

**Credit Where Credit Is Due:
Open Economy Industrial Policy and Export Diversification
in Latin America and the Caribbean**

Andrew Schrank
Department of Sociology
Yale University
140 Prospect Street
Box 208265
New Haven, CT 06520

Marcus J. Kurtz
Department of Political Science
Ohio State University
2140 Derby Hall
154 N. Oval Mall
Columbus, OH 43210

Do activist approaches to trade and integration offer developing countries a viable alternative to either free market liberalism or more traditional, mercantilist development regimes? We hope to answer the question by: first, distinguishing the “open economy industrial policies” in vogue today from either their “closed economy” predecessors—i.e., import-substituting industrialization (ISI)—or more orthodox, liberal approaches to trade and development policymaking; second, underscoring the superiority of the activist approach to outward orientation; and third, accounting for activism’s apparent success—and growing popularity—in the otherwise inauspicious Latin American and Caribbean context by identifying three distinct limits to rent-seeking in the open economy: infant exporter maturation; the costs of government support; and the likely reactions of foreign rivals. In particular, we argue that open economy industrial policies are *more* likely to provoke an export supply response than laissez faire and *less* likely to be captured by rent-seeking interests than ISI—and that they therefore constitute an appropriate policy alternative in the current developing country context.

Introduction

A substantial and growing body of literature heralds the demise of neoliberalism—and the rebirth of industrial policy—in Latin America and the Caribbean. For example, John Sheehan draws a distinction between the “standard” approach to free market economic reform and the “competitive” strategy adopted by Chile in the late 1980s and early 1990s. While the former approach is designed to maximize allocative efficiency, and therefore “most fully embodies the logic of eliminating state intervention,” the latter “aims at building up the capacity of the country’s modern sectors to compete in open international markets,” and thereby offers a potentially powerful alternative to the regnant neoclassical orthodoxy (Sheehan 1997, p. 10). Nor is Chile atypical. Carol Wise believes that elements of the competitive strategy are at work in contemporary Brazil, Colombia, and Mexico (Wise 1999). The Inter-American Development Bank (IDB) admits that a new breed of industrial policies has taken hold in much of Latin America and the Caribbean (IDB 2001, esp. Ch. 17). And James Mittleman finds that the region’s public officials are at long last beginning to re-regulate many of the activities that they had deregulated in the 1980s and early 1990s (Mittelman 1999, p. 13; see also Saul 2004).

Observers part company, however, over the long-term implications of neoliberalism’s apparent demise. While Latin American and Caribbean policymakers tend to portray the competitive strategy as a valuable alternative to the by now embattled Washington Consensus (see, e.g., Seidman 2004), their critics hold that “a ‘right wing deviation’ in trade policy that discriminates in favor of exports is no better than the equivalent ‘left wing deviation’ that discriminates in favor of import substitution” (Findlay 1981, p. 31)—and therefore worry that “incremental government handouts in the name of industrial policy” will ultimately aggravate the “low productivity and lack of competitiveness that dog the region” (Economist 2003) or even presage a return to the “dark days of the 1970s and ‘80s when economic and political chaos were the norm” (Ernsberger and Johnson 2003, p. 40). Who is correct? Is industrial policy, in the evocative words of Howard Pack, a “growth elixir” or a “slow-acting poison” (Pack 2000, p. 47)? We hope to answer the question by: first, distinguishing the open economy industrial policies in vogue today from either their closed economy predecessors—that is, import-substituting industrialization (ISI) and, in particular, tariffs and quotas—or more traditional approaches to international integration (see Ramos 1997; Kosacoff and Ramos 1999; Melo 2001); second, underscoring the superiority of the activist approach to

integration and outward orientation; and third, accounting for activism's apparent success—and growing popularity—in the otherwise inauspicious Latin American and Caribbean context by examining the limits to rent-seeking in the open economy.

We utilize both quantitative, cross-national data and qualitative, case study materials to achieve our goals. The quantitative data divide the region's open economy industrial policies into their principal components—fiscal incentives and credit subsidies—and thereby provide a number of particularly fine-grained insights into their consequences (Melo 2001; see also Bradford and Branson 1987, pp. 21-2). First, they suggest that credit subsidies have played an indispensable role in the growth of exports from the leading Latin American and Caribbean exporters over the course of the past decade. By insulating their firms from the ingrained imperfections of their underdeveloped credit markets, activist governments—and by way of extension their exporters—have outperformed their *laissez faire* rivals more or less consistently since 1995. Second, they suggest that neither international economic integration nor competitive rent-seeking need constitute an insurmountable obstacle to the successful use of industrial policy in the twenty-first century. After all, Latin American policy makers who have taken an active approach to export promotion have not only adapted to the pressures imposed by the World Trade Organization (WTO) but have in large measure avoided the temptations of rent-seeking and crony capitalism and have therefore—contra the conventional wisdom—engendered substantively and statistically significant increases in their respective export supply responses over time.

Why would open economy industrial policies work in the “constrained” Latin American and Caribbean environment (Johnson 2003, p. 2)? After all, Latin America's closed economy industrial policies have historically—if not invariably—been associated with inefficiency, rent-seeking, and crisis. We hope to account for the unique achievements of open economy industrial policy by examining three distinct limits to competitive rent-seeking in three different Latin American countries: first, the process of infant exporter—as opposed to infant industry—maturation in Chile; second, the politically concentrated and economically burdensome costs of the subsidies in the Dominican Republic; and third, the adverse reaction of the international community in Brazil. The three country cases are used not to test our theory *per se* but to illustrate an important and heretofore overlooked distinction between the closed economy industrial policies which have traditionally dominated Latin American political economies and the open

economy industrial policies which have gained ground over the course of the past decade. While the tariffs and quotas which underpinned the region's closed-economy industrial policies were costly to abandon and easy to retain, and therefore reproduced themselves over time, the fiscal incentives and credit subventions which underpin today's open-economy industrial policies are costly to retain and easy to abandon, and therefore tend to be temporary. Neither strategy is cost-free, in other words, but their costs differ markedly in both origins and implications—a point which the extant literature all but completely ignores and which should redirect the debate over alternatives to neoliberalism away from the question of their economic desirability and toward the question of their political feasibility.¹

We have divided the paper into four principal sections. The first reviews the debate over the role of industrial policy in the contemporary developing world. The second introduces our quantitative data, describes our modeling strategy, and presents our statistical results. The third illustrates the limits to competitive rent seeking in Chile, the Dominican Republic, and Brazil. And the fourth discusses the distinct advantages of—and limits to—industrial policy in the open economy and offers suggestions for future research.

Intellectual Context

Orthodox analysts and their critics part company over the roots of export-led growth in the less developed countries (LDCs). While mainstream analysts treat price competition as the *sine qua non* of comparative advantage, and therefore advocate “getting the prices right” in the LDCs (Krueger 1974, 1990 Bhagwati 1986; Lal and Rajapatirana 1987; Johnson 2003), their critics underscore the limits to the free market model, and therefore call for an active industrial policy (Wade 1990; Chang 1994; Amsden 2001). Who is correct? A number of analysts have characterized the 1993 publication of the World Bank's *East Asian Miracle* report as a turning point in the debate (see World Bank 1993), for the international financial institutions (IFIs) no longer deny that “Japan, Korea, Singapore, and Taiwan benefited from careful policy interventions” (Page 1994, p. 619) and their current approach to development policymaking is therefore “market friendly” rather than “market maniacal.”

¹ See Chibber (2003) for a valuable exception.

Nevertheless, the market friendly approach to development policymaking rests upon a profound, and ultimately self-defeating, contradiction. While higher-order comparative advantages, i.e., the comparative advantages that gave birth to the East Asian miracle, are portrayed as atypical, and are therefore attributed to “government-private sector cooperation” (World Bank 1993, p. 13), their lower-order counterparts are treated as natural, and are therefore attributed to market liberalization.² The distinction is of the utmost importance, for it is almost invariably used to defend the traditional, neoclassical development orthodoxy against heterodox or radical challenges. In fact, the IFIs no longer deny the potential efficacy of the “institutionally demanding strategies” (Page 1994, p. 624) utilized by the East Asian newly industrializing countries (NICs) in the 1970s and 1980s. They merely question the East Asian model’s social and political viability in the remainder of the developing world and offer market liberalization as a “second-best” alternative (cf. Kosacoff and Ramos 1999; Pack 2000).

Nor are the IFIs alone. A substantial and growing body of literature suggests that industrial policies are likely to be captured, compromised, and perhaps even rendered counterproductive by special interests and rent-seekers in impoverished countries (Krueger 1974, 1990; Auty 1995; Ades and Di Tella 1997, 2000; Noland and Pack 2001; Dutt 2002). For example, Richard Auty describes “policy capture” as the “Achilles heel of industry policy,” and holds that “subsidies for infant industry tend to breed nationalistic, ‘go-it-alone’ strategies for the acquisition of technology which are then fiercely defended by workers, executives and technocrats alike. If such lobbies are successful in extending infant-industry support,” he concludes, “they retard sectoral maturation and set precedents for further undesirable state intervention” (Auty 1995, pp. 214-15; see also Bhagwati 1986, p. 101).

Auty’s argument is anachronistic, however, for the debt crisis of the 1980s gave way to the “dramatic repudiation” of infant industry protection in the 1990s (Rodrik 1997, p. 412) and the policies he is attacking are therefore no longer in vogue. While developing country governments continue to pursue industrial policy broadly defined, their current efforts are more subtle than their predecessors and are not necessarily subject to capture, corruption, and compromise: On the one hand, they use more precise policy instruments like tax breaks, tariff exemptions, and credit subventions which are designed to facilitate—

² According to Michael Porter, the higher-order comparative advantages include skilled labor, technology, and the ability to undertake design, innovation, and marketing; low wages, on the other hand, are the very archetype of a lower-order comparative advantage (Porter 1990).

rather than suppress—international competition. And, on the other hand, they condition access to the aforementioned incentives on the conquest of foreign markets rather than the domination of local ones (Melo 2001).

Why is the distinction overlooked? We believe that the extant literature tends to place development regimes on a continuum from inward-oriented/statist to outward-oriented/liberal and to thereby conflate two distinct questions: Is the economy itself inward- or outward-oriented? And is the trade and investment regime neutral or non-neutral vis-à-vis particular sectors and activities? In other words, the existing literature tends to assume that inward-oriented development regimes demand sectoral policy and that outward-oriented development regimes preclude sectoral policy. Neither claim holds water, however, for sectoral policies (as well as their neutral rivals) are compatible with both inward-and outward-oriented regimes. While a uniform revenue tariff will tend to create a neutral, inward-oriented regime, a pro-export bias will tend to create a non-neutral, outward oriented regime. A more attractive formulation would therefore disaggregate development regimes along two distinct dimensions: first, the degree of international integration; and second, the opportunity for sectoral policy.

PLEASE INSERT FIGURE 1 APPROXIMATELY HERE

Figure 1 offers a stylized representation of the four possible outcomes.³ The southwestern and northeastern quadrants include the well-known inward-oriented/statist and outward-oriented/liberal options of import-substituting industrialization and classical liberalism respectively. While the former employs non-uniform tariffs and import controls (i.e., high rates of effective protection) to defend and nourish import-competing infant industry, the latter is designed to let market actors reach their own levels—whoever and whatever they may be. The northwestern and southeastern quadrants include the revenue-maximizing Leviathan and open economy industrial policy respectively. While import-competing industries are largely unintended by-products of high revenue tariffs under Leviathan (see, e.g., the literature on the “incidental protection” afforded by revenue tariffs in the Confederate States of America [Carlander and Majewski 2003; as well as Bense 1990, pp. 173-6]), nontraditional exports are very much deliberate products of precise policy instruments like tax breaks, duty drawbacks, and subsidized credit arrangements under open economy industrial policies.

³ See Ramos (1997, p. 34) for a slightly different representation.

Which approach is superior? We would expect open economy industrial policies to outperform their closed economy predecessors for at least two reasons. First, by restricting incentives and subsidies to export-oriented producers, developing country governments not only force their firms to compete in world markets but simultaneously offer their bureaucrats a more or less “easy to monitor” performance standard that was unavailable to their inward-oriented predecessors (see Wade 1993, p. 158). Exporters capture the subsidy, according to Alice Amsden, and import-competing firms do not (Amsden 2001, pp. 148-53). And, second, export-oriented production is believed to induce a wide array of positive externalities including, perhaps most importantly, information and technology transfer (Helleiner 1995; Clerides, Lachs, and Tybout 1998; Pack and Saggi 1999; Macario 2000).

Nevertheless, the closed economy is for the most part a thing of the past and today’s developing countries are therefore forced to choose not between openness and closure but between neutrality and non-neutrality. Therefore, the western quadrants are primarily of historical interest and the relevant question is whether the aforementioned export incentives offer their recipients an advantage over classical liberalism. Do they, in fact, provoke a significant export supply response? The authors of individual case studies answer in the affirmative. For example, Sean Ó Riain attributes the Irish software industry’s recent export success to the investment promotion efforts of Ireland’s “flexible developmental state” (or FDS; see Ó Riain 2000). Jean Grugel traces Costa Rica’s diversification to a policy of “strategic liberalization” combined with “export promotion” (Grugel 1998, p. 229). And Greg Noble chronicles the Taiwanese government’s effort “to take an active role in developing high technology industries without resorting to the extreme statist approaches adopted in some neighboring countries” (Noble 2000, p. 4).

Indeed, Ó Riain goes so far as to portray the FDS as a potentially replicable twenty-first century alternative to the East Asian “bureaucratic developmental state” (BDS) of yesteryear. Is he correct? We hope to answer the question by examining the relationship between two of the principal policy instruments available to flexible developmental states—tax and tariff incentives and credit subventions—and contemporary patterns of export growth in Latin America.

Cross-National Quantitative Analysis

Robert Wade holds that theories of industrial policy require “systematic testing” on “middle-N samples” of developing countries (Wade 2003, p. 8), and Latin America and the Caribbean offer a fortuitous opportunity to follow his advice. On the one hand, they play host to a number of different states with a variety of different trade and investment regimes and therefore offer a wide range of variation on the principal independent variable: from orthodox liberalism to comprehensive industrial policy. On the other hand, they feature a tradition of populism, rent-seeking, and corruption and are therefore—unlike East Asia—more or less typical developing regions. In fact, most Latin American and Caribbean countries appear to be poorly governed for their respective levels of income (Kaufmann and Kraay 2002, pp. 172-3) and they therefore offer a conservative test of the efficacy of industrial policy in the 1990s. If export incentives work in Latin America, we argue, they will in all likelihood work in much of the rest of the developing world.

Does open economy industrial policy work? While analysts who hope to answer the question have until recently been stymied by the absence of reliable, cross-national data on the extent and scope of export incentives in the developing world, Alberto Melo of the Interamerican Development Bank (IDB) has collected data on two dimensions of industrial policy for 26 countries in Latin America and the Caribbean: fiscal incentives; and credit subventions (Melo 2001). Both types of incentive are designed to guarantee exporters—and only exporters—access to critical material and non-material inputs and services at border prices or better. Fiscal incentives are designed to insulate exporters from otherwise burdensome taxes and tariffs and include: (1) tax rebates; (2) duty drawbacks; (3) temporary admissions schemes; (4) import duty exemptions; (5) internal tax holidays; and (6) export processing zones (EPZs).⁴ Credit subventions are designed to insulate exporters from the well-known inadequacies of the domestic credit market (Ramos 1997, p. 35) and include loans: for (1) working capital; (2) discrete capital goods; (3) project finance; (4) export credit insurance; (5) overseas marketing activities; and (6) export finance for buyers.⁵ By assigning

⁴ The tax rebates and holidays mean that exporters need not pass the costs of domestic taxes onto international customers. The drawbacks, duty exemptions, and temporary admissions schemes offer exporters access to foreign inputs at border prices. And the EPZs offer exporters who agree to locate in geographically circumscribed zones access to a wide array of tax and tariff holidays.

⁵ The Inter-American Development Bank forcefully states that “scarcity of credit is the principal problem faced by firms in Latin America. This is not surprising, given that the supply of private credit as a proportion of GDP is only a third that of the developed countries of Southeast Asia” (IDB 2001, p. 3).

each component of each dimension a value of 1, we can create a straightforward—albeit admittedly blunt—additive index of the intensity of each individual country’s promotional effort as well as subindices for each type of incentive.

Table 1 offers summary statistics for the “overall index” of promotional intensity as well as more precise indices of “fiscal promotion” and “credit promotion.”

PLEASE INSERT TABLE 1 APPROXIMATELY HERE

Mexico is the leading country on each dimension. A number of Central and South American countries—i.e., Argentina, Bolivia, Brazil, El Salvador, Guatemala, Peru, Uruguay, and Venezuela—are tied with Mexico on fiscal incentives. And Guyana and Suriname are by far the laggards with no incentives of any sort to speak of.

Fiscal Incentives and Credit Subsidies

Are Guyana and Suriname paying a price for their failure to embrace open economy industrial policies?

We can begin to assess the effects of the policies in question by regressing the average annual rate of export growth from 1995 to 2001 on the export incentives summarized in Table 1 and a series of control variables. By examining the average annual rate of export growth from 1995 to 2001 rather than inherently volatile short term growth rates, we hope to produce a relatively reliable estimate of the efficacy of industrial policy in the open economy environment. The 1995 base year is not chosen arbitrarily, however, for Melo holds that “the adoption of the new industrial policies was almost simultaneous in a significant number of countries and can be roughly dated to the three-year period 1994-1996” (Melo 2001, p. 5). Consequently, the variables on the right hand side of the equation are genuinely exogenous to export growth rates over the next six years.⁶

Cross-national tests of the efficacy of industrial policy frequently include a host of control variables. We restrict our initial control variables to gross domestic product (GDP) per capita—a simple proxy for initially varying socio-economic conditions—for three reasons. First, we are working with a small sample and are therefore suffering from a paucity of degrees of freedom under the best of circumstances. Second, our sample is limited to Latin American and Caribbean countries and we are

⁶ See Srinivasan and Bhagwati (1999, pp. 35-6) for a discussion of endogeneity in cross-national growth models.

therefore less worried—albeit by no means unworried—about unmeasured country-level heterogeneity than we would be if we were using a worldwide sample. And, third, we are examining export growth rates rather than the overall economic growth rates examined by most observers of industrial policy and we expect the former to be affected by a smaller number of potentially omitted factors than the latter.⁷

PLEASE INSERT TABLE 2 APPROXIMATELY HERE

Table 2 presents the results of three simple models of export growth.⁸ Model I treats export growth as a function of the initial level of GDP per capita and the overall index of export promotion. The coefficient for the export promotion index is both statistically and substantively significant. In fact, the addition of an extra promotional measure will generate more than an additional percentage point of annual export growth net of initial conditions. And movement from the low to the high end of the policy index will generate an increase of more than ten percentage points in the average annual rate of export growth.

Which components of the index are most important? We begin to answer the question by regressing the average rate of export growth on GDP per capita and each of the different dimensions of export promotion: fiscal incentives and credit subventions. The results are reported in Models II and III. While the fiscal incentives would appear to have a positive relationship to export growth, they are neither statistically nor substantively significant—perhaps because they are by now rather commonplace and therefore do not offer any particular country a unique competitive advantage. Fully twenty-four of the twenty-six countries included in Melo’s original sample offer exporters some sort of fiscal incentive. And the distribution of the fiscal incentive index is skewed toward the high end.⁹

Credit subventions are not only less common but tend to yield more powerful statistical results (see Model III). A one unit increase in the credit index, for example, produces significantly more export growth than a parallel increase in the overall index incorporated into Model I. Indeed, the results are both

⁷ For example, most cross-country growth regressions include a control for the overall level of investment; however, aggregate investment—as distinct from the all but unmeasurable level of investment in export-oriented sectors—is not an obvious source of export growth.

⁸ The models are estimated using weighted least squares. We weight the observations by aggregate gross domestic product in 1995 to correct for heteroskedasticity and, in particular, to account for the fact that the volatility of export growth is in all likelihood proportional to the overall size of the economy. After all, the opening (or closure) of a single substantial firm can have dramatic effects on export growth rates in very small countries; in large countries, however, changes in export performance are likely to be much less sudden or dramatic. Regression coefficients are placed above their standard errors; diagnostic statistics are available from the authors upon request.

⁹ Note that prevalence need not imply unimportance—or that the removal of fiscal incentives would not have deleterious consequences for export performance. Unfortunately, however, we are unable to assess the full impact of fiscal incentives without data from an earlier period (i.e., before the fiscal incentives had been largely universalized) with which to run a parallel analysis.

substantively and statistically significant and they are arguably rendered more—rather than less—credible by the comparatively small size of our sample (since large samples tend to depress standard errors).

Our findings are not necessarily surprising. On the contrary, they are broadly consistent with the qualitative literature on export-led growth in the developing world. For example, Alice Amsden holds that long-term credit subventions are the defining characteristic of the developmental state (Amsden 2001, pp. 148-53); Carla Macario expects export finance to grow more valuable “as export subsidies are phased out to comply with the Uruguay Round Agreements” (Macario 2000a, p. 16); and a further disaggregation of the credit index would appear to support their claims. We find, for instance, that an indicator variable for subsidized project finance—a rare incentive indeed ($n = 3$)—yields an estimated 6 percentage point increase in the average annual rate of export growth; subsidies for the purchase of capital goods ($n = 10$) produce a corresponding 3 percentage point increase in the rate of export growth; and government loans for marketing activities ($n = 6$) are associated with a 4.5 percentage point increase in the growth rate net of GDP per capita ($p < .05$ in all cases; estimated as in Table 2, results available from authors upon request).

Industrial Policy, Corruption, and Rent-seeking

While export incentives are known to work in theory, they are expected to be compromised by corruption, capture, and rent-seeking in practice—at least outside of East Asia (see, e.g., Lal and Rajapatirana 1987, p. 208; Hojman 1994, p. 205; Rodrik 1997, p. 427; Pack 2000, p. 64; as well as the World Bank 1993). Our results would appear to gainsay the conventional wisdom, however, for they offer *prima facie* evidence that performance standards are in fact imposed upon subsidy recipients in Latin America. Who is correct? Are the export incentives we have described really prone to corruption and capture? And, if so, what are the likely consequences? We begin to answer both questions by exploring the simple correlations between credit incentives and a popular—if by no means ideal—measure of the government’s ability to control corruption designed by Daniel Kaufmann and Art Kraay at the World Bank (Kaufmann, Kraay, and Mastruzzi 2003). The control of corruption index is an aggregate measure derived from a variety of different surveys of experts and businesspersons; it tends to range in value from -2.5 to 2.5 (with higher scores indicating less corruption); and it is strongly correlated with neither the index of credit subsidies

($r_{\text{corr, credit}} = 0.050$), the index of fiscal incentives ($r_{\text{corr, fiscal}} = -0.235$), nor the overall index of export promotion ($r_{\text{corr, overall}} = -0.065$).¹⁰

PLEASE INSERT TABLE 3 APPROXIMATELY HERE

A second question, however, concerns the efficacy of industrial policy in less than transparent environments. Does industrial policy require public sector probity to be effective? We hope to answer the question by including Kaufmann and Kraay's measure of corruption control as a control variable and interaction term in our export regressions (see Table 3). Model IV simply adds the corruption control variable to Model III from Table 1 in order to control for the effects of the institutional context. While the corruption control variable is appropriately signed, it is statistically insignificant and does nothing to compromise the effect of the credit index.

We next ask whether the efficacy of industrial policy is contingent on the probity of the public sector by including an interaction term—corruption control multiplied by the credit index—in Model V. If credit subventions work better in transparent environments, the interaction term should be positively signed and statistically significant. However, the interaction is neither appropriately signed nor statistically significant; the bulk of the variation is accounted for by the credit subsidy variable alone; and we therefore question whether the benefits of an open economy industrial policy are contingent upon good governance.

Nevertheless, the limited size of our sample suggests a cautious interpretation of the results and we therefore conclude by dropping the per capita GDP control variable—which is highly correlated with corruption control in any event ($r = 0.70$)—in order to save scarce degrees of freedom (see Model VI). The results are substantively unchanged. Only the credit index meaningfully affects the average annual rate of export growth.

Do the results presented in Tables 2 and 3 reflect enduring patterns or the idiosyncratic achievements of a few countries? Are they compromised by the inherently limited size of our sample or will they prove more general as time goes on? We have already addressed the issue of spuriousness by focusing on medium-run average annual export growth rates—which should smooth out at least some of the volatility characteristic of year-to-year growth rates. We can assess the validity of our claims more

¹⁰ The corruption control index is obtained from Kaufmann et al. (2003), and values from 1996 or the next closest year in the dataset are employed. The “corruption perceptions index” created by Transparency International yields broadly similar results but forces us to drop most of the English speaking countries in the Caribbean due to lack of data. Neither index is ideal, of course, but their consistent results are at least suggestive.

directly however, by examining the relationship between fiscal and credit incentives and two different measures of export performance: the average annual rate of nontraditional export (NTX) growth; and the relative performance of nontraditional versus overall exports between 1995 and 2001 (see Table 4).¹¹

PLEASE INSERT TABLE 4 APPROXIMATELY HERE

Our alternative measures of economic performance offer at least two advantages. First, they allow us to cross-validate our findings with different data. And, second, they allow us to examine some of the causal mechanisms which allegedly link industrial policy to export performance more directly. Export subsidies are not typically utilized to enhance the viability of well-established, natural resource export sectors, after all, but to call forth nontraditional exports like manufactured goods (Melo 2001, p. 16; see also Sheehan 1997, p. 10; Chibber 2003, p. 35). If credit subsidies really account for the variation identified in Tables 2 and 3, therefore, they should have at least as large an effect on both the average annual rate of nontraditional export growth and the difference between NTX and traditional exports as they do on the more general measure of export growth used in the first round of estimates.

We examine the relationship between open economy industrial policy and NTX growth in Models VII-X in Table 4. The results of the first three models are broadly consistent with the results of the three models displayed in Table 2 and thereby underscore the importance of government export promotion efforts. While fiscal policies would appear to be relatively unimportant, the average annual rate of NTX growth is invariably a positive and significant function of the level of credit subsidy.¹² In fact, the new models not only replicate the findings of the models presented in Table 2 but yield substantially larger effect estimates—implying more than a full percentage point more NTX growth than overall export growth per year for each unit change in the credit policy index. Given that the export incentives in question are indeed targeted toward NTX sectors, as they almost invariably are (Melo 2001, p. 16), the results are particularly convincing.

¹¹ We classified all exports outside of the natural resource sectors (fuels, minerals, or raw agricultural products) as “non-traditional.” While non-natural resource exports are not necessarily coterminous with nontraditional exports, they are at least a reasonable proxy. Large scale manufactured exports have only recently gained import in Latin America, while natural resources have dominated the region’s export profile from the era of Spanish colonialism.

¹² Models VII-IX were also re-estimated with Kaufmann et al.’s (2003) corruption control measure included as a control. The results were unaffected—credit subvention and the overall industrial policy index remain robustly related to nontraditional export performance.

Finally, Model X treats the difference between the nontraditional and traditional export growth rates as the dependent variable. It reveals a relatively strong relationship between credit subvention and the NTX sector's ability to outperform the traditional export sector. Thus, Model X not only underscores the validity of our earlier findings but simultaneously implies that they are driven neither by country-specific omitted variables—since country-specific factor costs and the like would presumably affect traditional as well as nontraditional exports—nor by overall demand conditions which would presumably affect both traditional and nontraditional exports as well.

Comparative Analysis

The standard critique of import-substituting industrialization is by now well known. ISI, it is argued, generates static and dynamic inefficiencies and thereby provokes an inevitable—and in the absence of thoroughgoing market reform irremediable—economic crisis. In a sense, the problem is political: While tariffs and import controls are designed to foster the growth of infant industries, their offspring tend to prefer the comfort of mother's bosom to the harsh realities of the international economy—and therefore tend to grow into troubled, costly, and demanding adolescents. They are economically feeble. They are politically powerful. And they are therefore likely to lobby the state for additional support rather than to specialize, invest, and accumulate (see, e.g., Hirschman 1968; Krueger 1974, 1990; Bell, Ross-Larson, and Westphal 1984).¹³

The open economy industrial policies we have described are distinct, however, for they tend to draw producers into global—rather than local—markets and to thereby foster internationally competitive production. Take, for example, fiscal incentives like export processing zones, duty drawbacks, and temporary admissions schemes. What do they have in common? While tariffs and import controls keep foreign goods out of the hands of local consumers, and thereby insulate local producers from the risks and rewards of international competition, fiscal incentives bring foreign goods—and, in particular, foreign capital and intermediate goods—into the hands of local producers, and thereby insulate potential and actual exporters from the imperfections imposed by either ISI or a hypothesized free market alternative. Publicly

¹³ The literature on rent-seeking under ISI actually obscures the important difference between “working the system” and “corruption.” See Chibber (2004, p. 190) for the distinction. We are less concerned with the precise nature of rent-seeking under ISI, however, than with the prospects for rent-seeking under open-economy industrial policies.

subsidized credit has a similar rationale. It insulates infant exporters from the myriad imperfections which are common to Latin American and Caribbean credit markets: high interest rates, macroeconomic volatility, and the rationing of credit (Ramos 1997, p. 35; IDB 2001, p. 3). If fiscal incentives make imported inputs available at border prices, in other words, credit subventions make financial inputs available at border prices. Both types of measures encourage, rather than suppress, international competition.

Perhaps the best way to understand the differences between ISI and the open economy industrial policies which are increasingly in vogue in Latin America and the Caribbean is to consider the prospects for—and implications of—rent-seeking under each regime. While infant industries are vulnerable to the withdrawal of tariffs and import controls in theory, they are all but untouchable in practice. Thus, Ha-Joon Chang, a well-known proponent of industrial policy, admits “that, once implemented, state-created rents may be difficult to withdraw” (1984, p. 121). And Marcus Noland and Howard Pack go even farther: “There are no instances in the literature with which we are familiar,” they write, “of a government’s actually reducing protection to sectors that did not perform well” (2001, pp. 46-7).

Open economy industrial policies face the opposite problem, however, for they are difficult to sustain rather than to withdraw. Consider, for example, the Certificado de Abono Tributario (CAT), a negotiable tax credit available to Costa Rican nontraditional exporters between 1972 and 1999. While the CATs engendered a massive export supply response, they were extraordinarily costly to the government. They generated between \$US1.35 and \$US2.05 worth of additional exports per dollar’s worth of subsidy (Hoffmaister 1992; Agosin, Gitli, and Vargas 1996). They were worth between 15 and 20 percent of the free-on-board value of the exports in question. And they therefore consumed upwards of 5 percent of the central government’s annual expenditures (Clark 1995, p. 196). Consequently, President Oscar Arias and his successor, Rafael Calderón, phased the subsidies out over the course of the 1990s (Clark 1995; Monge 1998).

Costa Rica’s experience contravenes the conventional portrait of industrial policy in at least two ways. First, the Costa Rican government has—contra Noland, Park, and the conventional wisdom—withdrawn a subsidy. New CATs have not been issued since 1992 and preexisting guarantees have gradually been abandoned. And, second, Costa Rica’s nontraditional exporters have nonetheless survived and prospered (Clark 1995; Kovaleski 1998). While nontraditional exports like flowers, pineapples,

textiles, and more sophisticated manufactured goods composed no more than 40 percent of Costa Rican exports in 1987, they were responsible for almost two-thirds of the country's exports a decade later—the phase-out of the CATs notwithstanding (Kovaleski 1998).

What accounts for the success of Costa Rica's open economy industrial policy? And why was it relatively immune from capture? The answer to the latter question derives from the answer to the former. After all, tariffs and quotas tend to stunt rather than facilitate the growth and maturation of infant industries (Bell et al. 1984) and their beneficiaries therefore come to depend upon their continued existence not simply for surplus profits but for their very survival. Export incentives are likely to facilitate rather than stunt the growth of infant exporters, however, and their beneficiaries are therefore likely to grow independent of public support over time. Costa Rica's experience is illustrative. By the mid-1990s, according to Mary Clark, the country's nontraditional exporters had come to accept the fact that the CATS would be eliminated and to "prepare to do business without the subsidy" (Clark 1995, p. 200).

The process of infant exporter maturation is not the only limit to rent-seeking under an open economy industrial policy, however, for export incentives tend to generate at least two distinct sources of political opposition over time. On the one hand, they tend to be more costly than tariffs and quotas, and they therefore tend to alienate their erstwhile sponsors in the increasingly beleaguered public sector. And on the other hand, they are likely to be more propulsive than tariffs and quotas, and they therefore tend to provoke opposition from firms and governments overseas (see, e.g., Fox 1997, p. 51 on the US response to Costa Rica's subsidies).

Furthermore, and perhaps more importantly, the two sources of opposition can be expected to grow over time, for the costs and achievements of industrial policy are directly proportional to the number of firms and entrepreneurs exploiting the policy. While export incentives necessarily impose costs upon either their sponsors or their competitors, their costs are ultimately a function of their popularity, and they therefore tend to be self-limiting in practice. Note the contrast with closed economy industrial policies in Table 5.

PLEASE INSERT TABLE 5 APPROXIMATELY HERE

The table underscores the threefold distinction between open- and closed economy industrial policies.

First, producers who take advantage of open economy industrial policies—unlike their import-competing

predecessors—have both an incentive and the ability to comply with their performance standards. They confront northern tastes, technologies, price, quality, and delivery standards on a daily basis. They take advantage of economies of scale. They learn by exporting. And they therefore mature into competitive enterprises—in which case they tend to grow out of their subsidies over time—or go bankrupt and leave the field of play.¹⁴ Second, public officials who adopt open economy industrial policies are forced to impose performance standards. They sponsor infant exporters. They call forth a broader export supply response. And they eventually find themselves short of revenue and unable to make good upon their obligations to their industrial offspring. A number of developing countries including not only Costa Rica but the first generation of newly industrializing countries have therefore been forced to temper or abandon their export incentives over time (see, e.g., Krueger 1990, p. 108 on the Asian NICs; as well as Fleischer 1998, pp. 133-4 and Motta Veiga 1998, p. 90 on Brazil).¹⁵ And, third, foreign firms and investors who compete with LDC exporters are unlikely to tolerate persistent and aggressive promotional efforts by LDC governments. On the contrary, they are likely to use bilateral pressures and multilateral institutions to combat their new rivals and to thereby offer LDC governments—who can use “international constraints as domestic leverage” (Evans 1998, p. 84, note 15)—a *de facto* ally in their own efforts to ward off capture.¹⁶

In fact, the open economy industrial policies we have described are in many ways the political antithesis of import-substituting industrialization. While ISI frequently—if by no means inevitably (see, e.g., Wade 1990)—goes too far and is therefore difficult to reverse, open economy industrial policies rarely go far enough and are necessarily difficult to carry out—a fact we hope to illustrate in the following case studies.

¹⁴ Chibber (2003, p. 37) advances a broadly similar argument; Hathaway offers an informative perspective on feedback effects between market opening and industry support for trade from the US context (1998).

¹⁵ Anne Krueger attributes at least part of the “reason for the prevalence of tariffs relative to export subsidies” in the LDCs to “the fact that tariffs generate revenue, while export subsidies cost revenue” (1990, p. 21, note 22).

¹⁶ Peter Evans (1998, p. 83) holds that the new rules of international trade and investment “give would-be industrialising regimes some leverage in resisting capture. They can claim, for example, ‘our hands are tied by international rules’ when non-performing firms claim subsidies.” See also Amsden and Hikino (2000) for a similar argument.

Chile: Why infant exporters mature.

Import-substituting industrialization is expected to call forth investors and entrepreneurs who require protection, abjure competition, and maximize their returns not by increasing productivity but by extracting rents from the state. We have argued, however, that the open economy industrial policies in use in Latin America and the Caribbean are likely to call forth internationally competitive producers rather than rent-seeking industrial reprobates. We invoke the Chilean experience with both forms of industrial policy to illustrate the distinction.

Chile pursued an extensive ISI program from the 1930s until 1973. The story is well known and need not be recapitulated at length. While ISI fostered the industrialization of Chile, it did so at great cost, and the vested interests it forged were so powerful that by the 1960s no major political force—whether conservative, Christian Democratic, or Marxist—would challenge the strategy’s wisdom. Therefore, the country descended into a whirlpool of economic calamity, political crisis, and eventual military dictatorship in the early 1970s (Larraín and Meller 1991; Edwards and Edwards 1991).

Most of the firms created under ISI were incapable of competing in world markets. Instead, they relied upon tariffs, import controls, and subsidies. In fact, General Augusto Pinochet underscored the industrial sector’s frailty—whether wittingly or unwittingly—by inaugurating an aggressive and sudden economic liberalization in April of 1975. Liberalization ultimately gave way to a low and uniform tariff and the consequences were profound: a massive wave of bankruptcies rocked the economy, a severe process of deindustrialization set in, and pronounced economic difficulties persisted for years to come (Tokman 1984; Kurtz 2001).

The military government began to implement an open economy industrial policy approximately a decade later, however, and Chilean exports began to respond. The new strategy included both substantial fiscal measures—like tariff drawbacks, a rebate of the value added tax on exports (Decreto Ley 825), and a direct export subsidy disguised as a tax rebate which is known as the *Reintegro Simplificado*—and credit subventions. The *Reintegro Simplificado* has at least two particularly interesting features. First, it is decidedly illiberal in conception, for it is not only targeted at new market entrants and smaller firms but it

also incorporates domestic content requirements to promote backward linkages.¹⁷ And, second, it is both transparent—it is paid directly out of the treasury—and costly. According to Carla Macario, the Chilean government spent hundreds of millions of dollars per year on the subsidy in the mid-1990s (Macario 2000b, p. 57; see also Kurtz 2001).

On the credit side, the government offers exporters cheap long-term dollar credit and partial loan guarantees to help local firms gain access to finance at reasonable cost and with time horizons long enough to make repayment feasible. While the *Corporación de Fomento* (CORFO) offers buyers of high value-added Chilean manufacturing and service sector exports low interest, long-term credit, the government offers smaller nontraditional exporters (sales under \$30 million) subsidies for the purchase of inputs or capital goods. The common denominator in both programs is not simply the direct provision of financial resources for exporting firms in targeted sectors but the enforcement of sunset provisions which eliminate the subsidies when their beneficiaries are able to stand on their own two feet.

While both the tariffs and quotas of the ISI era and the credit subsidies of the current era alter the relative prices confronted by domestic producers, their political and economic implications are distinct. In the ISI era, firms pursued ever-greater rents from ever-higher levels of effective protection and rarely managed to mature into internationally competitive producers. In the current era, however, the subsidies can only be captured if exports are actually registered and they necessarily decline as firms learn, mature, grow, and thereby bring the sunset provisions into effect. Nor would the extant subsidies allow inefficient producers to survive, for the payments are small relative to the price of exports, international competition is fierce, and low costs are not enough to guarantee survival. Exporters need to meet northern price, quality, and delivery standards—factor costs and prices notwithstanding.

The point is not that Chilean exporters do not want to retain access to their subsidies but that—unlike their predecessors in the closed economy—they are able to withstand their withdrawal. While exporters could lobby the state for continued support in theory, they would be unlikely to achieve their goals in practice, for the relevant performance standards are easily enforceable: As foreign sales pass the stipulated threshold, the sunset provisions are put into practice. In fact, the sunset provisions are doubly

¹⁷ The law calls for a subsidy of ten, five, or three percent of the f.o.b. value of exports, with the rate of subsidy declining to zero as the value of the exports approaches \$20.9 million.

beneficial to the Chilean government, for they simultaneously prevent the waste of public resources on already viable firms and free up funds to promote the growth of other firms in distinct sectors.

Noland and Park hold that firms are rarely if ever weaned of their subsidies. However, the Chilean experience would appear to gainsay their pessimistic claim. Subsidies have not only fostered internationally competitive enterprises but have regularly been removed and reallocated to a constantly changing set of infant exporters.¹⁸ What are the long-term consequences? Aggregate export data offer *prima facie* evidence of industrial policy's efficacy in Chile. After all, the value of Chilean nontraditional exports more than doubled from \$2.1 to \$4.7 billion dollars between 1990 and 1995 (Banco Central de Chile 2003), and NTX currently account for more than one quarter of the country's total exports.

Nevertheless, the Chilean state has frequently been portrayed as unusually capable. Are the achievements of the country's open economy industrial policies replicable in a less auspicious political context? We hope to answer the question by examining the consequences of credit subventions in the traditionally patrimonial environs of the Dominican Republic.

The Dominican Republic: Why predatory states withdraw subsidies.

The Dominican Republic has traditionally played host to a dualistic industrial economy. Since the middle of the twentieth century, if not before, the domestic market has been subject to ample protection by tariffs and import controls of various kinds. And a politically powerful industrial sector has therefore grown up under the aegis of state sponsorship in Santo Domingo: first under the dictatorship of Rafael Trujillo, who ruled the island nation from 1930 until his 1961 assassination; and second under the allegedly democratic rule of Trujillo's consiglieri and successor, Joaquín Balaguer, who not only ruled the country in a highly personalistic manner from 1966 until 1978 but returned to power for ten more years beginning in 1986 (Moya Pons 1992; Hartlyn 1998).

In the late 1960s and early 1970s, however, Balaguer inaugurated the gradual transformation of the Dominican Republic's trade and investment regime by authorizing the construction of three export processing zones (EPZs) in the secondary cities of La Romana, San Pedro, and Santiago (Schrank 2003). While the EPZs offered manufacturers who agreed to export the entirety of their output a wide array of tax

¹⁸ Others have noted the substantial role of the state in helping to engender export responses even in sectors characterized by static comparative advantages. See, for example, Schurman (1996a; 1996b).

and tariff exemptions, and thereby rendered nontraditional export (NTX) growth compatible with ISI in theory, they offered their tenants no alternative to the Dominican Republic's decidedly incomplete credit market, and thereby made NTX all but impossible in practice—at least for locally owned firms which lacked access to foreign sources of capital. Consequently, the country's traditionally import-competing manufacturers for the most part abandoned the zones to their foreign counterparts and continued to treat the domestic market as their natural hunting ground.

By the early 1980s, however, the situation had changed markedly. The Dominican Republic had entered into a serious balance of payments crisis and the government had therefore decided to use publicly financed credit to both *expand* and *domesticate* the EPZ sector. On the one hand, developers who hoped to *build* and *administer* privately owned EPZs would be eligible for up to US\$5 million worth of credit at below market rates. And, on the other hand, entrepreneurs and manufacturers who hoped to *invest* in the country's EPZs—whether publicly or privately owned—would be offered up to US\$500,000 at similarly subsidized rates (FIDE no date [a]; DEFINPRO no date). The subsidies were not giveaways, however, for they were designed to draw Dominican manufacturers into world markets for the first time. The eligibility criteria therefore included not only new fixed investments in the inherently export-oriented EPZs but either Dominican nationality, more than 15 years of continuous residence in the Dominican Republic, or majority Dominican ownership (for corporations and partnerships).¹⁹

What were the long-term consequences? According to unpublished data provided by the Central Bank of the Dominican Republic, the credit incentives were used to finance 12 new export processing zones, several EPZ expansions, and 11 individual firms. The former currently provide almost 40,000 jobs, approximately 25 percent of the EPZ sector's total, and a number of the latter have achieved varying levels of success in world textile and apparel markets. However, the government abandoned the costly credit incentives in mid-1990s.

In other words, the Dominican Republic's credit incentive program contravenes the conventional wisdom in at least two ways. First, it actually generated an export supply response. And, second, it failed

¹⁹ Schrank (forthcoming) holds that Dominican nontraditional exporters who got their start working as managers or joint venture partners of foreign investors in the EPZs—and therefore lack experience in the ISI sector—have outperformed exporters who migrated from the ISI sector into the zones; his results therefore underscore the disjuncture between closed- and open economy industrial policies. Credit subsidies were offered to both types of investors.

to entrench itself and generate a never-ending stream of rents. What, then, accounts for the program's abandonment? Interviews carried out in the Dominican Republic in 1998 and 2001 suggested an obvious answer: it was inordinately expensive and no longer necessary—at least not in the low value added sectors which had come to dominate the country's export trade. While government officials would not reveal the actual quantities offered to the individual firms they had subsidized, the Dominican Republic's 53 EPZs currently play host to more than 500 firms—more than one-third of which are locally owned and most of which were established in the aftermath of the credit program's abandonment (Schrank forthcoming). If the government had continued the program and supported all of the locally owned firms at US\$500,000 per establishment, the cost would have been prohibitive as well as concentrated and the international reaction, as we shall soon see, would have been swift and sure.

The lesson of the Dominican experience is neither that the government always chose the ideal subsidy recipients nor that the subsidy program has been the principal source of growth in the EPZs. Open-economy industrial policies have been far more successful in Chile than in the Dominican Republic. But the problem in the latter country is not—contra the conventional wisdom—the entrenchment of the subsidy regime and a failure to impose performance standards; on the contrary, it is the abandonment of the subsidy regime and the corresponding failure to draw capital into more remunerative and developmental activities.

Brazil: Why the new international rules of the game could prove to be a mixed blessing rather than a double edged sword.

If ISI is expected to call forth inefficient, rent-seeking firms, the open economy industrial policies we have described carry their own risks. According to their critics, for example, credit subsidies run the risk of either “propping up inefficient domestic companies” or “encouraging exports to countries/buyers which have no intention or ability to pay for them” (Stephens and Smallridge 2002, pp. 7-8). We have advanced at least two distinct reasons to discount the aforementioned risks: first, the probability of infant exporter maturation; and second, the inherent limits to public finance. However, Canada's successful efforts to challenge Brazil's aerospace financing arrangements in the WTO offer a third and no less important reason: the likelihood of foreign retaliation.

The Brazilian aircraft industry would appear to offer subsidy advocates a worst case scenario. First, the Brazilian aircraft manufacturer, EMBRAER (*Empresa Brasileira de Aeronautica*), is a “national champion” in the classical sense of the term (Goldstein 2002). It was established by the armed forces to manufacture military aircraft in the late 1960s. It brought state, multinational, and local capital together in a “triple alliance” of the sort described by Peter Evans in the 1970s (Goldstein 2002, p. 105; see also Evans 1979; Goldstein and Schneider 2004). It entered the civilian aircraft market with a vengeance in the 1980s. It was sold to a powerful consortium of public and private interests led by one of Brazil’s major industrial and financial groups and backed by a number of politically influential pension funds in the 1990s. And it is currently responsible for more than 5 percent of the country’s export revenues (Cassiolato, Bernardes, and Lastres 2002, p. 5; see also Goldstein 2002).

Second, the Brazilian credit subsidy regime would appear to be responsible for EMBRAER’s successful penetration of foreign markets. In fact, José Cassiolato, Roberto Bernardes, and Helena Lastres have characterized the Brazilian government’s export financing arrangements as the “decisive factor” in American Eagles’s purchase of 67 regional jets from EMBRAER—rather than from Canadian rival Bombardier—in 1997 (2002, p. 53).²⁰ The multibillion dollar deal was not only the largest contract in EMBRAER’s history at the time but made an essential contribution to the troubled company’s successful effort to reinvent itself as a privately controlled supplier of high quality civilian aircraft. “In addition,” according to Cassiolato, Bernardes, and Lastres, “it allowed the financial recovery of EMBRAER and ensured production of aircraft during the subsequent three years” (2002, p. 17).

In short, EMBRAER would appear to have been a prime candidate for “white elephant” status: a politically powerful firm which was all but dependent on government support in world markets. But the Canadians successfully challenged Brazil’s export financing arrangements at the WTO in the late 1990s, and the Brazilians were therefore forced to modify their subsidy regime accordingly. While the Canadians sued on behalf of Bombardier, EMBRAER’s principal rival in the regional aircraft market, their efforts did little to slow EMBRAER’s progress. On the one hand, the Brazilians brought their own suit against Canada and thereby forced the Canadians to abandon similar export financing arrangements. And, on the other hand, EMBRAER continued to grow. The company has recently surpassed Bombardier to capture

²⁰ See Motta Veiga (1998) and Bonelli (2000) for a detailed description of Brazil’s export financing arrangements.

the leading position in the world market for regional aircraft and it is beginning to challenge Boeing and Airbus for the bottom end of the market for full-sized jet aircraft as well (see Cassiolato, Bernardes, and Lastres 2002, esp. pp. 18-19; and Rohter 2000; Wheatley 2001).²¹

What conclusions might one draw from EMBRAER's experience? On the one hand, it suggests that open economy industrial policies need not coddle—and may, in fact, energize—the often inefficient offspring of their closed economy predecessors. EMBRAER needed public support to break into world markets but in the aftermath of the first WTO decision Bombardier officials admitted that the Brazilians would be worthy competitors on a level playing field (Rohter 2000). They have since been proven correct. On the other hand, it suggests that public support is unlikely to be overprovided in the current international environment. After all, Brazil's subsidy regime ultimately threatened to impose costs not only upon Brazilian taxpayers and government officials but upon exporters other than EMBRAER—for Canada does not import Brazilian aircraft and the trade sanctions granted by the WTO would therefore have been imposed not upon EMBRAER but upon producers of steel, textiles, sugar, and coffee had the Brazilian government not agreed to a negotiated alternative (Rohter 2000; Wheatley 2001).²² The fact that the Brazilians ultimately decided to modify—but not, it is worth noting, abandon—their export financing arrangements rather than endure serious trade sanctions suggests, therefore, that the WTO provides an additional check upon the rent-seeking proclivities of subsidized exporters.²³

Conclusion.

Orthodox analysts and their critics divide over the prospects for industrial policy in the open economy. While mainstream economists fear rent-seeking public and private interests, and therefore view industrial policy as irrational, their critics fear market failures and perverse equilibria, and therefore view industrial policy as indispensable. Who is correct? We have endeavored to resolve the debate by advancing three

²¹ Bombardier is still larger than EMBRAER overall due to advantages in other aircraft segments and extensive assets outside the aerospace industry. Overall, EMBRAER is the world's fourth largest civilian aircraft manufacturer behind Boeing, Airbus, and Bombardier. See Doh (2003) for a comparison of the two firms.

²² Ironically, Air Canada has recently moved toward the purchase of EMBRAER aircraft thanks in part to the Brazilian government's export financing arrangements. Bombardier is not allowed to offer similar financing since sales to Air Canada would not constitute exports (Financial Times 2003).

²³ A critic might ask whether the WTO would circumscribe the use of open economy industrial policies in general—thereby rendering our own discussion anachronistic. Suffice it to say that the Brazilians have modified but by no means abandoned their export financing arrangements. And Alice Amsden and Takashi Hikino (2000) offer a number of reasons to believe that industrial policy broadly defined is compatible with the WTO's provisions.

distinct but interrelated arguments. First, we have distinguished the open economy industrial policies which are currently gaining ground in Latin America and the Caribbean from either their closed economy predecessors or more traditional free market approaches to trade, investment, and development. Second, we have underscored the potential efficacy of the open economy industrial policies we have described by presenting *prima facie* evidence—i.e., systematic variation in export and nontraditional export performance—that the public officials who are in charge of distributing credit subsidies are in fact imposing performance standards upon their recipients. And, third, we have attributed the state’s willingness and ability to impose performance standards to: (1) the process of infant exporter maturation; (2) the costs of the subsidies themselves; and (3) the reactions of foreign firms and governments.

The results of our admittedly preliminary analysis suggest not only that open economy industrial policies are functional—i.e., in the sense that they can generate a meaningful export supply response—but that they are far less prone to rent-seeking and capture than their closed economy predecessors. The crux of the matter is straightforward: While ISI is cheap to defend and costly to abandon, and therefore tends to reproduce itself over time, export incentives are costly to defend and cheap to abandon, and therefore tend to be temporary. Neither strategy is painless or problem-free, in other words, but their respective problems are in many ways *sui generis* and it would therefore be erroneous to expect export incentives to “provoke exactly the same negative result as that induced by the worst cases of ISI inefficiency” (Hojman 1994, p. 205).²⁴

We would therefore counsel social scientists to abandon the hoary and overly simplistic “ISI v. laissez faire” dichotomy which has governed the study of the developing world for more than a decade in favor of three new and largely unexplored questions: First, what are the relative costs and benefits of specific export incentives? Second, where can impoverished developing country governments find the resources they need to adopt and enforce the incentives in question? And, finally, are the incentives subject to diminishing returns as they are adopted by more and more countries—as the statistical evidence on fiscal incentives would appear to imply? The answers are unlikely to come easily but they will almost certainly

²⁴ It would be no less erroneous, however, to expect export incentives to *call forth*—as opposed to “simply” globalizing—national champions like EMBRAER. Our effort to differentiate and defend open economy industrial policies should by no means be interpreted as a universal condemnation of their closed economy predecessors. We suspect that the latter have a vital—if perhaps diminishing—role to play in the current international context and are in many cases likely to complement rather than contradict the former.

be more useful than more inquiries into the costs, benefits, and socio-political underpinnings of ideal typical development strategies like ISI and laissez faire which have increasingly been overtaken—and even buried—by events.

Bibliography

- Ades, Alberto, and Rafael Di Tella. 1997. "The New Economics of Corruption: a Survey and Some New Results." *Political Studies*. XLV: 496-515.
- Ades, Alberto, and Rafael Di Tella. 2000. "Rents, Competition, and Corruption." *American Economic Review*. 89: 982-93.
- Agosin, Manuel, Eduardo Gitli, and Lainer Vargas. 1996. *La promoción de exportaciones en Costa Rica: Diagnóstico y recomendaciones para la próxima etapa*. San José, Costa Rica: COMEX.
- Amsden, Alice. 2001. *The Rise of 'The Rest': Challenges to the West from Late Industrializing Economies*. Oxford: Oxford University Press.
- Amsden, Alice, and Takashi Hikino. 2000. "The Bark Is Worse than the Bite: New WTO Law and Late Industrialization." *Annals of the American Academy of Political and Social Science* 570 (July): 104-14.
- Auty, Richard. 1995. "Industrial Policy Capture in Taiwan and South Korea." *Development Policy Review*. 13: 195-217.
- Banco Central de Chile. 2003. <http://si2.bcentral.cl/basededatoseconomicos/> (accessed 12/30/03).
- Bell, Martin, Bruce Ross-Larson, and Larry E. Westphal. 1984. "Assessing the Performance of Infant Industries" *Journal of Development Economics* 16: 101-168.
- Bensel, Richard. 1990. *Yankee Leviathan: The Origins of Central State Authority in America, 1859-1877*. New York: Cambridge University Press.
- Bhagwati, Jagdish. 1986. "Rethinking Trade Strategy." Pp. 91-104 in J. Lewis and V. Kallab, eds., *Development Strategies Reconsidered*. New Brunswick: Transaction Books.
- Bonelli, Regis. 2000. "Brazil: The Challenge of Improving Export Performance." Pp. 73-114 in Carla Macario, ed., *Export Growth in Latin America: Policies and Performance*. Boulder: Westview.

- Bradford, Colin, and William Branson. 1987. "Patterns of Trade and Structural Change." Pp. 3-24 in C. Bradford and W. Branson, eds., *Trade and Structural Change in Pacific Asia*. Chicago: University of Chicago Press.
- Carlander, Jay, and John Majewski. 2003. "Imagining 'A Great Manufacturing Empire': Virginia and the Possibilities of a Confederate Tariff." *Civil War History*. 49 (December): 334-52.
- Cassiolato, José, Roberto Bernardes, and Helena Lastres. 2002. *Transfer of Technology for Successful Integration into the Global Economy: A Case Study of EMBRAER in Brazil*. New York: UNCTAD.
- Chang, Ha-Joon. 1984. *The Political Economy of Industrial Policy*. New York: St. Martin's.
- Chibber, Vivek. 2003. *Locked in Place: State-Building and Late Industrialization in India*. Princeton: Princeton University Press.
- Clark, Mary A. 1995. "Nontraditional Export Promotion in Costa Rica: Sustaining Export-Led Growth" *Journal of Interamerican Studies and World Affairs* 37 (2): 181-219.
- Clerides, S.K., Saul Lachs, and James Tybout. 1998. "Is Learning-By-Exporting Important? Micro-Dynamic Evidence from Colombia, Mexico, and Morocco." *Quarterly Journal of Economics*. 113: 903-48.
- DEFINPRO. No date. *¿Que te ofrece el DEFINPRO?* Santo Domingo: Banco Central de la República Dominicana/Departamento de Desarrollo y Financiamiento de Proyectos.
- Doh, Jonathan. 2003. "The Bombardier-EMBRAER Dispute and its Implications for Western Hemisphere Integration." *CSIS Policy Papers on the Americas*. XIV (12): 1-18.
- Dutt, Pushan. 2002. "Does Protection Beget Corruption?" University of Alberta.
- Economist. 2003. "Wanted: a new regional agenda for economic growth." April 26.
- Edwards, Sebastián and Alejandra Cox Edwards. 1991. *Monetarism and Liberalization: The Chilean Experiment*. Chicago: University of Chicago Press.
- Ernsberger, Richard, and Scott Johnson. 2003. "Darkest Before the Dawn." *Newsweek*. November 10.
- Evans, Peter. 1979. *Dependent Development: The Alliance of Multinational, State, and Local Capital in Brazil*. Princeton: Princeton University Press.

- Evans, Peter. 1995. *Embedded Autonomy: States and Industrial Transformation*. Princeton: Princeton University Press.
- Evans, Peter. 1998. "Transferable Lessons? Re-examining the Institutional Pre-requisites of East Asian Economic Policies." *Journal of Development Studies*. 34 (August): 66-85.
- Fernández, Diogenes. 1973. "Evaluacion de la Economia Dominicana y Sus Perspectivas." Lecture delivered to the American Chamber of Commerce of the Dominican Republic. March 20. Santo Domingo.
- FIDE. No date. *Sector Industrial*. Santo Domingo: Banco Central de la República Dominicana/Departamento del Fondo de Inversiones para el Desarrollo Económico.
- Financial Times. 2003. "Bombardier boss blasts critics." September 16.
- Findlay, Ronald. 1981. "Comments." Pp. 30-33 in Wontack Hong and Lawrence Krause, eds., *Trade and Growth of the Advanced Developing Countries in the Pacific Basin*. Seoul: Korea Development Institute.
- Fox, James. 1997. "What Do Economists Know that Policymakers Need To?" *American Economic Review*. 87 (2): 49-53.
- Goldstein, Andrea. 2002. "EMBRAER: de campeón nacional a jugador global." *Revista de la CEPAL*. 77 (agosto): 101-21.
- Goldstein, Andrea, and Ben Ross Schneider. 2004. "Big Business in Brazil: States and Markets in the Corporate Reorganisation of the 1990's." Pp. 48-74 in Edmund Amann and Ha-Joon Chang, eds., *Brazil and South Korea: Economic Crisis and Restructuring*. Washington: Brookings.
- Grugel, Jean. 1998. "State and Business in Neo-Liberal Democracies in Latin America." *Global Society: Journal of Interdisciplinary International Relations*. 12 (2): 221-236.
- Hartlyn, Jonathan. 1998. *The Struggle for Democratic Politics in the Dominican Republic*. Chapel Hill: UNC Press.
- Hathaway, Oona. 1998. "Positive Feedback: The Impact of Trade Liberalization on Industry Demands for Protection." *Internacional Organization*. 53 (Summer): 572-612.
- Helleiner, G.K. 1995. "Introduction." Pp. 1-20 in Helleiner, ed., *Manufacturing for Export in the Developing World*. London: Routledge.

- Hirschman, Albert. 1968. "The Political Economy of Import-substituting Industrialization in Latin America." *Quarterly Journal of Economics*. 82 (February): 2-32.
- Hoffmaister, Alexander. 1992. "The Cost of Export Subsidies" *IMF Staff Papers* 39 (1) (March).
- Hojman, David. 1994. "The Political Economy of Recent Conversions to Market Economics in Latin America." *Journal of Latin American Studies*. 26 (February): 191-219.
- Inter-American Development Bank. 2001. *Economic and Social Progress in Latin America. Competitiveness: The Business of Growth*. Washington: IDB.
- Johnson, Stephen. 2003. "Is Neoliberalism Dead in Latin America?" *Web Memo #332*. Washington, DC: Heritage Foundation.
- Kaufmann, Daniel, and Aart Kraay. 2002. "Growth without Governance." *Economia*. 3 (Fall): 169-215.
- Kaufmann, Daniel, Aart Kraay, and Massimo Mastruzzi. 2003. *Governance Matters III: Governance Indicators for 1996-2002*. Washington: World Bank.
- Kosacoff, Bernardo, and Adrián Ramos. 1999. "The industrial policy debate." *CEPAL Review*. 68: 35-60.
- Kovaleski, Serge. 1998. "High Technology's Top Banana? Costa Rica Lures Intel, Other Industry Giants" *Washington Post*. March 11.
- Krueger, Anne. 1974. "The Political Economy of the Rent-Seeking Society." *American Economic Review*. 64 (3): 291-303.
- Krueger, Anne. 1990. "Government Failures in Development." *Journal of Economic Perspectives*. 4 (3): 9-23.
- Kurtz, Marcus. 2001. "State Developmentalism without a Developmental State: The Public Foundations of the 'Free Market Miracle' in Chile." *Latin American Politics and Society*. 43 (2): 1-25.
- Kurtz, Marcus. 2002. "Understanding the Third World Welfare State after Neoliberalism." *Comparative Politics*. 34 (3): 293-314.
- Lal, Deepak, and Sarath Rajapatirana. 1987. "Foreign Trade Regimes and Economic Growth in Developing Countries." *World Bank Research Observer*. 2 (July): 189-215.

- Larraín, Felipe and Patricio Meller. 1991. "The Socialist-Populist Chilean Experience: 1970-73" in Rudiger Dornbusch and Sebastián Edwards, eds., *The Macroeconomics of Populism in Latin America*. Chicago: University of Chicago Press.
- Macario, Carla. 2000. "Introduction." Pp. 1-20 in C. Macario, ed., *Export Growth in Latin America: Policies and Performance* Boulder, CO: Lynne Rienner.
- Macario, Carla. 2000. "Chile: In Search of a New Export Drive." Pp. 49-72 in C. Macario, ed., *Export Growth in Latin America: Policies and Performance* Boulder, CO: Lynne Rienner.
- Melo, Alberto. 2001. "Industrial Policy in Latin America and the Caribbean at the Turn of the Century." *Research Department Working Paper 459*. Washington: IADB.
- Mittelman, James. 1999. *The Future of Globalization*. Kuala Lumpur: Penerbit Universiti.
- Monge, Ricardo. 1998. "Costa Rica's Experience in the Area of Export Promotion" *Integration & Trade* 4-5 (January/August): 147-77.
- Motta Veiga, Pedro de. 1998. "Export promotion policies in Brazil: background, current situation, and main trends." *Integration and Trade*. 4-5 (January-August): 87-113.
- Moya Pons, Frank. 1992. *Empresarios en Conflicto: Políticas de Industrialización y Sustitución de Importaciones en la República Dominicana*. Santo Domingo: Fondo para el Avance de las Ciencias Sociales.
- Noble, Gregory. 2000. "Conspicuous Failures and Hidden Strengths of the ITRI Model: Taiwan's Technology Policy Toward Hard Disk Drives and CD ROMs." UCSD/ISIC Research Report 2000-02. San Diego: UCSD.
- Noland, Marcus, and Howard Pack. 2001. "Industrial Policies and Growth: Lessons from international Experience." Paper prepared for the Fifth Annual Conference of the Central Bank of Chile: "Challenges of Economic Growth." Santiago. November 29-30.
- Ó Riain, Sean. 2000. "The Flexible Developmental State: Globalization, Information Technology, and the 'Celtic Tiger.'" *Politics & Society* 28 (June): 157-87.
- Pack, Howard. 2000. "Industrial Policy: Growth Elixir or Poison?" *World Bank Research Observer*. 15 (February): 47-67.

- Pack, Howard, and Kamal Saggi. 1999. "Exporting, Externalities, and Technology Transfer." *World Bank Country Economics Department Working Paper No. 2065*. Washington: World Bank.
- Page, John. 1994. "The East Asian Miracle: An Introduction." *World Development*. 22 (4): 615-25.
- Porter, Michael. 1990. *The Competitive Advantage of Nations*. New York: Free Press.
- Ramos, Joseph. 1997. *Industrial Policy and Competitiveness in Open Economies*. Desarrollo Productivo No. 34. Santiago: CEPAL.
- Rodrik, Dani. 1997. "The 'paradoxes' of the successful state." *European Economic Review*. 41: 411-442.
- Rohter, Larry. 2000. "Brazil's Hot Commodity: Not Coffee or Soccer." *New York Times*. December 31.
- Schrank, Andrew. 2003. "Luring, Learning, and Lobbying: The Limits to Capital Mobility in the Dominican Republic." *Studies in Comparative International Development*. 37 (4): 89-116.
- Schrank, Andrew. Forthcoming. "Entrepreneurship, Export Diversification, and Economic Reform: The Birth of a 'Developmental Community' in the Dominican Republic." *Comparative Politics*
- Schurman, Rachel. 1996a. "Chile's Entrepreneurs and the 'Economic Miracle': The Invisible Hand or a Hand from the State?" *Studies in Comparative International Development* 31 (2) (Summer): 83-109.
- Schurman, Rachel. 1996b. "Snails, Southern Hake, and Sustainability: Neoliberalism and Natural Resource Exports in Chile" *World Development* 24 (1): 1695-1709.
- Seidman, Gay. 2004. "Former President of Brazil, Fernando Henrique Cardoso: A Most Public Sociologist." *Footnotes*. March.
- Sheehan, John. 1997. "Effects of Liberalization Programs on Poverty and Inequality: Chile, Mexico, and Peru." *Latin American Research Review*. 32 (3): 7-37.
- Srinivasan, T.N., and Jagdish Bhagwati. 1999. "Outward Orientation and Development: Are Revisionists Right?" *Economic Growth Center Discussion Paper No. 806*. Yale University. New Haven, CT.
- Stephens, Malcolm. 2002. *A Study on the Activities of IFIs in the Area of Export Credit Insurance and Export Finance*. INTAL-ITA-STD Occasional Paper 16. Washington: Inter-American Development Bank.
- Tokman, Victor. 1984. "Global monetarism and destruction of industry." *CEPAL Review*. 23: 107-21.

- Wade, Robert. 1990. *Governing the Market: Economic Theory and the Role of Government in East Asian Industrialization*. Princeton: Princeton University Press.
- Wade, Robert. 1993. "Managing Trade: Taiwan and South Korea as Challenges to Economics and Political Science" *Comparative Politics* 25:2 (January): 147-67.
- Wade, Robert. 2003. *Governing the Market and Creating Capitalisms*. Working Paper. London: LSE/DESTIN.
- Wheatley, Jonathan. 2001. "EMBRAER: The Sky's the Limit." *Business Week*. February 5.
- Wise, Carol. 1999. "Latin American Trade Strategy at Century's End." *Business and Politics*. 1 (2): 117-53.
- World Bank. 1993. *The East Asian Miracle: Economic Growth and Public Policy*. Washington: World Bank.
- World Bank. 2003. *World Development Indicators*. CD-ROM.

Figure 1: A typology of development regimes

		Degree of international integration	
		High tariffs/low integration	Low tariffs/high integration
Sectoral policy	Neutral	Leviathan: high, uniform revenue tariff; industrialization as by-product of revenue formation.	Liberalism: low, uniform tariff; allocative efficiency.
	Non-neutral	Import-substituting industrialization: tariff escalation (i.e., high tariffs on consumer goods and lower tariffs on capital goods and inputs); high rates of effective protection; import-competing industry grows.	Open economy industrial policy: low but not necessarily-uniform tariffs; fiscal and credit incentives for exports; pro-export bias.

Table 1: Summary statistics of export promotional intensity measures

<i>Index</i>	<i>Range</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Standard Dev</i>
Overall	0-12	0	10	4.7	2.7
Fiscal	0-6	0	4	2.9	1.2
Credit	0-6	0	6	1.8	1.9

Data: Melo (2001)

Table 2. Industrial Policy and Average Annual Export Growth, 1995-2001
 Export Growth = $f(\text{GDP/capita, export incentives})$

	Model I	Model II	Model III
GDP/capita, 1995	-0.097 (0.326)	0.442 (0.364)	-0.272 (0.298)
Overall Index	1.439*** (0.399)		
Fiscal Index		0.515 (1.421)	
Credit Index			2.052*** (0.433)
Constant	-3.123 (3.024)	2.631 (5.842)	1.081 (2.043)
N	25	25	25
Adjusted R ²	0.360	-0.011	0.497

*** $p \leq 0.01$; ** $p \leq 0.05$; * $p \leq 0.10$

Note: Coefficients are placed over their parenthesized standard errors. Bahamas dropped due to missing data. GDP/capita is in thousands of US dollars at purchasing power parity. Export growth is the simple annual average growth of exports over the period 1995-2001. Models were estimated by weighted least squares—weighting by 1995 gross domestic product at PPP—which corrects for the innate volatility of export performance in small economies and concomitant heteroskedasticity. Data on export growth for Nicaragua using the average over only the 1995-98 period due to missing data.

Sources: Export growth calculated from World Bank (2003); GDP and GDP per capita from World Bank (2003); and industrial policy indices derived from Melo (2001).

Table 3. Industrial Policy, Corruption, and Export Growth
 Export Growth = f (GDP/capita, export incentives, corruption control)

	Model IV	Model V	Model VI
GDP/capita, 1995	-0.404 (0.320)	-0.400 (0.327)	
Credit Index	2.172*** (0.444)	2.056*** (0.608)	1.725*** (0.551)
Corruption Control	1.625 (1.475)	2.979 (4.956)	2.556 (5.002)
Credit Index * Corruption Control		-0.389 (1.356)	-0.466 (1.373)
Constant	1.765 (2.126)	2.175 (2.601)	0.570 (2.271)
Adjusted R ²	0.502	0.479	0.467
N	25	25	25

Notes: Estimated using WLS, see Table 1 for details.

Sources: Melo (2001); World Bank (2003); Kaufmann, Kraay, Mastruzzi (2003).

*** $p \leq 0.01$; ** $p \leq 0.05$; * $p \leq 0.10$

Table 4. Non-Traditional Exports and Relative Export Composition

Dependent Variables:	Non-Traditional Export Growth			Export Composition
	Model VII	Model VIII	Model IX	Model X
GDP/capita, 1995	-0.955 (0.680)	-0.258 (0.750)	-1.221* (0.646)	-1.109** (0.489)
Overall Index	2.389** (0.884)			
Fiscal Index		0.883 (3.001)		
Credit Index			3.368*** (0.991)	1.349* (0.748)
Constant	-6.115 (7.119)	4.865 (12.788)	0.874 (4.883)	0.840 (3.546)
Adjusted R ²	0.224	-0.105	0.339	0.174
N	20	20	20	19

*** $p \leq 0.01$; ** $p \leq 0.05$; * $p \leq 0.10$

Note: Estimated using WLS, see Table 1 for details. Nontraditional exports are defined to include all non-natural resource exports (that is, exports of goods and services other than minerals, fuel, or agricultural products). Export composition in Model X is defined as the difference between the nontraditional export growth rate and the overall export growth rate, with positive numbers suggesting that the former outperform the latter.

Sources: GDP per capita (World Bank 2003); overall and nontraditional export growth rates calculated from World Bank (2003); and industrial policy indices from Melo (2001)

Table 5. The Dynamics Open- and Closed-Economy Industrial Policies

<i>Issue</i>	<i>Closed Economy Industrial Policy</i>	<i>Open Economy Industrial Policy</i>
Efficacy	<u>Low Efficacy.</u> Infant industry maturation uncommon; firms grow dependent on protection; withdrawal of rents is nearly impossible.	<u>High Efficacy.</u> Infant exporters grow into competitive firms; they prefer but are not dependent upon industrial policy; withdrawal of rents is feasible.
Cost	<u>Diffuse Costs.</u> Disorganized consumers pay for higher cost, lower quality goods; the government benefits from tariff revenues and opportunities for patronage; industrial policies are entrenched.	<u>Concentrated Costs.</u> The government pays the cost directly in current spending; public officials face both fiscal constraints and competing citizen demands; industrial policies are vulnerable.
Foreign Reaction	<u>FDI.</u> Foreign firms react by building local plants to serve the protected market; they compete with local firms, transfer profits overseas, and join forces with the ISI coalition.	<u>Resistance.</u> Foreign firms resent LDC encroachment into their home markets; they use bilateral pressures and multilateral institutions to derail subsidy programs.
Policy Outcome	<u>Over-provision.</u> Closed economy measures are over-provided and difficult to abandon; all major organized actors gain a stake in their perpetuation.	<u>Under-provision.</u> Open economy industrial policies are under-provided and easily abandoned; all major actors either come to favor or are at the very least able to accept their withdrawal.