Trade and Development: The Asian Experience

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Introduction

One development issue that has attracted much attention in recent years is the potential impact of a country's exports on its economic growth performance.[1] Based primarily on simple regression analysis for a number of developing countries, several studies have reported results that are said to support the so-called export-led growth hypothesis. This hypothesis implies that export promotion (outward-oriented) policies are the effective development strategy in developing countries. Given this evidence, such reasoning has gained a great deal of influence in academic and public circles alike.

Recently, Ronald Findlay (1984) and Anne Krueger (1985), prominent figures in this field, have focused on the Asian experience in economic development. In particular, they examined the case for Hong Kong, Korea, Singapore, and Taiwan, which have sometimes been called the "Gang of Four." These four Asian countries have attained swift and sustained economic growth over the last two decades. Guided by some theoretical conjectures, Findlay and Krueger concluded that the remarkable economic growth of these four countries is the result of the promotion of their exports.

However, the conclusion of both authors does not rest on any empirical testing. Rather, it is based on pure and simple inspection of time series data of the growth rates of exports and real GDP in these countries. The purpose of this paper is to re-examine the above evidence and explore empirically the link between exports and economic growth in each of the four Asian countries.

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[1]Among others, see Emery (1967), Michaely (1977), Fajana (1979), Tyler (1981), and Feder (1982).

The Empirical Results

The export-led growth hypothesis discussed by Findlay (1984) and Krueger (1985) maintains that higher exports accelerate the economic growth process. More precisely, it is hypothesized that higher exports *cause* higher economic growth.[2] But the Findlay-Krueger hypothesis does not consider the possibility that simple correlations may not be an appropriate test of causality, since a high correlation found between exports and economic growth can be equally the result of economic growth causing exports rather than vice versa. A credible test of the validity of the export-led growth hypothesis should focus on the direction of causation between exports and economic growth in the case of the four Asian countries.[3]

Following the literature in this area, exports are defined in real terms (in percentage changes) to remove the effect of fluctuations in terms of trade. Economic growth is defined as the percentage change of real GDP. The period of estimation is similar to Findlay's (1960–82) and the data series are derived from the same source, *The World Development Reports.*

Of course, the concept of causality is rather difficult and one may need a lot of prior information to establish the exact causal ordering between a given set of economic variables. In the context of a bivariate time series, however, Clive Granger (1969) has given the concept of causality a testable implication. This Granger test has been widely used in the econometric literature (for a survey, see Pierce and Haugh 1977, and Feige and Pearce 1979). Briefly, in the bivariate time series context (X, Y), the Granger definition of causality states that X causes Y if current Y can be better predicted by past Y and X than by just past Y alone. In simplified language, the null hypothesis that growth in exports (x) causes economic growth (y) can be tested by regressing y on $x(t-1)$, $x(t-2), \ldots, x(t-n)$, $y(t-1)$, $y(t-2), \ldots, y(t-m)$ and testing the joint significance of the coefficients on the lagged values of x. The reverse hypothesis that y causes x can be tested by regressing x on lagged x and lagged y and then testing the joint significance of the coefficients on lagged y. In this Granger test, it is important to choose lag lengths (n,m) that whiten the residual series. It was found that a lag length of two years is adequate to yield whitenoise residuals as evident by the Geary nonparametric test. The Durbin-Watson test was not used because, in the presence of a lagged dependent vari-

[2]See Emery (1967), Krueger (1978), and Jung and Marshall (1985).

[3]A similar line of thought can be found in Jung and Marshall (1985). This paper differs from Jung and Marshall's in that it employs different time periods and examines the experience of Hong Kong and Singapore in addition to Korea and Taiwan.

able, the test is known to be biased. The Durbin h-statistic could not be computed owing to a large coefficient variance of the lagged dependent variable. The testing equations were estimated by the Beach-McKinnon maximum likelihood method to guard against any (albeit small) serial correlation.

The above Granger test was applied to investigate the direction of causation between exports and economic growth in each of the four Asian countries. It should, however, be noted at the outset that the Granger test has its drawbacks (see, for example, Zellner 1979) and these should be kept in mind when interpreting the results.

Table 1 reports the empirical results (the calculated F-statistics) of the Granger test. These results are unambiguous in rejecting the causality implication of the export-led growth hypothesis in each of the four Asian countries. Specifically, in Hong Kong, Korea, and Singapore, the Granger causality results suggest that neither exports cause economic growth nor economic growth causes exports. That is, the two variables are causally independent. Thus, any statistical correlation that may be found between those two variables in the case of Hong Kong, Korea, and Singapore is essentially spurious and is void of any causal implication. This finding should not be surprising, as the apparent statistical association between exports and economic growth referred to by Findlay and Krueger could be the result of both variables being related to a third or more variables (Pierce and Haugh 1977).

For Taiwan, the Granger results indicate that economic growth unidirectionally causes exports. The economic growth that Taiwan enjoyed during the estimation period (1960–82) appears to be an internal process perhaps due to domestic technological advancement and enhanced accumulation of human capital (Jung and Marshall 1985). Given the country's limited market capacity, Taiwan's producers were probably compelled to turn to foreign markets for exports.

TABLE 1

CALCULATED F-STATISTICS OF THE GRANGER CAUSALITY TEST

Null Hypothesis	Hong Kong	Korea	Singapore	Taiwan
Exports do not cause economic growth	0.19	0.28	0.21	0.44
Economic growth does not cause exports	0.86	0.78	0.77	10.54[a]

[a]Reject null hypothesis.

It seems, therefore, that economic growth (generated internally) has caused higher exports in Taiwan, contrary to the implication of the export-led growth hypothesis.[4]

Conclusion

The empirical results reported in this paper do not support the export-led growth hypothesis of Findlay and Krueger that the remarkable economic growth of Hong Kong, Korea, Singapore, and Taiwan is caused by export promotion policies. These results, based on the Granger causality tests, show no causal effects running from exports to economic growth in any of the four countries. For Hong Kong, Korea, and Singapore, the tests reveal that economic growth and exports are causally independent. The tests further suggest that, for Taiwan, causation runs from economic growth to exports, which is contrary to the implication of the export-led growth hypothesis.

These results support the general findings of Woo Jung and Peyton Marshall for many other developing countries. While keeping in mind the possible shortcomings of the Granger tests and the limitations of the sample size, the above results have at least two implications. First, the evidence does not support the common belief that export promotion is behind the remarkable growth performance in the four Asian countries. Of course, this does not necessarily imply that import-substitution (inward-oriented) policies are a more effective development strategy. Rather, the results merely suggest that the economic growth of the Gang of Four countries of Asia is not necessarily the result of export promotion. Second, simple inspection of economic time series proves unreliable (misleading) for drawing important policy conclusions.

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[4]See Browett (1985) for a lucid theoretical discussion of this and other related issues in the context of the Gang of Four.

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