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Openness, Trade Liberalization, and Growth in Developing Countries

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I. Introduction

THE IDEA that international trade is the engine of growth is very old, going back at least to Adam Smith. However, during long periods in the 20th century, it has not been a very popular one. Protectionist theories, in fact, became dominant and for decades the majority of the developing countries implemented industrialization policies based on a very limited degree of international openness.

These policies, which came to be known as "import substitution industrialization (ISI)" strategies, had their origins in the thinking of Raúl Prebisch (1950)

and Hans Singer (1950) and were based on two fundamental premises: (1) a secular deterioration in the international price of raw materials and commodities would result, in the absence of industrialization in the LDCs, in an ever-growing widening of the gap between rich and poor countries; and (2) in order to industrialize, the smaller countries required (temporary) assistance in the form of protection to the newly emerging manufacturing sector. This reasoning was closely related to the *infant industry* argument for industrialization. Prebisch's ideas were particularly influential in Latin America, where as Secretary General of the United Nations Economic Commis-

sion for Latin America, he advised most politicians and policy makers.¹

During the 1950s, 1960s, and 1970s a large number of development economists embraced the protectionist view, and devoted enormous energy to design planning models that relied heavily on the import substitution ideas. However, even though the protectionist paradigm had become dominant, a small group of academics embarked, independently, on major empirical investigations aimed at assessing the consequences of alternative trade regimes. Using different approaches that ranged from the historical to the statistical, these researchers argued that there was abundant evidence suggesting that more open and outward oriented economies had outperformed those countries pursuing protectionism. The obvious policy implication from this literature was that developing countries should move away from protectionist and restrictive trade practices and open their foreign trade sector. This view, which was generally unpopular in development policy circles in the 1960s and 1970s, slowly gained followers among academics. As new evidence was gathered, increasing numbers of skeptical analysts were persuaded by the freer trade perspective. It was not until the late-1980s, however, that the protectionist influence on economic advisors and politicians began to cave in.

There is little doubt that the debt crisis unleashed in 1982 played an important role in reshaping policy views regarding development strategies, growth policy and long-term growth. Politicians sensed that the inward oriented policies fol-

lowed by the majority of the developing nations since World War II were no longer sustainable. The poor performance of the Latin American countries, most of which had followed with almost religious zeal the dictates of import substitution, offered a dramatic contrast to the rapidly growing East Asian countries that had aggressively implemented outward oriented strategies (see Table 1). Suddenly, this difference in performance which had been documented by the academic literature on trade orientation, became a fundamental topic in the public policy debate.

In the 1980s economists dealing with poorer nations began to recommend, with increasing insistence, development strategies based on market oriented reforms that included as a fundamental component the reduction of trade barriers and the opening of international trade to foreign competition. Even the staff of the United Nations Economic Commission for Latin America (ECLA), at one time the most ardent supporter of protectionist policies, began to favor outward orientation. Moreover, the World Bank, the International Monetary Fund, and other multilateral institutions routinely required the developing countries to embark on trade liberalization and to open up their external sector as a condition for receiving financial assistance. The collapse of the Communist system in Central and Eastern Europe in the late 1980s and early 1990s added impetus to the analysis of policy reform and structural adjustment. The opening of the external sector and the convertibility of the currency are, in fact, at the center of almost every reform package proposed to former Communist nations.

In spite of the recent move towards trade reform in scores of developing countries around the world, there still remain some controversies regarding some aspects of trade policies. A particu-

¹ An interesting summary of his view can be found in Prebisch (1984). Albert Hirschman (1968) provided an early "soul-searching" assessment of the disappointing results experienced under ISI. A review of import substitution theories appears in Henry Bruton (1989). For a discussion of trade policies in the context of Latin America's historical development, see Albert Fishlow (1987).

TABLE 1
GROWTH AND EXPORTS IN LATIN AMERICA AND EAST ASIA: 1965-1989
(PERCENTAGE DISTRIBUTION)

	Annual Rate of Growth of Real GDP		Annual Rate of Growth of Manu- facturing		Annual Rate of Growth of Exports	
	1965-80	1980-89	1965-80	1980-89	1965-80	1980-89
<i>A. Selected Latin American Countries</i>						
Argentina	3.5	-0.3	2.7	-0.6	4.7	0.6
Brazil	8.8	3.0	9.8	2.2	9.3	5.6
Chile	1.9	2.7	0.6	2.9	7.9	4.9
Colombia	5.8	3.5	6.4	3.1	1.4	9.8
Mexico	6.5	0.7	7.4	0.7	7.6	3.7
Peru	3.9	0.4	3.8	0.4	1.6	0.4
Venezuela	3.7	1.0	5.8	4.9	-9.5	11.3
Latin America & Caribbean (Average)	6.0	1.6	7.0	1.5	-1.0	3.6
<i>B. Selected East Asian Countries</i>						
Hong Kong	8.6	7.1	n.a.	n.a.	9.5	6.2
Indonesia	8.0	5.3	12.0	12.7	9.6	2.4
Korea	9.6	9.7	18.7	13.1	27.2	13.8
Malaysia	7.3	4.9	—	8.0	4.4	9.8
Singapore	10.1	6.1	13.2	5.9	4.7	8.1
Thailand	7.2	7.0	11.2	8.1	8.5	12.8
East Asia (Average)	7.2	7.9	10.6	12.6	10.0	10.0

Source: World Bank (1989, 1990).

larly important area of disagreement refers to whether "trade liberalization" packages have played an important role in the performance of the outward oriented economies. Jeffrey Sachs (1987), for example, has questioned the premise that trade liberalization is a necessary component of successful outward oriented strategies. He has argued that the success of the East Asian countries was to a large extent due to an active role of government in promoting exports in an environment where imports had not been fully liberalized, and where macro-economic (and especially fiscal) equilibrium was fostered (see also Sachs 1989). Lance Taylor (1991, p. 119) has recently offered a stronger view, arguing that "the trade liberalization strategy is intellectually moribund," and that there are "no

great benefits (plus some loss) in following open trade and capital market strategies" (p. 141). From here he goes on to say that "development strategies oriented internally may be a wise choice towards the century's end" (p. 141).

In this paper I review the modern literature on trade policy in developing countries, trying to evaluate the extent to which the existing empirical evidence supports the currently popular policy view that more open and outward oriented economies have outperformed countries with restrictive trade regimes. I analyze the methodology used in this literature, I scrutinize the techniques implemented and, although the emphasis is mostly empirical, I evaluate the conceptual and theoretical models developed to investigate the relationship be-

tween trade orientation and growth. An important question I address in this paper is whether we can trace the recent shift in views regarding protectionist policies to the contributions made by the academic literature on the subject.²

Modern empirical work on trade policy and growth can be classified into two broad and distinct categories: (a) large scale multi-country studies that have investigated in detail the experiences of a group of countries with trade policy reform. These studies have typically been sponsored by multilateral institutions and have resulted in book-length investigations of each country included in the sample. And (b) econometric studies that have investigated, on broad cross-country data, the relationship between the pace of exports expansion and aggregate economic growth. In the core of the paper I selectively review groups of works corresponding to each of these categories. The paper concludes with an overall evaluation of the current state of affairs in this field, and with a brief discussion on the recently emerging analyses based on the new theories of endogenous growth. In the concluding section I also provide some reflections on directions for future research.

II. Multi-country Studies of Trade Policy in LDCs

Much of what we know today about the effects of different trade policies on growth and economic performance has been learned from a small number of comparative cross country studies. The

typical strategy of these projects has been to engage a number of researchers to undertake detailed, many times book-length, individual country studies. The project coordinator provides, at the end, a synthesis where both the similarities as well as differences across countries are highlighted, and where some general conclusions are offered.

Although these cross-country investigations have unearthed significant information on trade practices in a score of countries, they have been subject to two limitations. First, invariably the authors have found it extremely difficult to compute satisfactory indices of protection and trade orientation, and second, these studies have not been able to provide a fully convincing theoretical framework that links commercial policy, trade orientation, and growth.³ In this section I discuss some of the most prominent comparative cross-country studies on trade policy in the LDCs. In doing so I explain how different analytical advances have allowed us to understand the issues at hand better, and I point out some of the weaknesses of this general comparative approach.

II.1 Import Substitution Policies and Effective Protection

The studies coordinated by Ian Little, Tibor Scitovsky, and Maurice Scott (1970) and by Bela Balassa (1971) are the pioneer modern multi-country investigations on trade orientation and economic performance in the developing countries. These influential projects analyzed in detail commercial policies in a score of na-

² Ann Harrison (1991), Edward Leamer (1992), and James Tybout (1992) have recently provided surveys on different aspects of trade policy in developing countries. In this survey I concentrate on studies rooted in extensive data analysis. Thus I ignore the increasingly popular literature based on computable general equilibrium models. Kemal Dervis, Jaime de Melo, and Sherman Robinson (1982) provide an early treatment of trade liberalization based on this technique.

³ This problem has, until recently, affected most studies that have tried to link national economic policies to equilibrium long-run growth within the context of the standard neoclassical growth model. The recent work on endogenous growth has, however, provided firmer theoretical grounds. See the discussion in Section V below.

tions, trying to determine the way in which these policies had affected the overall economic structure of these countries. The Little et al. project dealt with Argentina, Brazil, Mexico, India, Pakistan, the Philippines, and Taiwan. The Balassa project analyzed the cases of Chile, Brazil, Mexico, Malaysia, Pakistan, the Philippines, and Norway.⁴

Perhaps the most important contribution of these studies is that they provided comparative evidence on how the structure of protection to intermediate and final goods affected relative profitability to sectoral value added. This was done by computing *effective rates of protection* (ERPs) for each of the countries in the respective projects.

The concept of effective rate of protection, pioneered by W. Max Corden (1966), Balassa (1965), and Harry Johnson (1965), tries to capture in a single indicator the rate of protection granted to *value added* in a given industry. The rate of effective protection to industry j is defined as $\tau_j = (VA_j - VA_j^*)/VA_j^*$, where VA is domestic value added, and VA^* is "world" value added, and is taken to be a proxy for the most efficient way of producing j . Assuming a linear relation between inputs and outputs—where a_{ij} denotes an input-output coefficient—the ERP for industry j can be rewritten as:

$$\tau_j = (t_j - \sum_i a_{ij} t_i) / (1 - \sum_i a_{ij}), \quad (1)$$

where t_i is the tariff on input i . An important property of ERPs is that, to the extent that tariffs on the final good exceed tariffs on intermediate inputs, activities with low value added (e.g., a high $\sum a_{ij}$) will tend to have higher "effective" protection than what the nominal tariff

would indicate.⁵ More interestingly, in those sectors where intermediate inputs are subject to tariffs, the rate of effective protection can be *negative*. This, of course, would be the case if $t_j < \sum a_{ij} t_i$. A number of studies have shown that in many developing countries the agricultural sector has, for many years, been subject to negative ERPs.

Both Little, Scitovsky, and Scott (1970) and Balassa (1971) showed that the degree of protection granted to manufacturing value added was significantly higher than suggested by straightforward data on nominal import tariffs. In fact, as Table 2 shows, in many countries the rate of effective protection in the manufacturing sector was almost twice as high as the nominal rate of protection. From this general finding Little, Scitovsky, and Scott concluded that the policies followed in most of the developing world after World War II had excessively encouraged industrialization at the cost of reducing the incentives for expanding agriculture and exports. They further argued that the most important consequences of this protectionist policy had been a worsening of income distribution, a reduction in savings, an increase in the rate of unemployment and a very low rate of capacity utilization.⁶ The funda-

⁵ Subsequent studies also computed domestic resource costs (DRCs) measures of protection. As opposed to ERPs, domestic resource costs measure value-added using shadow prices. DRC can best be defined as measuring the social domestic cost of earning or saving a unit of foreign exchange. See Michael Bruno (1972). It is interesting to note that it is also possible to face a situation where the denominator in the effective rate of protection equation is negative. This is the case of negative value added. See, for example, the discussion in Augustine Tan (1970).

⁶ In these, as in related studies, fairly aggregated data were used to construct the ERPs. This introduces some important problems in interpreting the results. See the discussion by Corden (1971) on the computation of average tariffs. In the last few years the concepts of ERPs and DRCs have been criticized for their lack of general equilibrium properties, and for providing, in some circumstances, misleading

⁴ From today's perspective the inclusion of Norway as a developing country seems puzzling. It should be pointed out, however, that this study used Norwegian data for 1954.

TABLE 2
NOMINAL AND EFFECTIVE RATES OF PROTECTION IN SELECTED DEVELOPING COUNTRIES
(PERCENT)*

	Consumer Durables		Manufacturing Sector	
	Nominal	ERPs	Nominal	ERPs
Brazil (1966)	154	285	86	127
Chile (1961)	95	123	89	158
Mexico (1960)	50	85	20	32
Malaysia (1965)	1	-5	8	11
Pakistan (1962-63)	247	510	96	188
Philippines (1965)	51	81	29	53

Source: Balassa (1971).

* Computed using international input-output coefficients.

mental policy recommendation emerging from these studies was that the developing countries should greatly reduce the degree of protection, opening up to international competition. These conclusions were greeted with skepticism by the development establishment. For example, in his review of Little, Scitovsky, and Scott (1970), Paul Streeten (1971) wrote: "The book's arguments for freer trade are . . . not additive[;] . . . they are mutually inconsistent." And he ended his review saying that the book would take its place in history "among the literature of pamphleteering . . ."

In spite of providing a wealth of information on commercial practices, and of presenting what at the time was a highly innovative perspective on trade policy in the developing world, Little, Scitovsky, and Scott and Balassa faced some serious measurement difficulties. First, no attempt was made in any of the specific country studies to calculate the evolution of ERPs through time. Indeed, the data requirements for calculating this indicator at a given moment were so large that

the authors were satisfied with providing one, or at most two, snapshots of protection in their specific countries. As a result, no serious effort was made at analyzing *liberalization* episodes. Second, in some instances these two studies generated important differences in ERP calculations for the same country in the same years. For example, when the same technique was used for computing the ERP to the manufacturing sector in the Philippines in 1965, Little, Scitovsky, and Scott's study came up with a figure of 49 percent, while Balassa calculated an ERP of 61 percent.⁷

Neither Little, Scitovsky, and Scott (1970) nor Balassa (1971) ventured into the analysis of how specific countries evolved from one trade regime to another, nor did they investigate empirically and in detail how alternative policies had affected growth in particular historical settings. They concentrated their investigation on the characteristic of the import substitution regimes, without comparing it with alternative ways of organizing the external sector.

conclusions regarding the way in which changes in commercial policies will affect resource reallocation (see, for example, Avinash Dixit 1985).

⁷ They used the so-called Corden (1966) method for computing ERPs.

II.2 Defining Trade Orientation and Liberalization Policies

The classic NBER study directed by Anne Krueger (1978) and Jagdish Bhagwati (1978) provides the first systematic attempt at formally classifying trade regimes.⁸ Trade orientation was measured by the degree by which the protective (and incentives) structure in a country was *biased* against exports. A formal index of the degree of bias was defined as the ratio of the exchange rate effectively paid by importers (EER_M) to the exchange rate effectively faced by exporters (EER_X). If this ratio is greater than one it is said that the trade regime is biased against exports. More specifically, the effective exchange rate for exports is calculated as the nominal exchange rate applied to exports (E_X) corrected by export subsidies (s) and other incentives to exports (r), including export encouragement schemes:

$$EER_X = E_X(1 + s + r).$$

The effective exchange rate for imports is defined, on the other hand, as the nominal exchange rate applicable to imports E_M , corrected by the average (effective) import tariff (t), other import surcharges (n) and the premium associated with the existence of quantitative restrictions, such as import licenses (PR) (see also, Bhagwati 1988):

$$EER_M = E_M(1 + t + n + PR).$$

Naturally, if there are unified nominal exchange rates for commercial transactions then $E_X = E_M = E$. The degree of bias of the trade regime is given by:

$$B = \frac{EER_M}{EER_X} = \frac{E_M(1 + t + n + PR)}{E_X(1 + s + r)}. \quad (2)$$

⁸ The study included nine individual country studies: Turkey, Ghana, Israel, Egypt, the Philippines, India, Korea, Chile, and Colombia. The project also included Brazil and Pakistan, but no volume on these countries was published.

When B is smaller than one, the country might be defined as following an export promotion strategy. A unitary value of B , on the other hand, reflects the existence of a *neutral* trade regime, while a value of B exceeding unity captures the fact that the country in question is engaged in import substitution policies.

Two points are worth making regarding this index. First, this definition is based on *average* incentives. We can thus have a country that protects some sectors but that still, on average, does not exhibit an anti-export bias. Second, this definition of bias implicitly allows for a continuum of regimes; B can be high, low, somewhat high or relatively low. Even though for analytical purposes it is possible to define threshold values for B — B equal to one being the natural threshold—this approach has the advantage of, in principle, avoiding a dichotomized view of trade regimes.

In the Bhagwati-Krueger project trade liberalization was defined as *any policy that reduces the degree of anti-export bias*. In the empirical country cases, the authors mostly concentrated on reductions in the import licenses premium (PR) as the fundamental step in liberalization reforms. A particularly important property of this definition of trade liberalization is that it does not require zero, or even very low, import tariffs. In fact, according to this definition it is possible to have a “liberalized” economy with very high tariffs. As Krueger has stated:

Inspection of the definitions of bias and liberalization shows that there is no necessary reason, at least in theory, for a connection between the two. A regime could be fully liberalized and yet employ exceedingly high tariffs in order to encourage import substitution. The regime would then be liberalized and highly biased. (1978, p. 89, emphasis added)

With time, however, the definition of *liberalization* has evolved into a sharper concept, almost becoming synonymous

with free trade. For instance, some authors have argued that trade liberalization policies should not aim at reducing the degree of anti-export bias, and generating a neutral trade regime—that is a value of B equal to one—but should rather strive to produce a *liberal* trade system where *all* trade distortions, including import tariffs and export subsidies, are completely eliminated. This position, however, has been criticized by some authors that have argued that there is no firm evidence linking *liberal* trade regimes with improved economic performance.⁹ For instance, in an analysis of the policy options faced by the developing countries affected by the debt crisis, Sachs (1987, p. 294) has argued that the “current focus on liberalization is distracting attention from the more urgent needs of the debtor countries.”

In the late 1980s the policy debate on the merits of alternative trade regimes had become confusing and increasingly ideological. At the center of these controversies was the inability to define clearly what was meant exactly by alternative policies and by *trade liberalization* reforms. (See, for example, Colin Bradford and William Branson 1987; Richard Cooper 1987; and Sebastian Edwards 1989b for discussions on this subject.) Bradford and Branson (1987), for instance, argued that “part of the controversy undoubtedly derives from the use of loosely fashioned phrases which sound like dichotomous . . .” (p. 17). Cooper (1987, p. 518), on the other hand, argued that

it is necessary to distinguish between different types of liberalization to make clear that liberalization can be viewed as a process rather than as a state and to disassociate liberalization from *laissez-faire*.

⁹ Deepak Lal and Sarath Rajapatirana (1987) are possibly the most articulate representatives of this view.

As the rest of this paper will show, the literature on the subject has not always been successful in dealing with precise definitions of trade regimes, nor has it been able to handle successfully the difficult issue of measuring the type of trade orientation followed by a particular country.

II.3 Quantitative Restrictions, Protectionism, and Liberalization

Most multi-country studies have emphasized the fact that in developing countries nontariff barriers—quotas, licenses, and prohibitions—have traditionally constituted the most important form of restricting trade. For example, as Table 3 shows, in 1985 a very large proportion of imports into Latin America were either subject to outright prohibitions or to some sort of import licensing mechanism. This means that analyses that focus exclusively on book values of import tariffs will usually produce a highly misleading picture of the extent of protection.

The NBER study directed by Bhagwati-Krueger tackled this issue at the theoretical level through the construction of a series of models that investigated under what circumstances there was an equivalence between tariffs and quotas. At the empirical level, the premium (PR) in the bias equation (2) was supposed to capture the importance of existing quantitative restrictions. This premium was formally defined as the percentage difference between the actual domestic price of a particular tradable good and the domestic price that would prevail in the absence of any quantitative restrictions. It is immediately apparent from this definition that gathering actual data on the premium is remarkably difficult: not only would it be necessary to undertake explicit international price comparisons for large numbers of goods, but the difficult issue of computing average values for the premium would have to be faced. Natu-

TABLE 3
COVERAGE OF NONTARIFF BARRIERS IN SELECTED
LATIN AMERICAN COUNTRIES IN THE 1980s

Country	Year	Percentage of Import Items Subject to:	
		Licenses	Prohibition
Argentina	1987	19.9	0.1
Bolivia	1985	17.8	11.1
Brazil	1986	21.0	19.1
Chile	1987	0.0	0.2
Colombia	1986	75.6	0.9
Costa Rica	1982	4.1	0.0
Ecuador	1984	17.6	8.5
El Salvador	1986	0.0	10.7
Mexico	1986	22.6	0.1
Nicaragua	1981	26.5	0.0
Paraguay	1987	2.8	3.9
Peru	1987	44.8	10.6
Uruguay	1986	3.9	0.2
Venezuela	1987	3.0	9.4

Source: UNCTAD (1987).

rally, these problems did not escape the directors of this project. Krueger writes (1978, p. 52):

Time series estimates of the premium . . . were not obtained for any of the ten countries; in fact the empirical difficulties of obtaining premium data even at a point in time precluded any estimates for some countries.

And from here she went on to say:

Systematic quantitative analysis is often impossible and must at least partially be replaced by application of economic theory to qualitative evaluation of the incentives created by the regime.

In order to evaluate the effect of trade policies, Krueger and Bhagwati combined the concepts of *premium* and *bias* with the definition of five phases in the evolution of trade regimes. Phase I is characterized by across-the-board imposition of quantitative controls, usually associated with a balance of payments crisis. During Phase II the control system

becomes more complex and discriminatory, increasing the anti-export bias of the regime. Phase III is the beginning of the liberalization process and is characterized by the implementation of a (nominal) devaluation and relaxation of some quantitative restrictions (QRs). During Phase IV further steps towards liberalization, through the replacement of quotas by tariffs are implemented. In Phase V the economy has become fully liberalized: current account transactions are fully convertible and QRs are not used any longer. While the first two phases characterize an illiberal trade system, Phases III through V represent different stages in the movement towards free trade. Bhagwati and Krueger found that by the mid-1960s one half of the countries in their sample—Turkey, Ghana, Israel, Egypt, the Philippines, India, Korea, Chile, and Colombia—had evolved from highly protectionist policies to a liberalized stage. So much so, that four of them could be classified as being in Phase IV, while one had attained the fully liberalized Phase V status. Two countries cycled between Phases II and IV, while the other three had a long-term attachment to Phase II distortions. In Section II.5 below, I discuss Krueger's formal empirical evaluation of the relationship among the different phases, exports growth, and overall economic performance.

In the 1980s, and as a way to provide a solid intellectual basis to its new program lending policies, the World Bank commissioned a monumental 19 country comparative study on trade liberalization led by Michael Michaely.¹⁰ The project

¹⁰ The countries are Argentina, Brazil, Chile, Colombia, Greece, Indonesia, Israel, Korea, New Zealand, Pakistan, Peru, the Philippines, Portugal, Singapore, Spain, Sri Lanka, Turkey, Uruguay, and Yugoslavia. The results are published in seven volumes edited by Demetris Papageorgiou, Michael Michaely, and Armeane M. Choksi (1991).

not only analyzed the characteristics and consequences of different trade regimes, as its predecessor had done, but went further, investigating the most appropriate ways of actually implementing a liberalization policy. Issues related to sequencing, speed, and transitional costs were analyzed and compared across countries.

In the light of the difficulties faced by previous studies in classifying countries in different trade regimes, including the problems with measuring the importance of quantitative restrictions, the directors of the World Bank project decided to tackle this problem by asking the individual country authors to construct an *index* of trade liberalization. This index could take values from 1, in the case of a highly repressed external sector, to 20 when foreign trade was fully liberalized, and had to be calculated for as many years as possible between 1948 and 1985. In only one of the 19 countries the liberalization index attained a value of 20—Chile in the late 1970s. The Chilean experience with alternative trade regimes and liberalization policies is briefly described in Section II.6 below.

The analysis of the evolution of this liberalization index through time, in conjunction with the behavior of other variables, allowed Michaely et al. to identify episodes of significant change in trade policy. They defined trade liberalization as

any change which leads a country's trade system toward neutrality in the sense of bringing its economy closer to the situation which would prevail if there were no governmental interference. . . . (Michaely, Papageorgiou, and Choksi 1991, vol. 7, p. xx)

Using this definition, 36 liberalization attempts were identified for the 19 countries in the study. Of these, 19 were considered to be strong liberalizations and 17 were classified as weak efforts. Only 15 of the 36 cases were sustained, in the

sense that the reform had not been reversed after a few years.

In spite of the effort made by Michaely et al. to surmount the difficulties in measuring trade orientation, their liberalization index is largely subjective, reflecting the personal perception of the individual country author and, due to this subjectivity it is not comparable across countries. In fact, the directors of this project were aware of this problem and warned the readers that "the index of liberalization is inherently not comparable *across countries*: its assigned level in any year is meaningful only in the context of changes over time in that country" (Michaely, Papageorgiou, and Choksi 1991, v. 7, p. 28). Consequently, the indices could not be used as indicators of trade orientation in their cross country econometric analysis; instead, they had to rely on dummy variables to classify different episodes.¹¹

II.4 Devaluations and Trade Liberalization

A central feature of both the Bhagwati-Krueger and Michaely et al. studies is that devaluations are considered an important component, in their own right, of a liberalization policy.¹² The reason for this is that in the presence of quantitative restrictions a (real) devaluation will reduce the rents accrued to those with import license allocations. In terms of Bhagwati and Krueger's framework, this will result in a lower premium (*PR*), and thus in a reduction in the anti-export bias.

The effects of devaluation under quantitative restrictions are illustrated

¹¹ See Appendix A2 of the Synthesis volume (Vol. 7) of Michaely, Papageorgiou, and Choksi (1991), for a set of regressions relating economic performance to trade policy.

¹² Krueger (1978, p. 53) says that "the feature that distinguishes Phase III from a straightforward alteration in the exchange rate is the prior existence of quantitative restriction."

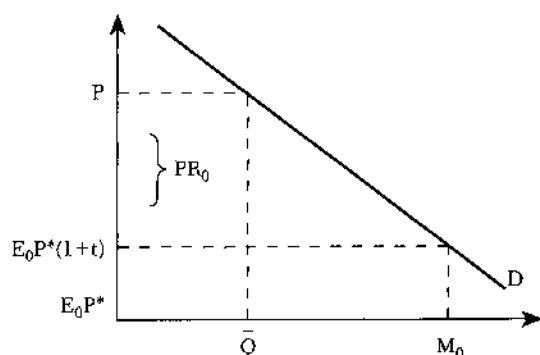


Figure 1a. Pre-devaluation situation

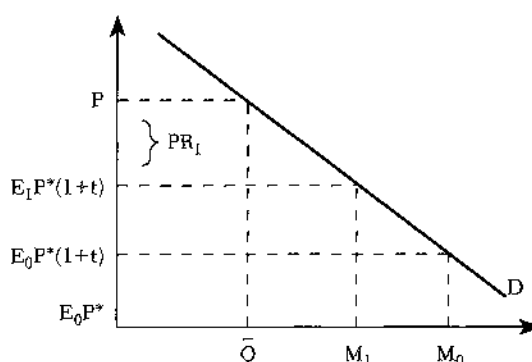


Figure 1b. Post-devaluation situation

through the simple (partial equilibrium) analysis in Figure 1. Figure 1a depicts the pre-devaluation situation, where D is the demand schedule for imports, P^* is the international price for imports expressed in foreign currency, E_0 is the initial (pre-devaluation) nominal exchange rate, t is the tariff on imports, and $\bar{Q}$ is the maximum amount of this good allowed into the country. Because $\bar{Q}$ is smaller than the quantity demanded in the absence of licenses (M_0), there will be rationing and the internal price of this good will exceed its international price inclusive of tariff $E_0P^*(1+t)$. The domestic price that clears this market is equal to P , and the premium associated with the existence of this license is equal to PR_0 . A devaluation which raises the domestic value of foreign exchange will increase the tariff inclusive world price of imports expressed in domestic currency. That is, $E_1P^*(1+t) > E_0P^*(1+t)$, where E_1 is the new (higher) nominal exchange rate. As can be seen in Figure 1b, the premium PR_0 has now been reduced to PR_1 and, as a consequence, there will be a lower anti-exports bias.¹³

Naturally, a devaluation will have no effect on the premium if it is accompa-

nied by an equiproportional increase in the domestic price of nontradables: What is required is a *real exchange rate* (RER) depreciation. A key question here—and one that attracted the attention of Krueger (1978) and the Michaely et al. study (1991)—is how to translate a nominal exchange rate adjustment into a real devaluation. If a nominal devaluation is accompanied by expansive fiscal and monetary policies, or if wages and other prices are severely indexed, inflationary pressures will develop and the real exchange rate will rapidly become overvalued. On the other hand, as Edwards (1989a) has found using an extensive cross-country data set, if nominal devaluations are accompanied by a set of consistent macroeconomic policies it is possible to generate significant real exchange rate devaluations and, thus, reductions in the trade system anti-exports bias.¹⁴ In his analysis of 39 major devaluation episodes in the developing countries between 1962 and 1982, Edwards found that in 25 out of 39 cases the nominal exchange rate adjustment succeeded in signifi-

¹³ Of course, this simplified partial equilibrium diagram ignores a series of important secondary effects. Still, it neatly captures the core of the argument made by Bhagwati and Krueger.

¹⁴ Edwards (1989a) argues that the role of nominal devaluations is to *facilitate* the elimination of real exchange rate overvaluation. Possibly the first systematic cross-country analysis of devaluations in the developing countries was undertaken by Cooper (1971). Much of the recent work in the area has built on his early contribution.

cantly altering the real exchange rate. Additionally he found that in the vast majority of these cases (20 out of 25), the successful devaluation package had been accompanied by major steps towards dismantling trade, capital, and exchange controls.¹⁵ In every one of these cases exports experienced a rebound and the overall external position of the country experienced a significant improvement relative to its pre-devaluation level.

The Krueger-Bhagwati project detected similar behavior patterns for the anti-export bias in the period following devaluations. Immediately after the nominal exchange rate adjustment, the RER experienced a drastic jump, which was followed by a slow erosion. The magnitude of this subsequent appreciation in the real exchange rate varied across countries: however, two years after the nominal devaluation in 13 of 22 devaluations classified as Phase III cases, the real exchange rate was still depreciated when measured with respect to its pre-Phase III value. What is more important is that in the majority of the cases where data were available, devaluations appeared to have resulted in a reduction of the anti-export bias. Table 4 presents information on the evolution of the trade regime bias—as defined in equation (2)—in selected Phase III episodes: in all but two cases—the two Korean episodes—the bias was lower two years after the devaluation than immediately prior to it.¹⁶

The analysis of devaluations and trade distortion in the Michaely et al. project

TABLE 4

ANTI-EXPORT BIAS AND DEVALUATIONS IN SELECTED
LIBERALIZATION EPISODES^a

Country	Devaluation Episode	Prior to Devaluation	Two Years After Devaluation
Brazil	1957	2.45	2.26
	1961	1.78	1.41
	1964	1.41	1.34
Chile	1956	3.69	1.94
	1959	1.94	1.99
	1965	1.95	1.79
Philippines	1960-62	2.01	1.36
	1970	1.37	1.16
Korea	1961	0.67	0.78
	1964	0.78	0.92
Turkey	1958-59	6.31	1.80

Source: Krueger (1978).

^a The index is defined in detail in equation (2). A lower index reflects a reduction in the extent of anti-export bias.

not only provided broad support for the findings in earlier studies, but also emphasized the fundamental role of real exchange rate stability in liberalization episodes. In general, countries with a more volatile real exchange rate experienced poorer overall performance than those nations that had managed to maintain a more stable real exchange rate. In a summary of the project, Michaely (1991, p. 119) states that: "The *long term* performance of the real exchange rate clearly differentiates 'liberalizers' from 'non-liberalizers.'"

In most countries in sub-Saharan Africa devaluations and liberalization policies have historically been vehemently opposed by politicians and policy makers. At the center of this hostility towards "trade-enhancing" policies, has been the belief that the successful development of Africa would require a rapid industrialization process. These policies, it was argued, would help the continent achieve "collective self-reliance" and reduce its

¹⁵ See the Appendix to Edwards' (1989a) Chapter 6 for a detailed discussion on the evolution of barriers to international exchange in the period immediately following the 39 devaluation episodes.

¹⁶ One should be cautious, however, in interpreting the data in Table 4, and in attributing the full reduction of the bias to the devaluation itself. In fact, as it was argued above, most devaluation policies are accompanied by relaxations of trade restrictions and controls.

external vulnerability.¹⁷ However, instead of generating growth, self-reliance, and better life conditions, the implementation of inward oriented policies based on planning models during the 1960s and 1970s resulted in severe crises throughout the African continent: market incentives were seriously distorted, food production plummeted, GNP per capita fell by almost one percent per year during the 1970s, corruption became rampant, and shortages were generalized.

In an influential report released in 1981 the World Bank called for major economic reforms in Africa, including the elimination of distortions, the reestablishment of market mechanisms and the encouragement of agricultural exports through large devaluations. There is little doubt that it was this call for massive and generalized *devaluations* throughout the continent that has made this World Bank report particularly controversial. The World Bank critics have argued that nominal devaluations in Africa are fully translated into higher domestic inflation, without reducing the anti-exports bias. More specifically, the skepticism towards the effectiveness of exchange rate adjustments has been largely based on the belief that aggregate agricultural exports in Africa have a very low degree of responsiveness to relative price changes.¹⁸ Re-

cent research, however, has strongly suggested that, contrary to the popular belief, long-run supply elasticities of aggregate exports in Africa are significantly positive. Marian Bond (1983), for example, used country-specific data to estimate supply elasticities for aggregate exports and found point estimates that ranged from 0.07 for Uganda to 0.6 for Senegal. On the other hand, using pooled data for 16 sub-Saharan countries for 1974–82, Balassa (1989) estimated elasticities of aggregate exports ranging from 0.78 to 0.91.

The emergence of massive shortages of manufactured goods in many African countries during the 1980s introduced a new dimension in the debate on effectiveness of devaluation policies. A number of authors argued that, to the extent that producers could not purchase manufactured goods—either consumption goods or intermediate inputs—higher nominal exchange rates would not encourage increases in exports production.¹⁹ This, of course, is a variant of the nominal vs. real devaluation issue. If manufacturing goods shortages are severe enough, their parallel market prices will be so high that for all practical purposes nominal devaluations will have no impact on the real exchange rate and, thus, on producers behavior. Jean-Claude Berthelemy and Christian Morrison (1989) have explicitly incorporated this aspect of African economies in their estimation of aggregate agriculture supply elasticities for the individual country level in Africa. Using data for six countries, they found that these elasticities were higher than those reported by Marian Bond (1983), ranging from 0.1 in Madagascar to 1.0 in Senegal.

As a consequence of the empirical re-

¹⁷ This policy stance was formalized in the "Lagos Plan of Action." See Organization for African Unity (1980). Of course, for those familiar with Latin America's economic history the rhetoric of the Lagos Plan generated a clear sense of *déjà vu*. However, from a doctrinal perspective the African plan was squarely based on Marxist principles. See, for example, Samir Amin (1973).

¹⁸ For a flavor of the controversy and of the debate that followed the publication of this report, see, for example, David Gordon and Joan Parker (1984). See United Nations Economic Commission for Africa (1990) and Kenneth Shapiro (1984) for a criticism of the World Bank Report. Paul Mosley, Jane Harrigan, and John Toye (1991) provide a critical view of liberalization policies, including devaluations, that were supported by the World Bank during the 1980s. See, also, Taylor (1988).

¹⁹ For a theoretical discussion motivated by the Tanzanian experience see Tessa van der Willigen (1986). See also J. A. Mollett (1984).

sults obtained by studies like the ones reviewed here, there has recently been serious questioning of the validity of the traditional antiliberalization perspective in Africa. In fact, an increasing number of institutions have been slowly embracing the idea that devaluations—and more specifically real exchange rate realignment—provide an effective way for reducing the extent of the anti-export bias in Africa. For example, in a recent study, FAO (1991) has argued the “real devaluation would be necessary to switch production to . . . exportable cash crops . . .” (p. 202). Since the mid-1980s an increasing number of African nations have engaged in reform, including exchange rate adjustment.²⁰

II.5 Cross-Country Evidence on Trade Orientation and Growth

What is the effect of trade orientation on economic performance? This is the fundamental issue which multi-country comparative studies ultimately have to address. Given the serious measurement problems involved in tracking the evolution of trade orientation through time this is not an easy question to answer.

In dealing with the relation between trade policy and growth, the most serious analytical difficulty has been the traditional absence of firm theoretical grounds that link national domestic policies to

long-run equilibrium growth. Within the framework of the neoclassical growth model, trade and other policies will affect the equilibrium *level* of aggregate output, but not its *rate of growth*. Only recently, with the development of endogenous growth models has this framework been modified to handle policy effects on growth. The traditional trade policy literature has dealt with this analytical problem in two related ways: first, a number of authors argued (either implicitly or explicitly) that movements from one steady state to a new steady state could account for most growth effects of domestic policies; and second, it has been pointed out, in a somewhat loose fashion, that there are some important dynamic advantages of freer trade that affect productivity and growth even in the long run.²¹

Using data from the individual country studies, Krueger (1978) econometrically tested two hypotheses: (1) more liberalized regimes result in higher rates of growth of exports; and (2) a more liberalized trade sector has a positive effect on aggregate growth.²² In the latter case she conjectured that there are two channels through which openness positively affected growth. First, there are direct effects that operate via “dynamic advantages”—including higher capacity utilization and more efficient investment projects—and second, there are indirect effects that work through exports: more liberalized economies have faster growth of exports and these, in turn, result in more rapidly growing GNP.

In her formal econometric analysis Krueger estimated the following equa-

²⁰ Ajay Chhibber (1992) has argued that if in Africa nominal devaluations are implemented within the context of restrictive fiscal policies, it is possible to generate significant real exchange rate adjustments. This point has also been forcefully made by Brian Pinto (1991) in a discussion on the unification of parallel and official exchange rates in Africa. Many critics of devaluation have argued that if all African countries engage in these types of policies, terms of trade will worsen, with the net effect of these policies being negative. Balassa (1989), however, argued that if the possibility of diversifying production is taken into account there is no reason for this adverse effect to be severe. For a discussion of recent reforms in Africa see Carol Lancaster (1991).

²¹ On “new” endogenous theories of growth see, for example, Paul Romer (1986) and Robert Lucas (1988). Also most of the literature reviewed in Section III implicitly assumes that off-steady state situations capture LDCs experiences even over long periods of time. See, for example, Corden (1986).

²² A “liberalized” regime was defined as one that had reduced the extent of anti-exports bias.

tion on pooled data for traditional and nontraditional exports:

$$\log X_{it} = a_{0i} + g \log REERX_{it} + rT_t + a_1 d_1 T_t + a_2 d_2 T_t + a_3 d_1 + a_4 d_2 + u_{it},$$

where X_{it} are either nontraditional or traditional exports in country i in period t ; $REERX$ is the exports effective real exchange rate, defined as the units of domestic currency received by an exporter for each real dollar worth of exports; T_t is a linear time trend; d_1 is a dummy that takes the value of one in Phases I and II and zero otherwise; and d_2 is a dummy equal to one when the country is in Phases IV or V, and equal to zero in all other phases. She also estimated a real GNP equation on time series for each individual country:²³

$$\log GNP_t = b_0 + b_1 T_t + b_2 \log X_t + b_3 d_1 T_t + b_4 d_2 T_t + \epsilon_t,$$

where X_t is an index of the dollar value of exports of country i in year t , relative to i 's average exports over the entire period.

The results strongly confirmed that a more depreciated $REERX$ has a positive impact on nontraditional exports; traditional exports, however, did not appear to be sensitive to real exchange rate changes. For both types of exports the coefficient of d_2 —the dummy variable for Phases IV and V—was significantly positive, suggesting that the move to a more "liberalized" regime also has a positive effect on exports growth. In terms of their relative contributions to export growth, real exchange rate changes appeared to be substantially more important than movements in the "liberalization" ladder. This prompted Krueger to conclude that "it is bias reduction, to a consider-

able greater extent than it is liberalization, which brings about export response" (1978, p. 205).

With respect to GNP growth, Krueger argued that her estimates provided strong evidence in favor of an indirect effect of liberalization on growth: higher exports positively affected GNP growth. However, the dummy variables coefficients were not significant in any of the regressions estimated, suggesting that there is no direct effect of liberalization on growth. In Krueger's words:²⁴

[F]actors associated with better export performance explain whatever systematic differences there are in growth rates under different phases of the regime; the fact that the regime itself is liberalized (or restricted) does not seem to have any additional independent influence. (1978, p. 274)

The conclusion that trade regimes *per se* had no *direct* effect on economic performance troubled some people. Balassa (1982), for example, argued that Krueger's results were seriously affected by an inadequate classification of trade regimes. According to him, by focusing almost exclusively on quantitative restrictions, the NBER study had basically ignored the protective effect of tariffs. He pointed out that, even in the absence of QRs, high tariffs usually introduced a strong bias against exports. In support of this view he cited the Argentinian experience.

As an alternative to the NBER five phases, Balassa (1982) proposed a four-way classification of trade regimes, that ranged from outward orientation—where the export bias stemming both from QRs and tariffs had been eliminated—to inward orientation, where the anti-export bias was the highest. Using data on effec-

²³ These equations were estimated for the ten countries in the study for 1954–72, or for subperiods within those years for which data were available.

²⁴ Notice that although Krueger discussed her results in terms of the effect of trade regimes on *growth*, her regressions considered the real GNP level as the dependent variable.

tive rates of protection, effective export subsidies, and nominal protection, Balassa (1982) classified 11 countries into these four categories.²⁵ He found that for the period 1960–73 those countries with lower anti-export bias had experienced a faster rate of growth of exports, and he concluded that this was strong evidence favoring the hypothesis that protectionism seriously hampered export expansion.

In trying to test the more controversial proposition that trade regimes affect GDP growth independent of exports, Balassa faced the traditional problem of measuring trade orientation. Instead of using dummy variables, as Krueger (1978) had done in the NBER project, Balassa (1982) decided to use "the growth rate of exports as a proxy for policy orientation" (p. 51). Using Spearman rank coefficients on pooled data for the eleven countries, he found that exports growth and output growth had been positively correlated and concluded that "the expansion of exports and the consequent growth of GNP have been the result of the incentives applied" (1982, p. 59). Although Balassa's comparative analysis was backed by individual country studies, it had some limitations that, in fact, have been present in much of the subsequent literature. Some of these refer to the arbitrary definition of export incentives, the lack of a role for real exchange rates in the explanation of export performance, the use of a highly suspicious proxy (exports growth) for trade orientation, and the inability to deal convincingly with causality issues. In fact, it is not clear whether it is exports growth that causes output expansion, or the other way around.

Michael et al.'s study returned to the

use of dummy variables to classify trade regimes in formally evaluating the effects of trade policy on growth. A number of regressions relating economic performance to different attributes of the trade regime—which, as pointed out, were captured by dummy variables—were estimated. By and large the results supported the view that countries with more intense, sustained liberalizations have outperformed those with failed liberalization attempts. However, in this study as in its predecessors, the problem of measuring trade orientation is not fully resolved. As in previous studies there was a nontrivial degree of arbitrariness in classifying countries as strong or weak liberalizers, and the use of binary dummies precluded the analysis of how different grades of trade liberalization affect growth and other key variables.

II.6 Two Examples of Trade Orientation and Liberalization

Among the countries examined in these projects, Chile and Korea provide two of the most interesting case studies of the evolution of trade policy.

Chile: Between 1950 and 1970—the years covered in the Bhagwati-Krueger study—Chile went through three incomplete liberalization attempts: in 1956–57 it reached Phase III, in 1959–61 it moved even further into Phase IV, and in 1965–70 it again reached Phase III (see Table 5). As with most countries in this study, during the period under analysis Chile never reached the stage of full liberalization (Phase V). Moreover, all of its three attempts were short-lived, ending up in frustration and in a reversion to exchange controls, the use of multiple exchange rates, and massive quantitative restrictions. An interesting feature of the three Chilean liberalization attempts is that, although they took place under three different exchange rate systems, they all

²⁵ The countries considered in this study are: Argentina, Brazil, Chile, Colombia, India, Israel, Korea, Mexico, Singapore, Taiwan, and Yugoslavia.

TABLE 5
PHASES OF EXCHANGE CONTROL REGIMES IN CHILE
1950-1972

Period	Phase
1950-55	II
1956-57	III ^a
1958-59	II
1959-61	IV ^a
1962-64	II
1965-70	III ^a
1971-72	II

Source: Jere Behrman (1976).

^a These are the liberalization episodes identified in the Krueger-Bhagwati study, and defined above.

collapsed, at least in part, due to a highly overvalued real exchange rate.²⁶

What makes the Chilean experience particularly interesting is that eventually, in the late 1970s and early 1980s, the country did adopt a very open trade regime with low uniform import tariffs, no exchange or trade controls and minimum restrictions to capital movements. There is no doubt that since 1979 Chile's trade policy corresponds to Phase V in the Bhagwati-Krueger classification: there are no QRs, licenses, or prohibitions. A uniform import tax—that has varied between 10 and 20 percent—has been in effect, and, by and large, real exchange rate overvaluation has been avoided. In fact, Chile is the only country in the Michaely et al. study whose index of liberalization reached the maximum possible level of 20.

In 1973 Chilean import tariffs averaged 105 percent and were highly dispersed, with some goods subject to nominal tar-

iffs of more than 700 percent and others fully exempted from import duties. In addition to tariffs, a battery of quantitative restrictions was applied, including outright import prohibition and prior import deposits of up to 10,000 percent (see de la Cuadra and Hachette 1991). These protective measures were complemented with a highly distortive multiple exchange rate system consisting of 15 different rates. By August of 1975 all quantitative restrictions had been eliminated and the average tariff had been reduced to 44 percent. This tariff reduction process continued until June of 1979 when all tariff items but one (automobiles) were set at 10 percent. In the mid-1980s, in the midst of the debt crisis, temporary tariff hikes were implemented; by 1987, however, a uniform level of 15 percent was firmly established.

The opening of Chile's external sector was accompanied, during most of the period, by a strongly depreciated real exchange rate.²⁷ The combination of these two policies had a significant impact on Chile's economic structure. The share of manufacture in GNP dropped from 30 percent in 1974 to 22 percent in 1981; productivity in tradable sectors grew substantially and exports became highly diversified. By the early 1990s exports had become the engine of growth and the Chilean experience with trade reform was praised as a big success by the multinational institutions and observers from different ideological persuasions (see World Bank 1989, 1990). Largely thanks to the boom in exports, between 1986 and 1991 Chile experienced the highest rate of growth in Latin America with an

²⁶ While the 1956-57 liberalization was carried out under floating exchange rates, the 1959-61 was implemented with a fixed nominal exchange rate, and the 1965-70 episode took place under a managed crawling peg system, where the nominal exchange rate was periodically adjusted. See, for example, Sergio de la Cuadra and Dominique Hachette (1991).

²⁷ During 1980-82, however, the government allowed the real exchange rate to become overvalued. This generated a serious crisis that lasted until 1986-87. Since 1985 Chile has successfully followed a crawling peg nominal exchange rate regime where the official exchange rate is adjusted periodically as a way to avoid devaluation. See Edwards and Alejandra Cox-Edwards (1991) for details.

TABLE 6
PHASES OF EXCHANGE CONTROL REGIMES IN KOREA
1950-1972

Period	Phase I
1950-53	I
1954-60	II
1961-62	III ^a
1963	II
1964-65	III ^a
1966-72	IV ^a

Source: Krueger (1978).

^a These are the liberalization episodes identified by the Krueger-Bhagwati study.

annual growth of GDP of 4.2 percent.

Perhaps the strongest sign of Chile's success with trade reform is that the new democratic regime of President Patricio Aylwin (elected in December of 1989) decided to continue the opening process, reducing, in June of 1991, import tariffs even further to a uniform 11 percent. What makes this measure particularly remarkable is that President Aylwin's economic team—including the Ministers of Finance and Economics—had been relentless critics of the trade reform process during its implementation in the mid and late 1970s. This remarkable change of opinion is clearly captured by the following quote by Aylwin's Minister of finance, at one time one of the most severe critics of the liberalization process:

Preserving the former government achievements means maintaining an open economy fully integrated into world markets, dynamic growth in exports, with a private sector fully committed to the task of [economic] development. (*Newsweek*, Latin American edition, Mar. 26, 1990)

Korea: Between 1963 and 1990 Korea's merchandise exports grew, in real U.S. dollar terms, at an annual rate of 23 percent. This stellar performance has often been mentioned as a premier example of the positive results of outward oriented

TABLE 7
IMPORT TARIFFS AND QUANTITATIVE RESTRICTIONS
IN KOREA 1977-1988

	Tariff (%)	Percentage of Imports Subject to
		Licenses & Prohibitions
1977	29.7	50.1
1979	24.8	30.9
1984	21.2	14.6
1988	9.8	4.6

Sources: Kwang Suk Kim (1991); World Bank (1989).

policies. However, Korea has not always been an open economy. In fact, throughout most of 1950-63 Korea's external sector was highly distorted. During this period most imports were subject to licensing, tariff rates were high (exceeding 50% in 1959-60), and a multiple exchange rate system was in effect. As can be seen from Table 6, with the exception of 1961-62, the Krueger-Bhagwati project classified Korea as a highly repressed economy throughout these years.

A major policy change took place in 1964, when exchange rates were unified, a major devaluation was implemented, and a systematic process of trade liberalization was started. Gradually import tariffs were reduced, the coverage of import licenses was eased, and import prohibitions were eliminated. By the end of the 1980s average import tariffs had been reduced to approximately 10 percent, and import licenses had been virtually eliminated (see Table 7). The transformation of Korea's external sector not only resulted in an accelerated growth of exports, but also affected their composition. While in 1962 manufactured goods amounted to a mere 17 percent of total exports, by 1980 their share had climbed to 75 percent (see Kwang Suk Kim 1991).

Supporting exchange rate and export promotion policies accompanied the Ko-

rean trade liberalization experience throughout 1964–90. Since the devaluation of 1964, the Korean authorities have made a concerted effort to maintain a highly depreciated—that is, competitive—*real* exchange rate. Starting in 1980 Korea pegged its nominal exchange rate to a basket of currencies, allowing periodic adjustments that reflect the development of a series of domestic and external factors. This system has allowed Korean exports to remain highly competitive in the world economy, but has generated serious accusations of unfair trade practices by the U.S.²⁸

Starting in the 1960s an aggressive export promotion scheme became an important complement of the Korean trade liberalization strategy. Throughout the years exports have been subsidized through a number of channels, including (a) direct cash subsidies (until 1964); (b) direct tax reductions (until 1973); (c) interest rate preferences; (d) indirect tax reductions on intermediate inputs; and (e) tariff exemptions to imported intermediate materials.²⁹ Kim (1991) has recently calculated that between 1964 and 1980 these subsidies, taken together, amounted to approximately 23 percent. However, as the devolution of indirect taxes and tariff duties paid on imported inputs are not genuine subsidies, he has argued that the relevant figure for evaluating the effect of export subsidies should exclude these items. He estimates that these total net subsidies—comprised of direct cash subsidies, direct tax reductions, and interest rate preference—have been reduced from 23 percent to zero between 1963 and 1983. He has argued,

²⁸ Rogelio Arellano-Cadena (1990) found that the Korean real exchange rate has had one of the lowest levels of volatility in the developing countries. See Bongsung Oum (1989) for a description of the Korean exchange rate system. See KDI (1989) for an analysis of some of the Korean U.S. fractions.

²⁹ See Kim (1991) for details on the different export promotion schemes used.

as others have, that in the case of Korea, these export subsidies played a fundamental role during the earlier years of the Korean export boom.

III. *Trade Orientation, Liberalization, and Unemployment*

One of the most important issues addressed by politicians before embarking on a trade reform program refers to the unemployment consequences of the policies under consideration: Is the liberalization process going to result in short-term unemployment? What will happen to long-run employment? Many times liberalization attempts have been aborted half-way, as the political authorities fear serious labor market disruptions. This has long been understood by economists. For example, Michaely, Papageorgiou, and Choksi (1991, vol. 7, p. 3) have stated that “[a]voiding high unemployment should . . . be a consideration in any scheme of liberalization.” In this section I briefly review the empirical literature on the relationship between trade policy, tariff reforms, and labor market developments in the developing countries.³⁰

The most important pioneering studies on structural reform and trade liberalization attempts devoted little effort to analyze the employment consequences of these policies. For example, Little, Scitovsky, and Scott (1970) discuss only briefly the *long-term* employment consequences of industrialization policies, without addressing the short-term consequences on the labor market of their proposed policies of tariff reduction. In fact, their otherwise illuminating discussion on the transition from a repressed to a liberalized trade sector (ch. 10) does not

³⁰ Due to space considerations the discussion is restricted to the empirical literature on the subject. For a theoretical analysis of the main issues involved see, for example, Edwards (1988).

touch explicitly on the employment issue. They do refer, however, to the income distribution effects of trade liberalization policies, arguing that a rapid trade reform would result in drastic changes in income distribution that would, probably, trigger an opposition to the implementation of these policies. In fact, it is this consideration of the potential political opposition to the reforms that prompts them to recommend a *gradual* trade liberalization process. However, no empirical discussion is provided to support the conjecture that more gradual reforms will have a smaller effect on unemployment.

The NBER project directed by Bhagwati (1978) and Krueger (1978) discussed above dealt in a very general way with the question of the employment consequences of trade reforms in the ten countries under study. In her synthesis volume Krueger (1978) devotes little more than two pages to this issue, pointing out that, generally speaking, the evidence from the individual countries indicated that employment grew more rapidly during Phases IV and V—that is, during those phases in which the trade regime was characterized by a more liberalized external sector. Based on data provided by the individual country authors she argues that this effect was particularly strong in the cases of the Philippines and Korea.

The link between trade regimes and employment is the specific subject of another NBER project directed by Krueger (1981). This study focused mainly on the *long-run* relationship between trade orientation and employment creation. Its main purpose was not to inquire how trade reform affected labor markets, but to analyze whether the existence of factor market distortions had resulted in deviations in the observed directions of trade from those suggested by the Heckscher-Ohlin-Samuelson framework. The expe-

riences of ten developing countries were analyzed in detail.³¹ Labor coefficients of foreign trade were computed, production functions at the industry level were estimated, and the extent of factor market distortions was assessed. The authors found that, without any exceptions, labor markets were highly distorted in the ten countries under study, with industrial minimum wages being the most prevalent form of distortion. The analysis of the empirical evidence strongly indicated that, in most of the countries, exportable industries (defined as such in a Heckscher-Ohlin sense) tended to be more labor intensive than import competing industries. Moreover, the data showed that the exportable sectors were relatively more intensive in the use of unskilled labor than import competing sectors. Krueger interprets this evidence as suggesting that, in spite of the existence of pervasive distortions in factor markets, the directions of trade in these countries responded to large extent to the Heckscher-Ohlin predictions. The other two general conclusions from this study are that employment tends to grow faster in outward oriented economies—a finding also obtained in the Bhagwati-Krueger study—and that the removal of both factor market distortions and trade restrictions benefits, in the long run, the employment creation process in most of the developing countries.

The World Bank study directed by Balassa (1982) also addressed the long-term employment consequences of different trade regimes. In his synthesis piece on the experiences of eleven countries Balassa points out that, because primary activities and manufacturing for exports are more labor intensive, "reducing tariffs will tend to benefit employment" (p. 65). Nevertheless, neither in the synthesis

³¹ Brazil, Chile, Colombia, Indonesia, Ivory Coast, Pakistan, Korea, Thailand, Tunisia, and Uruguay.

paper nor in the individual country studies is the issue of unemployment during the transition addressed in detail.³²

The most ambitious study on the labor market effects of trade liberalization reforms has been Michaely et al.'s recent World Bank project. In order to deal with the labor market consequences of the reforms, each country author used the methodology he or she found more appropriate and tried to evaluate the extent to which trade reform in that specific episode had affected employment, unemployment and, in some cases, wages.

In analyzing the employment consequences of trade reform Michaely et al. distinguish between gross and net effects. The gross—or in their words “dis-employment”—effect is defined as the unemployment associated with the contraction of some industries after the trade liberalization reform is undertaken. The net effect, on the other hand, is defined as the total change in aggregate unemployment in the economy. Naturally, from an economic perspective the net effect is the most interesting one, because under most circumstances we would expect a reduction in the level of employment in those sectors that lose competitiveness, and an increase in employment in those sectors that, as a consequence of a reform, expand.

In most cases the authors compute variants of the “before” and “after” method in assessing the employment effects of trade reforms. In three of the studies, however (Chile, Spain, and Yugoslavia) a method that attempted to control for the evolution of other economic variables—such as the terms of trade, fluctuations in economic activity and

macroeconomic policies—was used. The authors of the Chile and Yugoslavia studies found that, when controlling for other factors, the *net* effect of liberalization on employment was positive: as a consequence of the liberalization program the aggregate rate of unemployment declined in these countries.³³ For Spain the results differed depending on which liberalization episode was considered. While in the first two liberalization attempts (1960–66) and (1970–74) aggregate unemployment increased after the trade reforms, in the third episode (1977–80) there was a *decline* in net unemployment after liberalization.

Regarding the other countries in the study, it was found that unemployment increased *after* the following episodes:³⁴ Argentina in (1967–70) and (1976–80); Israel in (1952–55) and (1962–68); Indonesia in (1966–72); Korea in (1978–79); the Philippines in (1960–65); and Turkey in (1980–84). In most of these cases, however, the increase in unemployment was rather small, and could be attributed to factors different from the reform itself. These results led the directors of the project to conclude that “by and large, liberalization attempts have *not* incurred significant transition costs by way of unemployment” (Michaely, Papageorgiou, and Choksy, Vol. 7, ch. 6, p. 80, *emphasis added*).

Undoubtedly, the Michaely et al. project constitutes the most complete and

³³ The procedure used compares employment “before” and “after” the trade reform, without controlling for the effect of other variables. However, during the second year (1967) of the Yugoslavian liberalization effort there was an increase in unemployment.

³⁴ It is interesting to note that, in spite of their “before and after” comparisons, almost every time unemployment does increase after the reform the authors tend to attribute it to causes other than the reform itself. For example, in the Argentinean case they talk about overvaluation, in the Israeli episode they mention restrictive macro policies; in Korea they talk about a recession and so on.

³² This study includes Argentina, Brazil, Chile, Colombia, India, Israel, Korea, Mexico, Singapore, Taiwan, and Yugoslavia. The Korean and Taiwan studies, however, analyze in some detail the link between exports growth and employment absorption.

ambitious attempt to deal with the link between structural reforms and the labor market. However, as is usually the case with a collection of multi-authored country studies, the empirical and historical analyses are uneven and, at times, somewhat unfocused. For instance, in some of the country studies, there is no detailed discussion on the role of labor market distortions, minimum wages, or indexation practices.

The link between trade liberalization reforms and labor market adjustment has also been studied for the liberalization experiences of the Southern Cone of Latin America during the 1970s. In particular, in the case of Chile it has been argued that the existence of labor distortions—including minimum wages and wage indexation to past inflation—generated a segmented labor market, with a protected and an unprotected sector. The existence of a protected sector resulted in important wage rigidities that impaired the labor market's ability to adjust to the trade reform and other shocks. For example, Edwards and Cox-Edwards (1991) have calculated that as a result of existing labor market rigidities, the trade liberalization reform generated short-run unemployment in Chile on the order of 3.5 percent.³⁵

IV. Exports Growth, Trade Orientation, and Aggregate Growth

The comparative studies reviewed in Section II have provided very detailed information on trade policy practices in LDCs. However, their coverage has been small; in each of them only a handful of countries was actually analyzed. In

an effort to broaden the scope of the inquiry a number of authors have used larger cross-country data sets to analyze econometrically the relationship between trade orientation and growth. These studies make no pretense of learning details of trade policy practices of the countries in the sample; their strategy has been to maximize the number of countries included in the analysis. This section reviews and analyzes some of the most important works in this category.

In a highly influential paper that has generated significant additional research effort, Michaely (1977) used simple rank correlations on a 41-country sample for 1950–73 to analyze whether the rate of growth of exports has been associated with GDP growth. In order to avoid spurious results stemming from the fact that exports are a component of GDP, Michaely focused on the rate of growth of exports *shares* of GDP, and their relation with output growth. He found that the Spearman rank coefficient was significantly positive (.308) for the sample as a whole. It was larger (0.523), however, for a subsample of 23 middle income countries.³⁶ Balassa (1978) also used the rank correlation methodology to investigate this issue further. Using pooled data on eleven countries for 1960–73, he again found a positive correlation coefficient between different measures of the rate of growth of exports and output growth.

These results were criticized on three accounts: first, by looking at correlation coefficient, the (possible) role of other factors on growth was ignored. Second, no attempt was made to distinguish between endogenous and exogenous variables; that is, the issue of causality between exports growth and GDP growth was not

³⁵ Edwards and Cox-Edwards (1991) use a segmented labor market model to quantify the effects of the Chilean trade reform on unemployment. On this issue see, also, Vittorio Corbo, de Melo, and Tybout (1986) and Joseph Ramos (1986).

³⁶ Countries with GNP per capita exceeding U.S. \$300 in 1972 dollars.

satisfactorily addressed. And third, these analyses were not based on firm theoretical grounds.

IV.1 *Studies Based on Neoclassical Production Functions*

A number of authors have attempted to get around the criticisms of the rank correlation studies by formulating a conceptual framework based on neoclassical production functions. At the center of this approach is the idea that exports contribute to aggregate output in two fundamental ways: first, it is assumed that the exports sector generates positive externalities on nonexports sectors, through more efficient management styles and improved production techniques. Second, it is argued that there is a productivity differential in favor of the exports sector. Thus, an expansion of exports at the cost of other sectors will have a positive net effect on aggregate output.³⁷

Feder (1983) captured these ideas in a simple model with an exports sector (X) and a nonexports sector (N). The two sectoral production functions are:

$$N = F(K^N, L^N, X), \quad (3)$$

$$X = G(K^X, L^X), \quad (4)$$

where K^i and L^i are capital and labor used in the i ($i = N, X$) sector. Denoting partial derivatives by subscripts, the assumption of a productivity differential across sectors is captured by the following equation:

$$\left(\frac{G_K}{F_K}\right) = \left(\frac{G_L}{F_L}\right) = 1 + \delta, \quad (5)$$

³⁷ Gershon Feder (1983) provides the first formal model on this subject. According to him the productivity differentials across sectors could be due to several factors, including a more competitive environment in which exports operate. He does not explain, however, why these effects are not internalized by economic agents, nor why the productivity differentials tend to persist through time.

where G_L, F_L are the marginal productivities of labor, and G_K, F_K are the marginal productivities of capital. Then, δ measures the extent of the productivity differential in favor of exports. If $\delta = 0$, resources are optimally allocated and productivities are equalized across sectors. The assumption of a positive externality of exports is captured by the inclusion of X as an additional productive factor in the production function for the non-exports sector. The magnitude of F_X (the marginal productivity of X in N) measures the importance of this externality. If $F_X = 0$ the externality is not present, and exports growth will have no effect on the output of N .

Aggregate GDP (y) is the sum of N and X :

$$y = N + X. \quad (6)$$

After assuming that the marginal productivity of labor is equal to $\beta(y/L)$ (where β is a constant), Feder derives the following equation for the rate of growth of GDP:³⁸

$$\begin{aligned} (y/y) = & \alpha(I/y) + \beta(L/L) \\ & + [F_X + (\delta/(1 + \delta))](X/y)(X/X), \end{aligned} \quad (7)$$

where (I/y) is the investment ratio. The presence of the exports growth term on the right hand side of (7) distinguishes this expression from a straightforward growth accounting equation. Notice that in the absence of productivity differentials ($\delta = 0$) and of exports-related externalities ($F_X = 0$), the $(\dot{X}/X)$ term disappears, and equation (7) reverts to a standard neoclassical growth equation. One of the most attractive features of equation (7) is that it can be readily estimated using standard econometric techniques.

Feder used a sample of 31 semi-indus-

³⁸ This is derived from (3)–(6) and the assumption that $F_L = \beta(y/L)$, where β is a constant. α is equal to F_K .

trialized countries to estimate (7).³⁹ All variables were measured as 1964–73 averages, and ordinary least squares were used. The main hypothesis being tested is whether the coefficient of $(\dot{X}/y)(\dot{X}/X)$ was significantly positive as suggested by the theory. The following result was obtained (*t*-statistics in parentheses):

$$\begin{aligned} (\dot{y}/y) = & 0.002 + 0.178 (I/y) \\ & (0.180) \quad (3.542) \\ & + 0.747 (\dot{L}/L) + 0.422 (X/y)(\dot{X}/X) \\ & (2.862) \quad (5.454) \end{aligned}$$

$$\bar{R}^2 = .69.$$

Feder interpreted these findings as providing "strong support to the hypothesis that marginal factor productivities in the export sector are higher than in the non-export sector" (p. 65).

In an effort to disentangle the "exports productivity" (δ) from the "exports externality" (F_x) effects, Feder estimated an equation that included $(\dot{X}/X)$ as an additional regressor.⁴⁰ He found that both the coefficients of $(X/y)(\dot{X}/X)$ and of $(\dot{X}/X)$ were significantly positive and concluded that although both effects were present, export externalities were relatively more important than productivity differentials. Although these results were highly suggestive and represented an improvement over simple correlations between exports

growth and GDP growth, Feder made no attempts to analyze the robustness of his results, nor did he discuss some of the most common econometric problems faced by this type of analysis. As a result of this a number of people remained highly skeptical of the validity of these results.

Following the publication of Feder's paper, a number of authors have tried to expand the analysis in several directions. While some authors have based their analyses strictly on Feder's two sectors formulation, others have resorted to simpler one sector models where exports enter the production function as an additional factor of production: $y = f(K, L, X)$. In this case, the relevant exports-related regressor in the cross-country regressions is $(\dot{X}/X)$ and not, as in Feder, $(X/y)(\dot{X}/X)$. A serious problem with this simpler formulation, however, is that it has not specified the channels through which exports are supposed to affect GDP.

In order to organize the discussion I have classified work on the relationship between exports growth and GDP growth under five general questions:

- 1) Are poor and middle income countries affected in a similar way by outward orientation? or, is there a required minimum threshold level of development in order to enjoy the benefits of rapid exports growth?
- 2) How, if at all, do changing world economic conditions affect the benefits derived from outward orientation? Do the results of export promotion in the LDCs depend on whether the world economy is experiencing a boom or a bust?
- 3) Are there other channels, in addition to productivity differentials and externalities, through which exports expansion affects output growth? In other words, is the equation well

³⁹ An alternative hypothesis not considered by Feder, or any of the contributors to this literature, is that there is a mutual interdependence between the *N* and *X* sectors. In this case equation (7) would also include a term for $\dot{N}/N$. Prior to Feder's effort a number of studies had regressed GDP on exports growth. They were not based, however, on a conceptual framework. See, for example, Robert Emery (1967), Alfred Maizels (1968), Irving Kravis (1970), Constantine Michalopoulos and Keith Jay (1973), Balassa (1978), and William Tyler (1981).

⁴⁰ Assuming that the *N* sector production function is $N = X^\delta \psi(K^N, L^N)$, we have that $F_x = \theta(N/X)$. Thus, equation (7) can be rewritten as:

$$(\dot{y}/y) = \alpha(I/y) + \beta(L/L) + \left(\frac{\delta}{1+\delta} - \theta \right) (X/y)(\dot{X}/X) + \theta(\dot{X}/X).$$

specified? Or, are there omitted variables?

- 4) Is there an independent role for *trade policy* in these growth equations?
- 5) Does the causality necessarily go from export growth to GDP growth? Or, alternatively, are these equations subject to simultaneity bias?

IV.2 *Exports, Growth, and Critical Minimum Effort*

An immediate question that emerged from Feder's results was whether his findings held for all LDCs, or whether it was confined to the middle income nations. After all, in his original piece Michaely (1977) had found that the Spearman rank coefficient was higher for middle income countries than for the whole sample. Additionally, the fact that some of the original work had been restricted to semi-industrialized countries cast some doubt on the general applicability of this growth equation formulation.

From the policy debate perspective this is an important question that has some bearing on the universality of the outward oriented policy recommendation. Gerald Helleiner (1986), for example, has strongly argued that a minimum level of development is required before the benefits of exports promotion can be realized, and that, in consequence, export-promotion policies would have doubtful effects in Africa.

In addressing this issue a number of authors estimated GDP growth equations for both poor and middle income countries for 1960–78. In these analyses the cut-off point has been arbitrarily defined as an income per capita of approximately U.S. \$360 (1978 dollars). Other authors have tackled this problem by adding a "poor countries" dummies to the cross country growth equations. Regardless of the technique used and of the

period considered, these early studies found that the coefficient of exports growth was significantly larger for the middle income group.⁴¹ Subsequent contributions have tried to combine time series and cross section data, where the sample was divided into middle income and low income countries for two periods (1960–72 and 1973–82). They found that the coefficient of export growth was significantly positive in all but one case—low income countries during 1960–72. However, contrary to the results in previous studies, for 1973–82 the coefficient of exports growth for the poorer nations exceeded that of the middle income countries.

Most authors have addressed the homogeneity question by dividing their samples according to the stage of development. This, however, need not be the most appropriate way to distinguish groups of countries. Inderjit Kohli and Nirvikar Singh (1989) have investigated whether countries can be distinguished by a "minimum critical threshold" related to the trade structure itself, rather than to income per capita. Using data on 41 countries, they divided the sample into "outward oriented" economies—those with a rate of growth of exports exceeding 6 percent per annum, or with a share of exports to GNP larger than 17 percent—and "non-outward oriented" countries. Using Feder's analytical formulation they found that for the period 1960–70 the coefficient of exports growth was significantly positive for both groups of countries. It was significantly larger however, for the "outward oriented" nations.⁴² For the more recent period,

⁴¹ Rostam Kavoussi (1984) and Rati Ram (1985) are good representatives of this type of study.

⁴² This general result has been recently supported by the findings obtained by Patricia Gray and Singer (1988) using a methodology based on Kravis' (1970) decomposition of the sources of export growth. They decomposed exports growth into three factors: world

however, these coefficients were positive but often insignificant for both groups.

In sum, most studies have found that in GDP growth regressions the importance and significance of the exports growth coefficient varies across groups of countries, casting some doubt on the desirability of pooling all these nations together in the econometric analysis. However, it is unlikely that this issue will be further elucidated until more sophisticated econometric techniques are used on pooled time series-cross section data.

IV.3 *Export Growth, GDP Growth, and World Market Conditions*

A common criticism of the regression analyses that favor "outward-orientation" is that they are overly simplistic and that, among other things, they tend to ignore the role of world market conditions on the feasibility of a successful trade opening strategy (see, for example, Helleiner 1990).

A number of authors have reacted to this criticism by analyzing whether the earlier results hold under alternative world market environments. The vast majority of these studies have taken a very simple approach, comparing the results of cross country growth equations for two, or more, periods. The favorite breaking point has been the 1973 oil shock. Feder-type regressions have been run for pre- and post-1973 averages across countries, and the estimated coefficients have been casually compared. Each author has tried to distinguish his product by adding some twist to the analysis, such as further dividing the sample between low income and middle income

countries. A common feature of most of these studies is that the econometric techniques used are very simple, with no effort made to test for structural breaks, or to deal with problems related to measurement error and simultaneity. Table 8 contains summaries of a number of papers that have dealt with export growth under alternative world market conditions.

The earlier regression-based analyses—Balassa (1985), Ram (1985, 1987)—found that the point estimate on the coefficient on the exports growth variable was higher in the post-oil shock period. This type of result led Balassa to conclude that there are clear "advantages of outward-oriented policies for export performance and for economic growth in the face of external shocks," and that the "reliance on export promotion in response to external shocks under an outward-oriented strategy . . . favorably affected economic growth" (Balassa 1981, p. 189).

A serious limitation of this earlier work, however, is that the regressions for different periods were not always strictly comparable. For instance, Pradumna Rana (1988) pointed out that in his 1985 article Balassa compared results for a pre-1973 regression for 11 countries with results from a 41 country sample for post-1973. When these equations were re-estimated using the same 41 countries sample on pooled data, he found that although the exports growth coefficients were significantly positive for both subsamples, the point estimates for the post-1973 period were smaller than those for the pre-1973 period. (These results have been supported by Kohli and Singh 1989; and Hadi Esfahani 1991.)

Some authors have departed from the regression-based tradition and looked at the effects of world market conditions from a different perspective. A typical approach has been to classify countries between those facing "favorable" and

demand, competitiveness, and diversification. The two latter were identified with "outward orientation" and were used to construct an index of trade policy. Spearman rank coefficients between this index and GDP growth were estimated.

TABLE 8
SELECTED WORK ON EXPORTS GROWTH, GDP GROWTH, AND WORLD MARKET CONDITIONS

Author	Methodology	Results
Balassa (1985)	• Uses production function approach with $(\dot{X}/X)$ as regressor. • Compares results for sample of 11 countries in 1960–73 with results for 1973–79 that includes 43 countries adversely affected by the 1973 oil shock.	• Finds that coefficient of $(\dot{X}/X)$ is higher in the 1973–79 period than in the earlier period.
Ram (1985)	• Production function framework on 73 countries for 1960–70 and 1970–77. • Breakdown of sample justified by oil shock.	• For both periods coefficient of $(\dot{X}/X)$ significantly positive; higher in 1970–77.
Kavoussi (1985)	• Decomposes sources of exports growth using Kravis (1970) technique. • Constructs outward orientation ranking. • Classifies countries between those facing “favorable” and “unfavorable” world market conditions. • Computes Spearman rank coefficients between outward orientation and GDP growth in two periods: 1967–73 and 1973–77.	• Found that countries facing favorable market conditions exhibited a significantly stronger correlation between $(\dot{X}/X)$ and GDP growth than those facing unfavorable conditions.
Ram (1987)	• Production function approach on time series and cross sections. • Divides sample in “before oil shock” (1960–72) and “after oil shock” (1973–82). • Sample also divided between low and middle income countries.	• In the vast majority of cases the estimated coefficient of $(\dot{X}/X)$ for the 1973–82 period exceeds that of the earlier period.
Rana (1988)	• Comment on Balassa’s (1985) paper. • Uses balanced sample of 43 nations for before and after 1973. • Estimates pooled regressions using both OLS and a random effects procedure.	• All estimates of $(\dot{X}/X)$ are significantly positive; those for post-73 period smaller than those for earlier period.
Gray & Singer (1988)	• Uses Kavoussi’s (1985) exports decomposition technique on 1967–73 and 1973–83. • Divides countries between those facing “above average” world demand and “below average” demand. • Spearman rank coefficient.	• Spearman coefficient significantly positive for countries facing above-average world demand; insignificant for those facing low world demand conditions.
Kohli & Singh (1989)	• Feder’s model is estimated on 41 countries using samples for 1960–70 and 1970–81. • Sample also divided between “outward oriented” and “non-outward oriented” countries.	• Coefficients of $(\dot{X}/X)$ always significant for earlier period; not always in the later period.

“unfavorable” world demand. It has been found that, while there is a strong positive correlation between exports growth and GDP growth for countries facing positive world demand conditions, this cor-

relation is very weak, or nonexistent, for countries facing below normal world demand. This finding led Gray and Singer (1988) to conclude that “outward orientation cannot be considered as a universal

recommendation for all conditions and for all types of countries" (p. 403).

Although the work on the area has not provided a conclusive answer to the question of how world demand conditions affect the relation between export growth and aggregate GDP, it has provided strong indications that world business cycles play some role in the way the external sector interacts with aggregate GDP. A more precise answer to this general question would require more detailed analysis relying, at least in part, on time series data and on modern and more sophisticated statistical techniques. Additionally, truly persuasive analyses would have to be based on firmer theoretical bases that provide a clear discussion on the specific way in which the different variables in the regressions are supposed to affect economic growth.

IV.4 Equation Specification

The literature analyzed above has been based on the premise that exports generate positive externalities for the rest of the economy. In principle, however, there may be other channels through which export performance (and openness) will affect aggregate economic performance. For example, some authors have argued that, in a two gap setting, export expansion will also affect aggregate growth by helping relax the foreign exchange constraint.⁴³ This effect works through the following mechanism: By allowing an increase in imports of intermediate inputs, export expansion relaxes a crucial bottleneck and positively affects output growth.

Within the two gap framework, ignor-

ing imported inputs in regression analyses of growth will bias the coefficient of $(X/y)(X/X)$ upward, tending to overestimate the magnitude of the effect of exports growth on GDP growth. Using a 31 semi-industrialized country sample, Esfahani (1991) found that once intermediate imports growth is included, the point estimate of $(X/y)(X/X)$ drops and, for some subperiods, it becomes insignificant. He also found that in all regressions the coefficient of imports growth was significant, providing some support to his view that export growth tends to help relax the foreign exchange constraint. From these findings Esfahani concludes that

even though exports do not appear to have had much direct externality effect on GDP . . . , export promotion policies in these countries can be quite valuable in supplying foreign exchange, which relieves import shortages and permits output expansion. (p. 114)

The assumption of a linear relationship between export growth and GDP growth has been questioned by a number of authors. More specifically, it has been argued that the contribution of exports growth to GDP growth is likely to be subject to diminishing returns. When the quadratic term $((X/y)(X/X))^2$ is added to Feder-type GDP growth equations, its coefficient is usually significant, providing some evidence of diminishing returns of the effects of export growth on GDP growth. (See, for example, Kohli and Singh 1989; Edmar Bacha 1984; and Jose Ocampo 1986.)

IV.5 Trade Policy and GDP Growth in Cross Country Regression Analyses

Most cross country econometric works on the relationship between trade orientation and growth have (implicitly or explicitly) followed a two-stage methodology: in the first stage it is assumed (rather than tested) that more "liberalized" economies experience faster

⁴³ See, for example, Esfahani (1991). The two gaps approach is based on the crucial ex post macroeconomic identity $S - I = X - M$ (where S is savings, I investment, X exports, and M imports). Depending on the ex ante values of X , M , S , and I a country can be "foreign exchange constrained" or "savings constrained." A role of economic policy is to relieve the binding gap.

growth of exports.⁴⁴ In the second stage it is tested whether countries with faster growth of exports have experienced a more rapid rate of growth of GDP. A positive answer to this second narrower question is then interpreted as providing as evidence supporting the broader proposition that outward orientation and "liberalization" foster growth. The fundamental reason why this rather inelegant two stages approach has become so popular is the difficulty of directly measuring trade policy and trade orientation.

Some authors, however, have made an effort to measure trade orientation and to test specifically the relationship between trade policy and growth. Due to the unavailability of time series on trade policy indicators, most of these studies used proxies for the actual policy variables. Balassa (1985), for example, constructed an index of trade policy as the deviations of actual volume exports from the volume of exports *predicted* by a simple structural model of trade. More specifically, he assumed that exports are a function of income per capita, population, and mineral resources availability. After computing a linear exports equation for a 43 country sample he used the residuals as a measure of trade orientation: positive residuals were interpreted as reflecting "export promotion" policies, while negative residuals were considered a sign of "inward orientation." When this trade orientation variable was included in a GDP growth equation its estimated coefficient was significantly positive. This was interpreted as showing "that trade orientation has significantly influenced the rate of economic growth in the 43 countries studied during the 1973-79 period" (p. 30). Surprisingly, perhaps, in

this regression Balassa abandoned the production function framework, and did not include capital accumulation or labor force growth as regressors. Additionally, no effort was made to treat this index of trade orientation as a variable measured with error, or to check for the robustness of the results to alternative specifications of the exports equation.

An alternative approach has been to construct subjective indices of trade orientation. According to this methodology the researcher uses her information to classify countries in different groups. For example, in a very influential study the World Bank (1987) classified trade orientation in 41 developing countries into four groups: strongly outward oriented; moderately outward oriented; moderately inward oriented; and strongly inward oriented (see Table 9). The criteria used for these classifications was largely subjective and not free of controversy. For example, a number of authors have objected to Korea's classification as a strongly outward oriented country, and pointed out that government intervention has played an important part in Korea's success story (Helleiner 1990).

Although it is difficult—if not utterly impossible—to know with confidence how to classify Korea within this type of scheme, there is no doubt that the World Bank subjective classification reported in Table 9 is open to a series of questions. Notice, for instance, that Chile, the only country in the Michaely et al. project to achieve a perfect 20 in the liberalization index during the 1970s, is only classified as moderately outward oriented in the 1973-85 period.⁴⁵ More interesting, however, is the fact that the World Bank

⁴⁴ Given the discussion in Section II on the definition of "liberalization" it may seem ironic to use this term here. This is deliberate. The literature reviewed in this section has been remarkably vague in defining "liberalization" and "outward orientation."

⁴⁵ During the same period both Korea and Singapore, which are classified as strongly outward oriented, achieved a maximum index of 18. Remember, however, that Michaely et al. clearly point out that their liberalization indices are not strictly comparable across countries.

TABLE 9
WORLD BANK CLASSIFICATION OF DEVELOPING COUNTRIES ACCORDING TO TRADE ORIENTATION
1963-1973 AND 1973-1985

Period	Strongly Outward Oriented	Moderately Outward Oriented	Moderately Inward Oriented	Strongly Inward Oriented
1963-73	Hong Kong Korea Singapore	Brazil Cameroon Colombia Costa Rica Côte d'Ivoire Guatemala Indonesia Israel Malaysia Thailand	Bolivia El Salvador Honduras Kenya Madagascar Mexico Nicaragua Nigeria Philippines Senegal Tunisia Yugoslavia	Argentina Bangladesh Burundi Chile Dominican Republic Ethiopia Ghana India Pakistan Peru Sri Lanka Sudan Tanzania Turkey Uruguay Zambia
1973-85	Hong Kong Korea Singapore	Brazil Chile Israel Malaysia Thailand Tunisia Turkey Uruguay	Cameroon Colombia Costa Rica Côte d'Ivoire El Salvador Guatemala Honduras Indonesia Kenya Mexico Nicaragua Pakistan Philippines Senegal Sri Lanka Yugoslavia	Argentina Bangladesh Bolivia Burundi Dominican Republic Ethiopia Ghana India Madagascar Nigeria Peru Sudan Tanzania Zambia

Source: World Bank (1987).

study classifies Korea as strongly outward oriented in both the 1963-73 and 1973-85 periods, even though it is well known that during the early years of the 1963-73 period the Korean trade regime was significantly more restrictive than in the later period. In fact, for 1963-73 the Michaely et al. index averaged only 12.4, while for 1973-84 it climbed to 18. This outward orientation index was used to

compare overall economic performance across the 41 countries in the sample, and concluded that the evidence "suggests that the economic performance of the outward-oriented economies has been broadly superior to that of inward-oriented economies in all respects" (World Bank 1987, p. 85).

A more direct approach has been taken by Bernard Heitger (1987), who instead

of constructing an index of trade orientation has used actually computed effective rates of protection (ERP) as measures of the restrictiveness of trade regimes. Using data on 47 countries for 1960–70 he estimated a GDP growth regression equation including as regressors the average and standard deviation of ERPs across commodities, the investment ratio, initial GDP, and adult literacy. He found for a number of alternative specifications of the regressions that the coefficients of both ERPs variables were significantly negative, providing support to the view that trade distortions negatively affect GDP growth. Even though the data on ERPs used by Heitger are from different years for each country, and that quantitative restrictions are ignored, these results constitute an important step towards a more direct test of the proposition that *trade policy* directly affects economic performance.

IV.6 Causality and Simultaneity

Do countries with rapidly growing exports have a higher rate of aggregate growth, or is it that faster growing countries have a more dynamic export sector? Most studies reviewed above have tended to ignore this issue, assuming that it is exports that drive aggregate GDP (see, however, Ram 1987). There are, however, some nontrivial reasons why more rapid GDP growth could, in principle, result in faster growth of exports. Just dismissing the issue as being irrelevant, as a number of authors have done, does not seem to be fully justified.

Time series techniques have been used to obtain some information on whether there is reverse causality, going from GDP growth to exports growth. Woo Jung and Peyton Marshall (1985), for example, have used annual data on 37 countries to perform Granger "causality" tests. In 22 of the 37 cases it was not possible to establish unequivocally the

direction of causality. For only four cases—Indonesia, Egypt, Costa Rica, and Ecuador—was it found that exports growth caused GDP growth. More recently Michael Hutchinson and Singh (1987) have applied Granger "causality" tests to 34 countries, finding that for 18 of them—including Brazil and Korea—it was not possible to establish one-way causality. In ten countries exports growth was found to have "caused" output GDP growth, while in three other cases GDP growth caused exports growth.

Esfahani (1991) has tackled the simultaneity problem in a more direct way by formulating and estimating a three equations model of growth, exports, and imports. He found that when his growth equation was estimated using two stage least squares, the estimated coefficient of $(X/y)/(\dot{X}/X)$ became insignificant, casting some doubt on the importance of the exports externalities approach.⁴⁶

V. Concluding Remarks

In this paper I have reviewed the modern empirical literature on the relationship between trade orientation and economic performance. The discussion has focused on two distinct bodies of work: detailed multi-country studies of protectionist practices and liberalization episodes, and cross-country regression analyses on the relationship between exports growth and economic performance.

The country-specific analyses reviewed in Section II have been useful in providing detailed discussions on the way in which different policies have affected economic performance in a number of countries. Moreover in some cases these studies have been highly influential in policy circles. In particular, discussions of successful experiences such as Korea and Chile have greatly influenced the

⁴⁶See also Dominick Salvatore (1983) for a simultaneous equation model on trade and growth.

way in which advisors and politicians think about trade orientation and commercial policy. For example, a recently released document by the United Nations Economic Commission for Latin America (CEPAL 1992) indicates that the contrasting performances between successful and lagging nations played a key role in the Commission's recent switch towards supporting outward orientation. On the other hand, Section IV has shown that much of the cross-country regression based studies have been plagued by empirical and conceptual shortcomings. The theoretical frameworks used have been increasingly simplistic, failing to address important questions such as the exact mechanism through which exports expansion affects GDP growth, and ignoring important potential determinants of growth such as educational attainment. Also, many papers have been characterized by a lack of care in dealing with issues related to endogeneity and measurement errors. All of this has resulted, in many cases, in unconvincing results whose fragility has been exposed by subsequent work. It is difficult to believe, in fact, that cross-country regression analyses of the type reviewed in Section IV of this paper have, on their own, played much of a role in the recent popularity of outward oriented policies.

Recent developments in the theory of endogenous economic growth, largely influenced by Romer (1986) and Lucas (1988), have made important progress towards providing a more convincing and rigorous conceptual framework for the analysis of the relationship between trade policies and growth. In this new vintage of growth models it is possible to establish a *long-run equilibrium* relationship between openness and economic growth. This, of course, is not the case in traditional neoclassical models where in long-run equilibrium the steady-state rate of growth is completely independent of na-

tional policies. For example, Feder's (1983) model discussed above relies heavily on the non-steady state assumptions that $\delta > 0$ and $F_x > 0$.

A good example of this new literature is Romer's (1989) model of endogenous growth, where the productive process uses capital, labor, and a large number of specialized inputs. Firms can either engage in production of final goods or in research and development (R&D). More resources devoted to R&D result in a larger availability of intermediate inputs and a higher marginal product of capital. In this model, a more open trade regime allows countries to specialize in the production of a subset of intermediate inputs in which they have comparative advantage. Under freer trade, then, a larger number of inputs is available at a lower cost; as a result there is a higher equilibrium growth. Danny Quah and James Rauch (1990) have also developed a model with intermediate goods where freer trade results in an acceleration in the equilibrium rate of growth. In their model a closed economy has to produce a large array of intermediate goods and, thus, is likely to run into bottlenecks. Freer trade, then, allows the country to relax these bottlenecks and thus to grow faster than under autarky. Gene Grossman and Elhanan Helpman (1991) and Edwards (1992) have taken a different perspective and have emphasized the role of freer trade in generating technological progress. They have built models where a higher degree of openness allows smaller countries to absorb technology developed in the advanced nations at a faster rate and thus to grow, in equilibrium, more rapidly than with a lower degree of openness. What is particularly interesting about this model is that under a plausible constellation of parameters more open economies will grow faster than more restricted ones even in the long run.

In spite of these new theoretical results that allow analysts to relate trade policy to long-run growth, the new models of endogenous growth have made little progress in empirically analyzing these issues. To a large extent the results presented until now have been based on broad cross country regressions on aggregate data, not very different from those in the works reviewed in Section IV.⁴⁷ Although some of the regressors used are different, the measures of openness are as unconvincing as those of the more traditional literature. Most recent empirical work on the endogenous growth approach have measured openness as exports share or imports shares (Romer 1989; Quah and Rauch 1990), and have not tried to capture the extent to which commercial *policy* impedes trade. It is, in fact, well known that exports or imports ratios depend heavily on the economy's structure—including the country's size—and that independently of the extent of trade barriers, larger countries will exhibit lower exports ratios than smaller countries. In a word, as the more traditional policy work reviewed in Section IV, these new studies are seriously affected by the difficulty in measuring trade orientation.

An important challenge that lies ahead for research in this area, then, is to obtain more reliable measures of trade policy and to investigate in greater detail the channels through which greater outward orientation affects growth. Researchers, however, should be aware that all encompassing indices of trade policy that are free of measurement error will *not* be found. This means, then, that in order to gain further insights into these issues, it is fundamental to adopt econometric methodologies that deal specifically with errors in variables, that investigate for-

mally the robustness of specific results, and that rely systematically on sensitivity analyses. In fact, from an econometric perspective, one of the most serious shortcomings of the cross-section papers discussed in Section IV—and for that matter of most recent papers inspired on endogenous growth—is the lack of efforts to implement in a systematic way a battery of tests that deal with the degree of robustness (or fragility) of the results.⁴⁸

Applied economists often ask too much of their data sets, and try to extract information that simply is not there. In that sense, cross-country aggregate data sets have little information regarding the relationship between trade policy and growth. Recent theoretical developments in growth theory have suggested that microeconomic analysis could shed some light on the growth process. Issues related to the use of multiple intermediate inputs, the invention of designs and the absorption of technological progress under alternative trade regimes look particularly relevant. However, it is doubtful that these questions will be adequately addressed through the currently common cross country regressions on aggregate data. Episodic historical analyses of the type discussed in Section II are, in fact, more promising. More complete evidence on the precise channels through which trade orientation affects growth, will have to wait, then, for new studies that not only look at history but also dig deeply into the *microeconomics* of innovation, trade, and growth.

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⁴⁷ Quah and Rauch (1990), however, have stayed away from cross country analyses focusing, instead, on time series data.

⁴⁸ Edwards (1992) addresses this measurement problem and uses nine alternative indices of trade orientation to test the proposition that openness positively affects growth. In that paper the sensitivity of results to measurement errors and alternative specifications are discussed in detail.

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