intercept only and with intercept and linear trend. Therefore, we used all the variables in the first difference with intercept in order to make the same order of the series. The long-run relationship between the variables can expressed the following estimated equation:

$$LGDP_t = 13.97 + 1.80 LEXPO_t + 0.36 LGFCF_t + 0.103 LEMP_t - 0.003 LINF_t$$

t stat. (17.8) (7.302) (8.601) (4.821) (-1.514)

Note: t-statistics are given in the parenthesis

The estimated results show that export, gross fixed capital formation and employment have positive and significant impact on GDP in the long-run whereas inflation does not have significant impact on GDP.

The long-run relationship between the variables indicates that there is Granger-causality in at least one direction which is determined by the F-statistic and the lagged error-correction term. In this model, R square is 0.99 (99 %), it shows that model is accurate. Out of the 100 % variation of the GDP growth, all these variables explains the 99 % of that variation with this model. Only other factors explain the 1% variation of the GDP variation.

Conclusion and Recommendation

In this study we empirically examined the validity of export-led hypothesis for Sri Lanka by testing causality between export and economic growth after including capital, labour and inflation. There are many studies that have examined the export–growth nexus, but the findings are questionable. The reasons for the inconsistencies mainly include sample bias, the selection of appropriate proxies for variables, methodological deficiencies and the quality of data. The findings of this article reveal that export which promotes economic growth, capital investment and employment in the short-run and long-run for Sri Lanka. We find that the reported results confirm the validity of export-led growth hypothesis for Sri Lanka. That is, openness indeed leads to higher economic growth.

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Table 2: Unrestricted Co-integration rank test (Maximum Eigenvalue)

No of co-integrating equation	Trade statistic	0.05 Critical value	P value
None*	89.566	69.818	0.0006
At most 1*	47.856	47.856	0.0125
At most 2*	29.797	29.797	0.0334
At most 3*	15.494	15.494	0.0646
At most 4	3.8414	3.8414	0.2061

Table 3: Trace Test

No of co-integration equation	Max-Eigen Value	0.05 Critical Value	Probability value
None*	35.77365	33.87687	0.0294
At most 1	22.49767	27.58434	0.1960
At most 2	16.54845	21.13162	0.1944
At most 3*	13.14805	14.26460	0.0745
At most 4	1.598952	3.841466	0.2061

Table 4: Granger Causality Test Results (1 Lags)

Direction of the Causality	Probability	Decision	Outcome
EXP →GDP	0.6594	Don't reject null	EXP does not causes GDP
GDP →EXP	0.0752*	Reject null	GDP causes EXP
EMP →GDP	0.1582	Don't reject null	EMP does not causes GDP
GDP →EMP	0.0005*	Reject null	GDP causes EMP
GFCF→GDP	0.4872	Don't reject null	GFCF does not causes GDP
GDP → GFCF	0.0328*	Reject null	GDP causes GFCF
EMP →EXP	0.6321	Don't reject null	EMP does not cause EXP
EXP→EMP	0.0114*	Reject null	EXP causes EMP
INFL→EXP	0.3398	Don't reject null	INFL does not cause EXP
EXP →INFL	0.0442*	Reject null	EXP causes INFL
GFCF→EXP	0.2292	Don't reject null	GFCF does not cause EXP
EXP→GFCF	0.0504*	Reject null	EXP cause GFCF