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Economic Environments and Third World Arms Production

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In a previous paper [*International Organization*, **40**, 3 (1986)], we discussed the economic environment necessary to profile Latin American countries into arms producers and nonproducers. This environment was compared directly with earlier research which had suggested an alternative environment: scale economies, a large military and/or population, and a large national income. However, these "size" variables were unable to explain why some smaller countries (e.g. Ecuador, Peru and the Dominican Republic) were producers. Since we were able to correctly predict each country's classification as a producer or not, we concluded that our analysis supplemented this earlier work. This note reports our preliminary findings in which we attempt to extend the analysis to a larger sample of countries (49), including Latin America, 19 of which produced at least one major weapon in 1979–1980. An initial examination of each country showed large differences in the mean values of economic variables which depict balance of payments, debt and fiscal positions, defense spending, and other measures of economic performance such as gross national product (GNP). The producers tended to be larger, more open to foreign trade, with more external debt, more savings, and a more dynamic import and export performance. This cursory examination led us to conclude that no single factor can consistently predict whether a country is a producer or not.

A multiple-discriminant analysis was used to identify which factors or combination of factors correctly classifies countries as either producers or nonproducers. For all 49 countries, if total military expenditures were the only discriminating variable, 10 of the producers and two of the nonproducers were incorrectly classified. By adding public external borrowing and debt, and public external borrowing as a percent of exports, all nonproducers were correctly identified, but Ecuador, the Dominican Republic and Argentina were incorrectly predicted to be nonproducers. This result was unchanged after adding three additional variables to describe international reserves, growth in the government sector, and the current-account balance. Adding variables which other researchers had found useful (GNP, population and armed forces) did not improve the prediction with respect to these three countries.

Since the three countries were all from Latin America, a separate analysis was conducted excluding Latin America. For these countries, we found that arms production depended almost exclusively on the volume of public and publicly generated external capital. Overall export and import performance seemed to play a small role in the establishment of maintenance of an indigenous arms industry. The ability to finance existing current-account deficits through publicly guaranteed loans is critical. If these countries do not possess large

and recent (1982) inflows of external capital, they are incapable of justifying or sustaining the ongoing production of a major weapon—irrespective of their size or industrial sophistication. Military expenditures *per se* play no role whatsoever in the determination of whether these countries produce or not.

For Latin America, we found that these countries can be correctly classified using only three variables—1960–1970 import and export growth, and 1970 accumulated public external debt. It appears that Latin American arms production has come about as a result of import substitution policies and high levels of protectionism in the 1960s. The industries survived in the 1970s due to rapid increases in foreign exchange which stemmed from a rapid rate of export growth and increased public external indebtedness. The only new producers between 1970 and 1980 were Mexico, Ecuador and Venezuela— all of which were oil exporters with a relatively easy access to foreign exchange.

For both groups of countries, economic size, *per capita* income, military capabilities or associated economies of scale in production do not appear to be either a necessary or sufficient condition for indigenous production. Instead, access to foreign exchange—presumably required to import parts and technology—is the main factor in determining whether arms production will be established and maintained. The availability of foreign exchange however is a multidimensional factor which is not associated with one specific index such as export growth.

If our analysis is correct, the prospects for the emergence of any new producer in Latin America is poor, given the lackluster export performance of the nonproducers and the current high levels of external debt. The situation may be less clear for the rest of the world. If the major arms suppliers want to restrict any new indigenous production, denials of credits at past levels would seem to be the most efficient way to proceed.