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# **Openness, Outward Orientation, Trade Liberalization, and Economic Performance in Developing Countries**

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The paper provides a critical review of the existing empirical literature that deals with the relationship between trade orientation and economic performance. Using a model that avoids the shortcomings of most current measures of trade orientation, the author finds strong support for the hypothesis that, other things being equal, countries with a less distorted external sector grow faster than countries with a more distorted external sector.

A major shortcoming of the current policy debate is its increasingly dichotomized, ideological tone. In the last few years, not only have positions become more rigid, but there is also increasing confusion about the meaning of key concepts such as liberalization and outward orientation. The author detects three main shortcomings in the current debate:

- By thinking in dichotomies, we have lost the notion of trade regimes as existing along a continuum.
- We no longer understand “liberalization” as a process that can operate at different intensities.
- A number of writers confuse “liberalization” with “laissez faire,” with the result that people sometimes advocate what seem to be contradictory positions (e.g., favoring openness and an outward orientation at the same time as opposing liberalization).

To rescue the policy debate, trade regimes can be thought of as existing along a continuum, with the terms

- *Outward* and *inward* orientation denoting whether policy emphasis is on the domestic market or on international trade.
- *Trade* and *closed* describing the degree of an economy’s openness. At one (the closed) end of the spectrum would be *import substitution* (deliberate discrimination against imports that compete with domestically produced goods). At the other end would be *export promotion*. In the

middle would be an *open economy* — one with a neutral trade regime, in which trade represents a large share of GDP. A *liberal regime* would fall between open economy and export promotion.

- *Liberalization* being defined as a process that makes greater use of the price system. This makes the trade regime more transparent, and brings domestic prices closer to world prices. The vagueness of this definition disappears as soon as we provide information about the initial trade regime and the intensity of the liberalization process.

Is there a relationship between how liberalized a trade regime is (how close it is to *laissez faire*) and economic performance? Is there an “optimal” trade regime? If so, is that optimal regime independent of a country’s specific characteristics?

The author discusses the new theories of economic growth and assesses their usefulness for analyzing the relationship between trade orientation and growth in the developing countries. Using a growth model that relates trade orientation to the ability to absorb technology from the rest of the world, he tests the model using an index of trade orientation that is (1) objective, (2) allows for a continuum of regime, and (3) comparable across countries.

The results — using cross-country data — strongly support the hypothesis that, other things being equal, countries with a less distorted external sector grow faster than countries with a more distorted external sector.

This paper is a product of the Trade Policy Division, Country Economics Department, World Bank. Copies are available free from the World Bank, 1818 H Street NW, Washington DC 20433. Please contact Maria Ameal, room N8-073, extension 61466 (60 pages with charts and tables).

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## I. Introduction

There is by now agreement among a large proportion of the economics profession that countries that have relied on "outward oriented" development strategies have done better over the medium and longer run than those countries that have adopted "inward looking" strategies. Recently, and to the surprise of many, even ECLA/CEPAL -- not exactly known for its endorsement of outward policies -- has recognized that the excesses of import substitution have been very costly for Latin America; some of its senior staff members have recommended that in the future export promotion should play a more central role in Latin American development policies (see Bianchi et al. 1987).

There seems to be relatively less agreement, however, on whether "trade liberalization" packages have played an important role in the performance of the outward oriented economies. For example, in a recent paper presented at the World Bank-IMF Conference on adjustment with growth, Sachs (1987) questioned the idea that trade liberalizations are indeed a required component of successful outward oriented strategies. Making reference to the experiences of the East-Asian countries -- Japan, Korea, Singapore, Taiwan, and Hong Kong -- Sachs argues that these countries' success was to a large extent due to an active role of government in promoting exports in an environment where imports had not yet been fully liberalized, and where macroeconomic (and especially fiscal) equilibrium was fostered (see also Sachs, 1988).

Whether one agrees with Sachs depends on how outward orientation, export promotion and trade liberalization are defined. In fact, in order to have a meaningful discussion about the role of trade regimes and commercial policies it is crucial to know exactly what we mean by each of these terms.

Unfortunately this doesn't seem to happen anymore. Somehow in the midst of the policy debate of the last few years we seem to have lost our control over language and what for some is a "liberalized economy" for others is a "nonliberalized" economy; for some "outward oriented" means a certain thing, while for others it means a different one.

There is little doubt that the policy discussion on trade regimes has become highly ideologized. Perhaps the best example of the current confusing state of affairs is that the case of South Korea is now considered an example of the validity of different (almost opposing) views regarding commercial policy. For some (i.e., World Bank 1987) Korea is the best example of an outward oriented liberalized economy, while for others (Collins and Park 1988, Sachs 1987) Korea is a prime example that in order for a small developing economy to grow (very) fast it should avoid an abrupt liberalization. Certainly, either one of these camps is not right in its assessment, or the participants of the debate are giving a different meaning to the same terms.

Recently, we have witnessed a shift in the meaning of "liberalization". In the more traditional policy literature of the 1960s and 1970s trade liberalization was defined in a very general way; what economists usually meant was some relaxation of trade and exchange controls. In fact, in the by now classical NBER study on trade regimes directed by Bhagwati (1978) and Krueger (1978) a liberalization episode was defined as a more extensive use of the price mechanism that would reduce the anti-export bias of the trade regime. In her review article on the problems of liberalization presented at the World Bank conference on the dynamics of liberalization, Krueger (1986) reaffirmed this general definition and argued that even a (real) devaluation in the presence of QRs constituted a liberalization episode.

These are indeed very mild definitions of liberalization. In fact today very few people will raise an eyebrow about them. However, more recently, and in some quarters "trade liberalization" has acquired a more drastic connotation, meaning an elimination of QRs coupled with a severe reduction of import tariffs to a uniform level of around 10 percent. Moreover, the term "economic liberalization" has in many ways, become synonymous of free market oriented policies with minimum or no government intervention at any level. In a way it has become synonymous of "laissez faire".

The difference between the "old" and "new" definitions of trade liberalization is, to a large extent, one of degree or intensity. A devaluation in the presence of QRs, or the replacement of QRs by (quasi) equivalent tariffs is a mild form of liberalization. However, the reduction of tariffs (with no QRs) to a uniform 10% or, for that matter, the complete elimination of tariffs is a very drastic liberalization. In order to clearly understand the different issues involved in policy discussions it is, then, crucial to specify the intensity of liberalization we are referring to. Unfortunately this is not always done these days. As a result of the ideologization of the policy debate, more and more people are discussing these issues as if they were either "black" or "white", with no room for different shades of grey in between.

However, an increasing number of authors have recently begun to recognize these problems. For instance in an interesting paper on the experience of the East Asian nations, Bradford and Branson (1987) say:

Part of the controversy undoubtedly derives from the use of loosely fashioned phrases which sound like dichotomous typologies when in fact more rigorous specifications of meaning would reveal that they define different points along a spectrum of policy regimes rather than stark alternatives. (page 17)

Bhagwati (1986) has also recognized the need to sharpen the debate by clearly defining the key terms. He says:

What exactly is meant by an export promoting trade strategy? Unless we are clear on that critical question, we cannot properly debate the merits of the strategy and its alternatives. Clarification of the question is therefore important, especially as everyday usage of this phrase echoes many different notions that are wholly unrelated. (page 11)

Richard Cooper (1987) has referred to the dangers of the debate on trade regimes becoming excessively ideological. He argues that the imprecision of language is at the very heart of this danger. Since his view captures in a very clear way the shortcomings of the debate, it is worthwhile quoting at some length from him:

[L]abels may become slogans. Words such as "liberalization" and "privatization" and "adjustment and growth" may become slogans used by both proponents and opponents of particular courses of action. If this happens, the debate can occur without sufficient refinements and therefore without being really joined. (page 516)

Regarding the intensity of liberalization Cooper says:

[E]conomics ... has continuous gradations and therefore gives rise to both subtle distinctions and to the possibilities for compromise. That is especially true of such terms as "liberalization" ... (page 516)

And more importantly:

[I]t is necessary to distinguish between different types of liberalization to make clear that liberalization can be viewed as a process rather than a state and to disassociate liberalization from laissez-faire. (page 518)

The purpose of this paper is to analyze at a broad level the question of the relation between trade orientation, liberalization and economic performance avoiding the ideological overtones that have plagued so much of the recent literature. In particular, this paper tries to synthesize the discussion by establishing some general organizing principles. In doing this, the literature on the subject is analyzed. While emphasis is placed

mainly on the empirical evidence, the new -- and quite exciting -- theoretical literature on growth is briefly reviewed. Also, I present new evidence on the relation between trade regimes and economic performance. The novelty of this empirical analysis is that, contrary to the existing literature, it uses an objective index of trade intervention.

The paper is organized in the following way. Section II deals with policy literature on trade regimes. Here the literature is reviewed and it is pointed out that, at some time, the notion of a continuum of regimes was replaced by a dichotomized view. It is strongly argued that in order to make progress in the policy discussion it is very important that we return to the original notion of a continuum of regimes. Also in this section the increasingly controversial concept of "liberalization" is discussed. Section III reviews (some of) the empirical literature on trade orientation and economic performance in developing countries. Here the question is what do we know about this relationship, if anything. The approach taken focuses on scrutinizing the methodology used by different studies. Section IV reviews the new theoretical literature on growth, and discusses what these papers have to offer to the debate on the relation between trade policy and growth. Section V presents some preliminary new evidence on the relationship between trade orientation and economic performance. The empirical analysis presented here tries to overcome two important limitations of previous studies: (1) the lack of an objective (as opposed to subjective) and continuous indicator of the extent of distortions of a trade regime; and (2) the difficulty in comparing any indicator of this kind across countries. Finally, the paper closes with a summary and with a brief discussion on directions for future research.

## II. The Policy Literature on Trade Regimes: A Review

The abundant policy literature on trade regimes and economic performance has mainly focused on two issues: (a) defining alternative trade regimes; and (b) determining the relationship between trade regimes and growth. In this section I provide a general and selective review of this literature, focusing on these two questions. I also discuss briefly the different measures of "protection" that have been used in studies on trade reforms.

### II.1 Defining a Trade Regime

The purpose of this subsection is to discuss alternative definitions of trade regimes that have been used in the literature. A particularly important objective of the section is to illustrate the way in which the meaning of "liberalization" has changed in the last few years.

Little, Scitovsky and Scott (1970) and Balassa (1971) are the pioneering modern studies on trade orientation and economic performance. These influential works discussed the characteristics of two broadly defined trade regimes -- import substitution and export promotion -- and dealt with some important issues related to the transitional period from one regime to another. No effort was made in these studies, however, to provide a detailed taxonomy of trade regimes.

In the classic NBER study directed by Krueger (1978) and Bhagwati (1978) we find for the first time a systematic development of concepts that allow a more or less formal classification of trade regimes. In this study two key concepts were introduced into the discussion: (1) the degree of bias of the trade regime; and (2) the premium that is created by the existence of quantitative restrictions (QRs) in the importables market.

The "bias" of the trade regime is defined as the ratio of the exchange rate effectively received by exporters ( $EER_x$ ) to the exchange rate effectively paid by importers ( $EER_M$ ). If this ratio is lower 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  $r$ :<sup>1</sup>

$$EER_x = E_x(1+s+r).$$

On the other hand, the effective exchange rate for imports is defined 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 to the existence of quantitative restrictions ( $P$ ):<sup>2</sup>

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

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:

$$B = \frac{EER_x}{EER_M} = \frac{E_x(1+s+r)}{E_M(1+t+n+P)} \quad (1)$$

Two points are worth making at this point. First, this definition of bias 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 ( $B < 1$ ). Second, this definition of bias implicitly allows for

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<sup>1</sup>Naturally, if exports are taxed,  $s$  and/or  $r$  will be negative.

<sup>2</sup>Krueger's (1978) definition is slightly different. We have decided to use the definition corresponding to Bhagwati's (1986) reinterpretation of Krueger because it facilitates the discussion.

a continuum of regimes;  $B$  can be high, low, somewhat high or relatively low. Even though for analytical purposes we can (and should) define threshold values for  $B$  --  $B = 1$  being the more natural threshold -- this approach is not based on a dichotomized view of trade regimes.

In order to evaluate the effect of trade policies the Krueger-Bhagwati study combined the concept of 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 to 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 3 is the beginning of the liberalization process and is characterized by the implementation of a (nominal) devaluation and relaxation of some QRs. During Phase 4 further steps towards replacing quotas by tariffs are implemented. In Phase 5 the economy has become fully liberalized: current account transactions are fully convertible and QRs are not used any longer.

In a much needed synthetic paper Jagdish Bhagwati (1986) makes an effort to further clarify the definition of trade regimes, using the framework developed by him and Krueger in the NBER study. According to Bhagwati it is useful to distinguish between three basic trade strategies:

1. Import Substitution (IS) Strategy:  $Bias < 1$
2. Export Promotion (EP) Strategy:  $Bias \approx 1$
3. Ultra Export Promotion Strategy:  $Bias > 1$ .

Three points are worth noting. First, within the tradition of the NBER study there still is room for a continuum of regimes. We can face a mild IS strategy -- where  $B$  is slightly below 1 -- or we can have a regime heavily oriented towards IS -- with a bias index well below one. Second, Bhagwati has chosen to label the neutral regime ( $B \approx 1$ ) "export promotion".

Naturally if  $B \approx 1$  there is no bias against exports, but there isn't either a bias in favor of exports as the label EP usually implies. Third, and perhaps more importantly, neither of these regimes is necessarily related to a "hands off" or "laissez-faire" strategy. In fact an EP strategy can be achieved with a highly interventionist government that, on average does not distort the ratio  $(1+s+r)/(1+r+n+P)$ . Moreover, an ultra export promoting strategy, where  $B > 1$ , may require significant government intervention. As discussed below, this fact has recently prompted some experts to make an additional distinction between a neutral trade regime and a liberal trade regime.

It was argued in Section I that the notion of "trade liberalization" has changed significantly in the last decade. In the original NBER study liberalization was defined in a very general way as a more extensive use of the price mechanism. Anne Krueger has, in fact, maintained that position throughout the years.<sup>3</sup> At the specific operational level, in the synthesis volume of the NBER project Krueger defined trade liberalization as a reduction in the premium resulting from the use of QRs. There is no mention of zero or even very low tariffs. In fact, it must be noticed that according to this definition we can have a "liberalized" economy with very high tariffs. This, indeed, is a possibility that Krueger recognizes:

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)

This definition of liberalization is indeed very different to the way in which the concept has been used (as synonymous with free trade) in the

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<sup>3</sup>Krueger (1978, 1981, 1984).

last few years.

An important implication of Krueger's definition is that a devaluation in the presence of QRs constitutes a step towards liberalization. The reason, of course, is that if there are QRs a devaluation will reduce the premium obtained by those that have an access to the quota.

On the other hand, as noted before, the definition of an unbiased or neutral trade regime ( $B \approx 1$ ) does not preclude in any way an active role for the government. We can attain a  $B \approx 1$  either with high levels of  $s$ ,  $t$ ,  $r$ ,  $n$ , and  $P$  or with no government intervention in international trade.<sup>4</sup> This has recently prompted a number of authors to make a distinction between a neutral trade regime ( $B \approx 1$ ) and a liberal regime where there is almost no government intervention. According to this view governments should not only aim at reducing the anti-export bias -- and definitely should not try to promote exports via intervention -- but should try to implement a liberal strategy.<sup>5</sup>

Lal and Rajapatirana (1987) are, perhaps the clearest representatives of the new liberal view regarding trade regimes. They reject government intervention both to protect imports and to promote exports:

Of course, export promotion can be as inefficient and chaotic as protection .... The liberal position on trade and growth (which we support) is different. As a first step it entails a neutral trade regime. (p. 208, emphasis added)

And they go on to say:

The case for a liberal trade regime ... becomes part of the general case for markets against mandarins .... [I]f one accepts the need for restraints on the natural and often irrational

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<sup>4</sup>Notice that until now we haven't said anything about other sectors such as the labor market, the capital market or the capital account. Some of the issues that arise when we look at many markets are addressed below.

<sup>5</sup>See, for example, World Bank (1987), Lal and Rajapatirana (1987).

dirigisme of mandarins in most developing countries, then the adoption of a liberal trade regime ... becomes an important means to this end. (p. 209)

Naturally, according to this view liberalization is different from the milder and more specific notion employed by Krueger. For the advocates of liberal regimes, liberalization is (almost) synonymous with free trade and "laissez faire". Although Lal and Rajapatirana recognize that "it is important to distinguish between the degree and pattern of protection" (p. 197, emphasis added), their analysis still has a distinctive dichotomized flavor.

Criticizing some of the implications of this "liberal" view, Jeffrey Sachs, Rudiger Dornbusch and other prominent researchers have recently argued against "liberalization" in the developing countries. For example, commenting on the links between liberalization and the resolution of the debt crisis Sachs (1987) notes:

The current focus on liberalization is distracting attention from the more urgent needs of the debtor countries. ... [T]he attempts to stimulate exports at all costs through trade liberalizations or aggressive depreciations of the exchange rate can often undermine a stabilization program and thus postpone a resolution of the debt crisis" (p. 294)

And later he says:

[E]xport orientation can be pursued without an across-the-board import liberalization and can be fostered by an activist government. (1987, pp. 322-3)

It is clear that Sachs is not using the term liberalization in the traditional Krueger sense. He is not even allowing for the possibility of different degrees of liberalization. It would seem fair to say that for him liberalization has become an all-or-nothing event, where if you opt for it

the government has to completely relinquish its role.<sup>6</sup>

#### The Need for a Continuum

Recently, Bradford and Branson (1987) and Edwards (1988) have argued that in order to rescue the policy debate from its current overly ideologized overtones it is necessary to think, once again, of trade regimes as a continuum.

Table 1 contains the typology suggested by Bradford and Branson (1987). They argue that outward and inward orientation are very general categories that serve to denote whether the policy emphasis is put on the domestic markets or on international trade. Thus they are placed in the middle of the continuum. They then use the terms trade and closed economies to capture the degree of openness of a country. In their analysis these concepts are not necessarily the result of policies but rather "endogenous economic outcomes". An economy can be closed -- that is, total trade (imports plus exports) does not exceed 5% -- either because its resource endowment is similar to the world's endowment or because of trade impediments. An open economy is one with a neutral trade regime and a large share of trade in GDP. Notice that there are various categories of open economy, depending on the role of policies in other sectors. Towards the closed economy end of the spectrum the authors place import substitution (IS). This is a regime that deliberately discriminates against imports that compete with-domestically produced goods. Again the authors distinguish between different shades of IS. On the other extreme of the spectrum Bradford and Branson have placed different types of export promotion. This regime is characterized

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<sup>6</sup>However, in a recent paper Sachs (1988) criticizes "significant" liberalizations. Still, he does not make an explicit distinction between the effects of different types of liberalization programs.

TABLE 1

Definition of Trade Regimes:  
The Bradford-Branson Continuum

Autarky	No trade "Delinking" Self-reliance	Dirigisme
Closed Economy	Exports and imports less than 5% as a share of GDP	
Import Substitution	(a) Discriminates against all imports through controls: $EER_m > EER_x$ (b) Selective discrimination (c) Mild and limited applications ("left wing deviations")	
Inward Orientation	Priority given to the domestic economy	Markets
Outward Orientation	Priority given to exports	Markets
Trade Economy	Exports 15% or more as a share of GDP	
Open Economy	Internal liberalization $EER_x = EER_m$ (a) tradable goods (b) (a) + nontradable goods (c) (a) + (b) - macroeconomic variables	
Export promotion	(a) Uniform subsidies for all exports: $EER_x > EER_m$ (b) Selective subsidies: Industrial policy Import substitution ("right wing deviations")	Dirigisme

NOTE:  $EER_x$  and  $EER_m$  are the real effective exchange rates for exports and imports, respectively.

Source: Bradford and Branson (1987, p. 16).

by active government intervention aimed at boosting export performance.

Although not complete, this taxonomy is very useful. One of the missing elements, however, refers to placing the "liberal regime" à la Lal and Rajapatirana within this spectrum. This type of regime should be placed in between the open economy and export promotion categories of the table.

In general, there is little doubt that considering a trade regime as a continuum rather than as a dichotomy will greatly improve the quality of the debate. However, while it is not difficult to define such a continuum at an analytical level, it is quite hard to find empirical counterparts to these concepts. As will be argued in detail in Section III, one of the main limitations of the existing empirical evidence on the relation between trade regimes and economic performance has been precisely its inability to design and construct adequate indexes of trade orientation. Ideally, such indexes should satisfy the following three criteria: (a) Objectivity. It is necessary that the index used to classify a country's trade regime (or to locate it within the spectrum) is based on relatively objective criteria and not on subjective preconceptions brought in by the researchers.<sup>7</sup> (b) Continuity. The ideal index should allow for different shades of grey in between the extreme regimes. We would like to be able to determine whether or not small movements in either direction in the trade orientation spectrum will affect economic performance. (c) Comparability. The index should be useful for cross-country comparisons.

Unfortunately, gigantic data limitations have precluded researchers to construct indexes of regimes that satisfy these three characteristics. In Section IV of this paper, however, an attempt is made to capture the effects

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<sup>7</sup>The main problem with the subjective approach rests on how to classify the countries in the first place. Where should Korea or Brazil be placed?

of the inclusion of two indexes that satisfy (some of) these requirements on a regression that explains the economic performance of a group of developing countries.

### II.3 A Digression on Liberalization, Effective Protection and Domestic Resource Costs

Most of the indicators commonly employed to characterize the trade regime prevailing in a particular country -- such as the bias index  $B$  -- reflect, at best, the average level of protection given to two broadly defined sectors of the economy. However, almost every country protects different sectors at different rates. In particular, final goods usually have different tariffs and QRs than capital goods and intermediate inputs. A number of authors have indeed recognized that having information on both the average level and the complete structure of protection are important. As a result, most studies on trade liberalization -- including the Bhagwati-Krueger (1978), the Balassa (1982) and the Krueger (1983) projects -- have tried to compute Effective Rates of Protection (ERPs) and Domestic Resource Costs indexes (DRCs) to measure more accurately the way in which input-output relations affect the extent of "true" protection granted to a particular sector of the economy.

The concept of effective protection was pioneered by Corden (1966), Balassa (1965) and Johnson (1965) and tries to capture in a single indicator the rate of protection granted to value added in a given industry.<sup>8</sup> During the 1960s and early 1970s the literature on measurement and implications of

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<sup>8</sup>The rate of effective protection to industry  $j$  is defined as  $r_j = (VA_j - VA_j^*)/VA_j^*$ , where  $VA$  is domestic value added, and  $VA^*$  is "world"

value added taken to be a proxy of 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:  $r_j = (t_j - \sum a_{ij} t_i) / (1 - \sum a_{ij})$ , where  $t_i$  is the tariff on input  $i$ .

ERPs developed extensively and a number of studies computed ERPs for large groups of countries.<sup>9</sup>

In spite of the efforts made by a number of experts to generalize the applicability of ERPs and DRCs, both concepts have important limitations within a general equilibrium framework. Perhaps the most serious problem is that in a world with more than two final goods ERPs give no information on the way in which resources will be reallocated in the case of changes in the tariff structure. This limitation of ERPs has led a number of experts to argue that the concept of effective rate of protection should be abandoned altogether (see for example Dixit and Norman 1980 and Dixit 1986; Bhagwati and Srinivasan 1983 provide a fairly detailed discussion on the properties and limitations of ERPs and DCRs; see Balassa and Schydrowsky on the relation between ERPs and DRCs).

Although both ERPs and DRCs are much more limited than what it once was thought, they do provide some valuable information; abandoning them would be clearly an overreaction. More specifically, ERPs and DCRs give us information on the extent of inefficiency "society", or perhaps more accurately the "government", is willing to grant a particular sector.<sup>10</sup> Even though this is a much more modest role than that assigned to these indicators in the past, it is a particularly important one in political economy studies of trade policy. What is critically important, however, is to be aware of the limitations of these concepts.

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<sup>9</sup>See, for example the studies directed by Balassa (1971, 1982).

<sup>10</sup>The reason for this interpretation follows directly from the definition of ERP, as the percentage deviation of domestic unit value added from world (and efficiently produced) unit value added in industry j.

An important implication of the shortcomings of ERPs and DRCs is that traditional policy recommendations based on these concepts should be reanalyzed to verify if they still hold under fully specified general equilibrium frameworks. For instance, one recommendation that does not survive in a general equilibrium setting is the "uniform tariff" proposal. Generally speaking, in equilibrium models with intermediate inputs, government budget constraints and other realistic features a uniform tariff structure will be optimal only by mere coincidence.<sup>11</sup>

### III. The Empirical Evidence on Trade Regimes and Economic Performance in Developing Countries<sup>12</sup>

The purpose of this section is to critically review the empirical evidence provided by the literature on policy orientation and economic performance. Most studies in this area have asked a variant of the following question: "What does the empirical evidence say regarding the relationship between trade orientation, exports and economic growth?"<sup>13</sup> In reviewing this literature it is convenient to classify the different contributions in four broad and related categories:

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<sup>11</sup>There may be, however, some practical reason to advocate a uniform tariff. One such reason considered by Harberger (1984) is that only if there are uniform tariffs (and subsidies on exportable inputs) we can know for sure the ERPs structure; they will all be equal. What is not clear, however, is why we should worry about the structure of ERPs! A more convincing reason for advocating a uniform tariff stems from the political economy of protection.

<sup>12</sup>I am grateful to Miguel Savastano for his assistance in preparing this section.

<sup>13</sup>Most of these studies have been characterized by a lack of rigorous theoretical underpinnings. Naturally, the most important contributors to this literature are perfectly aware of its lack of theoretical base. See, for example, Krueger (1983, p. 42).

- (a) Multicountry studies (primarily syntheses volumes of large-scale projects);
- (b) Studies that investigate specifically the relation between exports and output growth;
- (c) Studies based on the Kravis (1970) decomposition method that try to determine the relative contribution of external demand, competitiveness and diversification factors in the evolution of a country's exports; and
- (d) Studies that compare the Heckscher-Ohlin predictions regarding the factors composition of trade with the actual trade patterns.

Table 2 lists 17 recent empirical studies classified in these four groups.

As pointed out, a common problem faced by all these studies consists of the lack of an appropriate indicator of "trade orientation". Any attempt to relate trade regimes and growth requires data on either how a trade regime evolves through time in a particular country, or data that can be compared across countries.<sup>14</sup> This, of course, is not an easy task. For example, the recent Choksi, Michaely and Papageorgiou (1986) project at the World Bank constructed time series of a subjective index of trade liberalization for 19 developing countries. These indexes, however, were not comparable across countries and, thus, could not be used to investigate empirically whether different degrees of trade liberalization can explain cross country differences in economic performance. In the Krueger-Bhagwati project, on the other hand, the researchers faced difficulties in constructing a series of the Bias (B) index discussed in the previous section. The reason, of

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<sup>14</sup> Balassa (1985, 1988) derived a trade orientation index as the percentage difference between the actual and predicted per capita exports.

TABLE 2

## Classification of Selected Empirical Studies on Trade Regimes

Group A: Summary Results of Multicountry Projects on Trade Regimes

		<u>No. of</u> <u>Countries</u>	<u>Period</u>
1)	Balassa, B. (1971)		
2)	Krueger, A. <u>Liberalization Attempts and Consequences</u> , 1st Synthesis volume of NBER project on "Trade Regimes and Economic Development".	10	1950-72
3)	Bhagwati, J. <u>Anatomy and Consequences of Exchange Control Regimes</u> , 2nd Synthesis volume of NBER project on "Trade Regimes and Economic Development".	10	1950-72
4)	Balassa, B. <u>Development Strategies and Economic Performance</u> , Synthesis of World Bank Project on "Development Strategies in Semi-Industrial Economies".	11	1960-73
4a)	Balassa, B. "Exports and Economic Growth: Further Evidence," <u>Journal of Development Economics</u> .	11	1966-73
5)	World Bank <u>World Development Report</u> , summarizes preliminary results of World Bank project on "Timing and Sequencing of Trade Liberalization Reforms".	41	1963-73 1973-85

Group B: Studies Measuring Contribution of Exports to Growth in LDCs in a Neoclassical Production Function-Type Framework

6)	Tyler, W. "Growth and Export Expansion in Developing Countries," <u>Journal of Development Economics</u> .	55	1966-77
7)	Feder, G. "On Exports and Economic Growth," <u>Journal of Development Economics</u> .	19 31 (2 groups)	1964-73
8)	Kavoussi, R. "Export Expansion and Economic Growth: Further Empirical Evidence," <u>Journal of Development Economics</u> .	73	1960-73
9)	Ram, R. "Exports and Economic Growth: Some Additional Evidence," <u>Economic Development and Cultural Change</u> .	73	1960-70 1970-77

Table 2 (continued)

		<u>No. of Countries</u>	<u>Period</u>
10) Balassa, B. (1985)	"Exports, Policy Choices and Economic Growth in Developing Countries After the 1973 Oil Shock," <u>Journal of Development Economics</u> .	43	1973-79
11) Balassa, B. (1981)	"The Newly Industrialized Developing Economies After the Oil Crisis," <u>Weltwirtschaftliches Archiv</u> .	12	1973-78
12) Jung, W. & Marshall, P. (1985)	"Exports, Growth and Causality in Developing Countries," <u>Journal of Development Economics</u> .	37	1950-81
13) Hutchinson, M. and Singh, N. (1987)	"Exports and Growth in Developing Economies: Identifying Externality Effects," UCSB Working Papers.	34	1950-81
<u>Group C: Studies Using Kravis (1970) "Decomposition Method" to Analyze Export Performance in LDCs</u>			
14) Love, J. (1984)	"External Market Conditions, Competitiveness and Diversification in LDCs Exports," <u>Journal of Development Econ.</u>	27	1950-78
15) Kavcussi, R. (1985)	"International Trade and Economic Development: Recent Experience of Developing Countries," <u>Journal of Developing Areas</u> .	52	1967-73 1973-77
16) Singer, H. and Gray, P. (1988)	"Trade Policy and Growth of Developing Countries: Some New Data," <u>World Development</u> .	52 61	1967-73 1977-83
<u>Group D: Studies Using Heckscher-Ohlin Framework to Analyze Pattern of Trade and Factor Productivity</u>			
17) Krueger, A. (1983)	<u>Trade and Employment in Developing Countries</u> , Synthesis volume of NBER project on "Alternative Trade Strategies and Employment.	12	1960-75
18) Havrylyshyn, O. (1985)	"The Direction of Developing Country Trade: Empirical Evidence," <u>Journal of Development Economics</u> .	45	1963-78

course, had to do with the problems involved in computing the premium associated to QRs, as well as with the absence of reliable data on import tariffs.

Researchers have developed two types of strategies to deal with this problem. (a) Some, as the Krueger-Bhagwati study, the World Bank (1987) and Choski et al. (1988), have resorted to the construction of subjective indexes of trade orientation.<sup>15</sup> (b) Another group of researchers have chosen to decompose the question of the effects of trade orientation on economic performance into two stages. The first stage basically amounts to assuming -- without testing rigorously -- that a more liberalized regime will encourage exports via a reduction of the antiexport bias.<sup>16</sup> At the second stage, then, the researcher usually tests whether higher exports (or a more rapid growth in exports) have indeed been associated with a higher rate of output growth (Michaely 1977, Balassa 1978, 1982).

#### Multicountry Studies

The Krueger-Bhagwati NBER project dealt with 10 countries -- Brazil, Chile, Colombia, Egypt, Ghana, India, Israel, Philippines, South Korea and Turkey -- during the period 1950-1972. Detailed data on a number of variables, including ERPs and DRCs were used to classify each country at a particular moment in time in one of the Phases previously defined in the

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<sup>15</sup>The subjectivity of the indexes employed in the Krueger-Bhagwati study is, however, rooted on some objective indicators. In particular, as mentioned below, in the empirical analysis Krueger tries to control for the different degrees of distortions prevailing in each country.

<sup>16</sup>Of course the difficulty in computing  $B$  is at the heart of them assuming that this relation between  $B$  and exports holds.

project.<sup>17</sup> Three groups were then formed: (i) countries that seemed to have progressed steadily from phases I to IV (Brazil, Israel, South Korea); (ii) countries that cycled back and forward between phases II and IV (Chile, Colombia, Ghana, and the Philippines); and (iii) countries that remained in Phase II for long periods (India, Turkey, and Egypt).

Using the wealth of information generated in the ten country studies Krueger (1978) and Bhagwati (1978) attempted to determine whether, on average, the relaxation of the anti-export bias had affected exports and the overall economic performance. We will review first Krueger's synthesis of this project. An important finding is that devaluations -- that is, the movement from Phase II to Phase III -- generally resulted in important reductions in the premium on import licenses and, thus, in a lower anti-export bias. She also investigated the extent to which changes in the trade orientation of a country contributed to an expansion of exports and whether this phase movement implied some costs in terms of output growth. From a regression analysis Krueger then found that while the real effective exchange rate played a significant role in determining exports, the dummy variables included to control for the different liberalization phases were not significant. With respect to real output she found that on average, higher exports were associated with higher GNP, with no significant costs being related to the transition towards a more liberalized trade regime. Perhaps Krueger's most important conclusion from this monumental cross-country study was that in order to attain a sustainable growth in exports (and, thus, GNP)

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<sup>17</sup> Recall from Section II that the phases were defined as follows: (I) systematic imposition of across-the-board QRs; (II) control system becomes more discriminatory with strong antiexport bias; (III) devaluation and relaxation of some QRs; (IV) continued liberalization, with greater emphasis on the price mechanism than on QRs; (V) fully liberalized and convertible regime, no QRs remain.

it is very important to make a credible commitment to maintain a high (i.e., depreciated) real effective exchange rate for exports.<sup>18</sup>

On the other hand, in his synthesis volume, Bhagwati (1978) analyzed in detail the static and dynamic gains from trade liberalization. He argued that the pre-reform data on ERPs and DRCs clearly suggest that liberalization in these countries generated important static gains in the form of efficiency improvements. He also confirms Krueger's finding that biased regimes negatively affect exports growth and that these are generally responsive to price incentives. However, regarding the dynamic gains of a change in trade orientation, however, he found no evidence linking a smaller bias to either technological superiority or to higher savings ratios.

Balassa (1978, 1982) summarizes a large World Bank project that focused on 11 countries -- Argentina, Brazil, Chile, Colombia, Mexico, Israel, Yugoslavia, India, South Korea, Singapore and Taiwan -- for the period 1960-73. He establishes a fourfold classification according to the timing and extent of the export promotion policies adopted by each country. He then evaluates the effectiveness of these policies using the two-step methodology described above. First Balassa analyzed whether export incentives fostered exports growth and, in the second stage, he investigated the effects of an expansion of exports on output growth. In the first stage of the analysis Balassa makes use of two proxies for quantifying export incentives: the rate of growth of manufacturing exports and the change in the export output ratio in manufacturing. He found that these variables were consistently higher in those countries that followed sustained export promotion policies. In the

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<sup>18</sup> She then argues that the best way to make sure that high RER will be maintained is by supplementing liberalization with increased foreign borrowing and a crawling peg.

second stage of the analysis Balassa employed simple rank coefficients and cross country regressions. His main finding was that outward orientation, represented by a high growth rate of exports, had positive effects on output growth. Although it was backed by individual country studies Balassa's synthetic piece had some limitations that, in fact, have been present in most of the subsequent literature. Some of these limitations refer to the arbitrary definition of export incentives, the lack of a role for real exchange rates in the explanation of export performance and the inability to deal convincingly with causality issues.

The recent World Bank project directed by Choksi, Michaely and Papageorgiou is another ambitious multicountry study that has analyzed in great detail the liberalization experiences of 19 countries since World War II. Since this project has not been completed, it is not possible yet to discuss all its findings. However, some preliminary results have provided important information regarding the dynamics of trade liberalization. For example, Michaely (1988) reports that in only one of 36 liberalization episodes the trade reform resulted in an increase in the aggregate rate of unemployment. This indeed is a striking result that suggests that trade reforms do not have, even in the short run, a negative effect on output and employment. Also, this study confirms previous findings that indicate that consistently higher real exchange rates that support a liberalization process result in faster output growth. In addition to the generalized measurement problem, this study seems to have some limitations related to the lack of firm theoretical basis, as well as to uneven empirical investigations across countries.<sup>19</sup> The World Development Report (1987) presents

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<sup>19</sup>I say that it "seems" to have these limitations, because the final report has not yet been released.

some preliminary results obtained in this project, suggesting that countries with a more liberal trade regime have outperformed the more inward oriented economies in the last 25 years.

#### Exports and Output Growth

A number of studies focused their attention on the relationship between exports expansion (see, in particular, Balassa 1978, 1982) project and related work by Michaely (1977). This literature has focused on testing the robustness of the findings that indicate a positive effect of exports on growth. This has been mainly done by controlling for the effects of additional variables, extending the sample of countries, and improving on the measurement of the variables employed. It also provided a (weak) theoretical base to the empirical work on this area by postulating that exports should be considered as an additional factor of production in the aggregate neoclassical-type production function of an open economy. The rationale for adding exports as another factor is based on possible positive externalities and technological diffusion effects they generated by more rapid exports. In this sense, most of these studies derived their estimated reduced forms from an augmented neoclassical production function such as:

$$Y = f(K, L, X) \quad (2)$$

where  $Y$  is the level of output,<sup>20</sup>  $K$  is the capital stock (the growth of which was usually proxied by the level of investment,  $I$ ),  $L$  is the labor force and  $X$  are exports.

Table 3 provides a detailed summary of four representative articles of this growing literature. The table shows the sample and period covered by

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<sup>20</sup>To account for the fact that exports are a component of GNP these measures of output usually referred to the non-export GNP, i.e., GNP - total exports.

TABLE 3

Summary of Results of Studies Relating Exports Growth  
To Output Growth (Group B)

<u>Study</u>	<u>Sample/Period</u>	<u>Argued Improvement</u>	<u>Estimated Equation</u>
Tyler (1981)	-55 middle income LDCs. Eliminating those with income per capita (Y/N) < 300. -Period: 1960-77	-Less restrictive sample of countries. No selection bias with respect to Balassa's studies.	$\hat{Y} = \beta_0 + \beta_1 \hat{K} + \beta_2 \hat{L} + \beta_3 \hat{X}$
Feder (1983)	-2 samples of LDCs 1) 19 middle income countries 2) 31 middle income + low income countries	-Distinguishes theoretically and empirically between: factor productivity differential and external-ity effects of EP policies in a 2-sector model (export and non-export sectors).	$\hat{Y} = \beta_1 (I/Y) + \beta_2 \hat{L} + \beta_3 \hat{X} \cdot X/Y \quad (1)$ $\hat{Y} = \gamma_1 (I/Y) + \gamma_2 \hat{L} + \gamma_3 \hat{X} \cdot X/Y + \gamma_4 \hat{X} \quad (2)$
Kavoussi (1984)	-73 low and middle income LDCs, characterized by whether (Y/N) <sub>60</sub> ≥ \$360 and excluding oil exporters. -Period 1960-78.	-Examine whether the positive correlation between $\hat{X}$ and $\hat{Y}$ also holds for low income countries.	$\hat{Y} = \beta_0 + \beta_1 \hat{K} + \beta_2 \hat{L} + \beta_3 \hat{X} \quad (1)$ $\hat{Y} = \alpha_0 + \alpha_1 \hat{K} + \alpha_2 \hat{L} + \alpha_3 \hat{X} + \alpha_4 \hat{X}_m \quad (2)$ ( $X_m$ = share of manufactured $X^S$ on total exports).
Ram (1985)	-73 LDCs, low and middle income distinguished by (Y/N) <sub>77</sub> ≤ \$300 -2 subperiods: 1960-70, 1970-77.	-Avoid selection bias. -Test for absence of simultaneity bias.	$\hat{Y} = \beta_0 + \beta_1 I/Y + \beta_2 \hat{L} + \beta_3 \hat{X} + \beta_4 D$ (low income dummy).

Table 3 (continued)

Study	Results	Other Tests
Tyler (1981)	$\hat{\beta}_3 = 0.57$ for the whole sample. Drops to $\hat{\beta}_3 = 0.055$ when 6 OPEC countries are excluded.	Pearson and Spearman rank correlations between $\hat{Y}$ and a) manufacturing output b) domestic investment c) $\hat{X}^S$ growth rate d) manufactured $X^S$ growth rate (all were positive and significant).
Feder (1983)	1) $\hat{\beta}_3 \approx 0.4$ and significant, introduction of exports as explanatory variable increased the $\bar{R}^2$ . 2) $\hat{\gamma}_4 \approx 0.13$ statistically significant in both samples. Evidence of substantial productivity differentials in addition to the usual externalities effect.	Performs regression of (1) for 17 developed countries and found that $\hat{\gamma}_3$ was significant but $\hat{\gamma}_4$ wasn't, i.e., productivity benefits of export expansion were exhausted in those countries.
Kavoussi (1984)	1) $\hat{\beta}_3 > 0$ and significant for the whole sample and for both subsamples. But was twice as large for the middle-income than for the low-income countries. 2) $\hat{\alpha}_4$ is not significant for the sample as a whole. For the middle-income group: $\hat{\alpha}_3 < 0$ not significant $\hat{\alpha}_4 > 0$ significant. For low income groups: opposite results.	Spearman rank correlations between $\hat{X}$ and GNP for a) The whole sample (positive and significant). b) The 2 subsamples (higher for the middle income than for the low income group). c) The sample excluding countries where $X_m > 44\%$ (reduce the significance of the middle income group).
Ram (1985)	- $\hat{\beta}_3 > 0$ and significant in all the regressions. - $\hat{\beta}_3$ larger in the second and lower for the low-income countries.	-White's test is performed to check for homoskedasticity of disturbances and simultaneity bias (favorable result).

each study, their distinctive features with respect to previous works, the functional form postulated, the econometric results obtained and the statistical procedures employed to test their hypotheses. As can be seen the main concern of these studies has been to analyze the magnitude, significance and sensitivity of the parameter associated with exports growth. In general a large and significant value for this coefficient has been found. This has been interpreted as supportive evidence in favor of the benefits of export-promoting policies. A secondary concern of this line of research has been to determine whether the positive relation between exports and output growth is robust to the inclusion of low-income LDCs in the regression sample; the results in this respect, however, have not been conclusive.

A major shortcoming of these empirical findings is the fact that they are obtained without controlling for the actual trade orientation (bias) of the countries included in the sample.<sup>21</sup> Furthermore, these studies tend to derive policy recommendations without having tested the effectiveness of (some of) the policy instruments they advocate to use. In this sense, then, the results obtained by them should be considered, as Bhagwati (1986) points out, as only a very indirect evidence in favor of the adoption of export promoting policies.

Another criticism to these studies has been focused on the issue of causality. The empirical findings obtained from standard regression techniques do not permit us to determine whether the growth of exports "cause" the growth of output -- as these studies claim -- or if the

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<sup>21</sup>Two recent papers by Balassa (1981, 1985) have tried to overcome this deficiency by including policy related indicators as explanatory variables in the regression. However, the variables chosen as proxies for the trade orientation of the regime raise some doubts regarding the relevance of the results.

causality runs in the opposite direction -- as has been claimed, for instance, by Findlay (1984). Some recent empirical works have addressed this issue by applying Granger "causality" tests to the relation between exports and output.<sup>22</sup> Table 4 summarizes the methodology and results of two of these works. As can be seen the evidence reported in these papers is quite mixed; the causality from exports to output is accepted only for a small number of countries, and in the majority of cases the hypothesis of two-way causality cannot be rejected. These results seem to confirm the need for a more detailed and careful specification of the link between trade orientation, exports growth and economic performance.

Studies Based on Kravis' "Decomposition Method" and on the Heckscher-Ohlin Framework

The general issue of the effects of alternative trade regimes on the evolution of exports and on the overall economic performance of LDCs has been addressed rather differently by the studies of group C in Table 2. The objective of these studies has been to identify the relative importance of the different factors that explain the rate of growth of exports in developing countries. In particular, these papers have followed the methodology established by Kravis (1970) and have assumed that the evolution of exports of a given country is determined by three factors: i) the evolution of external demand; ii) the change in the degree of competitiveness (measured as the change in the country's world market share); and iii) the change in the degree of export diversification (proxied by the share of non-traditional exports in total exports). While the first of these determinants is

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<sup>22</sup>There is, of course, a great deal of controversy on the real meaning of "causality" and on the significance of the Granger-type tests. See, for example, Leamer (1985). Notice, also, that Sections 3 and 4 of Balassa (1985) are not subject to the causality criticism.

TABLE 4  
 "Causality" Tests on the Effects of Exports on Growth

Study	Sample/Period	Test
Jung & Marshall (1985)	37 LDCs for the period 1950-1981	Granger "causality" tests and F-tests for the signs of coefficients in: $\hat{X}_t = \sum_i a_i \hat{X}_{t-i} + \sum_j b_j \hat{Y}_{t-j} + \mu_t$ $\hat{Y}_t = \sum_i c_i \hat{Y}_{t-i} + \sum_j d_j X_{t-j} + v_t$ (Box-Pierce Q to test for autocorrelation) -Lag length generally restricted to 2.
Hutchinson & Singh (1987)	34 LDCs for the period 1950-1985	Granger "causality" tests and F-tests to capture export externality effects in: $\hat{n}_t = \sum a_i s_{t-i} + \sum b_j \hat{n}_{t-j} + \sum c_s \hat{X}_{t-s} + \mu_t$ $\hat{X}_t = \sum d_i s_{t-i} + \sum e_j \hat{n}_{t-j} + \sum f_s \hat{X}_{t-s} + v_t$ where: $\hat{n} = (\hat{Y} - \hat{X})$ non-export sector growth $S_t = \Delta I/Y$ , change on Investment/GDP ratio.

(continued)

Table 4 (continued)

Study	Interpretation of Outcome			Results
Jung & Marshall (1985)	<u>If</u>	<u>and</u>	<u>Then</u>	4 countries classified as EP 5 countries classified as ERG 3 countries classified as IGE 2 countries classified as GRE -22 countries couldn't be properly classified. Including countries always characterized as EP examples like South Korea, Taiwan, Brazil.
	$\hat{X} \rightarrow \hat{Y}$	$\Sigma \hat{\alpha}_j > 0$	EP	
	(export promoted growth)			
	$\hat{Y} \rightarrow \hat{X}$	$\Sigma \hat{\beta}_j > 0$	IGE	
	(internally generated $X^S$ )			
	$\hat{Y} \rightarrow \hat{X}$	$\Sigma \hat{\beta}_j < 0$	ERG	
(export reducing growth)				
$\hat{X} \rightarrow \hat{Y}$	$\Sigma \hat{\alpha}_j < 0$	GRE		
(growth reducing exports)				
If $\hat{X} \leftrightarrow \hat{Y}$ or $\Sigma \hat{\beta}$ not significant, no interpretation is given.				
Hutchinson & Singh (1987)	<u>If</u>	<u>and</u>	<u>Then</u>	-10 countries (mainly primary producing) showed evidence of positive export externalities. -3 countries showed evidence of growth externalities. -3 countries showed evidence of negative externalities. 18 countries couldn't be classified, including Brazil and South Korea.
	$\hat{X} \rightarrow \hat{n}$	$\Sigma \hat{c} > 0$	Export externalities	
	$\hat{n} \rightarrow \hat{X}$	$\Sigma \hat{e} > 0$	Growth externalities	
	$X \rightarrow \hat{n}$	$\Sigma \hat{c} < 0$	Negative externalities	
	$\hat{n} \rightarrow \hat{X}$	$\Sigma \hat{e} < 0$		

taken as exogenous for the developing countries, the last two are usually interpreted as being the result of domestic trade orientation policies.

The empirical analysis of these studies has consisted, basically, on computing correlation coefficients between the value of exports and the three explanatory factors for a particular group of countries in a given period. Depending on the size and significance of these coefficients the studies have determined whether the observed rate of growth of exports can be considered primarily a result of the adoption of export-promoting policies or of the conditions prevailing in the world market. Overall, the results obtained by these studies are not fully conclusive. The relative importance of domestic as opposed to external factors seems to be very sensitive to the group of countries selected and to the period chosen for the estimation. In general, though, it appears that, as would have been expected, the exports performance of LDCs is strongly dependent, but not deterministically so, on the existence of favorable conditions in the world market. It is not clear, however, what practical and new implications can be derived from this finding; especially since the link between the competitiveness and diversification factors and the changes in the trade regime appears to be extremely indirect and weak.

An alternative methodology for investigating the consequences of a change in the trade regime of LDCs has been used by the studies of group D in Table 2. Taking the Heckscher-Ohlin model as a benchmark, these two works performed different tests that confirmed that the factors content of exports of developing countries is consistent with these countries' factors endowment. Having determined that LDCs exports are relatively labor intensive, these studies relate the actual distortions in factors markets (Krueger 1983) and in the pattern of trade across regions (Havrylyshyn 1985) with an

excessive anti-export bias. Thus they emphasize on the potential gains in terms of efficiency, employment and exports growth of the adoption of a more outward oriented trade regime. However, despite their sound theoretical base, these studies' empirical analysis is somewhat incomplete. In particular, the fact that they do not provide an adequate and comparable measure of the degree of distortions created by the trade regimes prevailing in the countries analyzed undermines their policy recommendation.

### Summary

The evidence discussed here -- plus a number of other contributions not included because of space considerations -- provides a broad picture in support of the joint hypotheses that domestic policies affect exports and that exports expansion has been associated with more sustained output growth. It is indeed very difficult to dismiss the massiveness of these results. It is fair to say then, that a firmly established empirical finding, is that a greater participation in international trade helps growth. However, from a policy perspective this is not an overly helpful finding, since it does not add too much to the current debate on openness, laissez faire, export promotion and trade liberalization. We would be hard pressed to say which set of policies would better achieve an efficient process of integration into the world economy or to give precise prescriptions on what is the "optimum" degree of openness. Two basic problems remain unsolved in this regard. The first is the lack of clear theoretical underpinnings that would support these empirical results. The second refers to the repeatedly mentioned measurement problem. Further development in this line of research would require, at least, the use of an appropriate index of trade orientation in attempts to explain cross-country differences in economic performance.

#### IV. Recent Theoretical Developments on the Relation Between Trade and Growth

As pointed out in Section III the traditional policy and empirical literature on trade and growth have not been based on firm theoretical grounds. In fact, as Helpman (1988, p. 3) has recently pointed out "current theory is not suitable to deal in a satisfactory way with these alternative views [on the relation between trade policy and growth]".<sup>23</sup>

The most serious problem of traditional growth theory -- that is, of Solow's neoclassical growth model and its many variants -- is that in equilibrium (i.e., in the steady state) the rate of growth of output is independent of policy related parameters. This means that two identical countries that only differ with respect to their vectors of policies will still grow, in equilibrium, at the same rate. An additional and well-known property of these models is that the equilibrium rate of growth of an economy is independent of its savings rate. Thus, if two otherwise identical countries have different savings ratios, they will still grow at the same rate in the steady state. The model predicts, however, that they will have different equilibrium levels of income per capita.

These limitations of traditional growth models can be illustrated with a simple aggregate production function. Let  $Y$  be total output,  $F(\ )$  be a constant returns to scale production function,  $K$  the capital stock,  $L$  the labor force and  $A$  a parameter that represents "technology". Further, let's assume that technological progress is of the "labor augmenting" type.<sup>24</sup> Aggregate output is then determined in the following way:

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<sup>23</sup>Findlay (1984) and Smith (1984) provide excellent surveys on the relation between growth and trade. They don't deal, however, with the role of domestic commercial policy; their main interest is, in fact, to explain how growth will affect trade patterns.

<sup>24</sup>See Dixit (1976).

$$Y_t = F(K_t, L_t A_t) \quad (3)$$

Denoting the rate of growth of output by  $g$ , the rate of growth of the labor force by  $n$ , and (net) investment by  $I$ , we have:

$$g = \eta \left( \frac{I}{Y} \right)_t + \epsilon n + \epsilon \left( \frac{\dot{A}}{A} \right)_t \quad (4)$$

which is the equation that has been used extensively in accounting empirical studies of the determinants of growth. These studies have found that, on average, technological progress accounts for between 1/2 and 1/3 of real growth in the developing countries. The presence of the investment ratio in equation (4) suggests that a higher level of investment will be translated into a higher rate of output growth. This, however, is not an equilibrium situation. In the steady state the output capital ratio should be constant and equation (4) collapses to:

$$g = n + \left( \frac{\dot{A}}{A} \right) \quad (5)$$

In many ways this expression is disappointing, since it states that the equilibrium rate of growth is determined by the sum of two exogenous variables -- the rate of growth of the labor force and the rate of technological progress. Furthermore, this setting not only predicts that the equilibrium rate of growth of an economy will be completely independent of policy measures, but also that the rates of output growth will converge across countries.<sup>25</sup>

As a consequence of the recently renewed interest in growth theory, a number of authors have tried to devise simple models that are free of some of the limitations of the Solow-type framework. Lucas (1988) provides a

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<sup>25</sup>This last statement assumes, of course, that countries face the same exogenously determined  $n$  and  $(\dot{A}/A)$ .

good survey of the analytical issues involved in this line of research and suggests that the explicit introduction of human capital accumulation in a two-good open economy model can indeed explain the nonconvergence of rates of growth across countries. Becker and Barro (1988), on the other hand, have looked at the economics of population in order to understand the determinants of the rate of growth of the labor force and output.

#### Increasing Returns to Scale and Endogenous Technological Progress

In general, the recent efforts to construct more satisfactory theories of growth have focused on relaxing two key assumptions of the neoclassical model: (1) the constant returns to scale technology; and (2) the exogeneity of technological progress. The first assumption has been replaced by the introduction of increasing returns to scale. Work in this area has been pioneered by Romer (1986a,b, 1988), who has suggested a number of growth models with economies of scale that are either exogenous or endogenous to the firm.<sup>26</sup> Although in both settings the presence of increasing returns makes it possible to generate an equilibrium situation with nonconvergent rates of growth across countries, the models with internal economies of scale provide a more appealing explanation. These models use an Ethier (1982)-type production function which has the property that a greater degree of specialization in the productive process increases efficiency. This pioneer work does not deal directly, however, with the question of the relation between trade policy and growth.

With respect to the endogenous technological progress, Helpman and Grossman (1988) have recently build an elegant two-country model that emphasizes the role of R&D in the growth process. This model assumes the

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<sup>26</sup> Allyn Young (1928) was an early proponent of explanations of growth based on increasing returns.

existence of differentiated intermediate inputs produced by oligopolistic firms, and of country-specific final goods. Investment in R&D allows each country to produce "blueprints" for new intermediate inputs. The production function for final goods is, as in Romer (1988), of the Ethier (1982) variety, where total factor productivity is enhanced by an increase in the variety of intermediate inputs. In this framework, investment in R&D is translated into "acquired" comparative advantages. If there are cross-country differences in the efficiency with which R&D takes place, relative to efficiency in manufacturing, the model generates very rich dynamics. For example, if changes in commercial policy reallocate spending towards the final commodity produced by the country with comparative advantage in R&D, the equilibrium world rate of growth will decline. An important feature of this model is that in the steady state both countries grow at the same (equilibrium) rate.

Boldrin and Scheinkman (1988) have developed a simple two-countries, two final goods model that is able to generate different rates of growth across countries. In this model there are infinite intermediate inputs, and each country is subject to an economy wide learning-by-doing process à la Arrow (1962). It is further assumed that the efficiency of learning-by-doing depends on the distribution of the labor force across sectors; the higher the proportion of workers employed in the modern (high technology) sector, the more efficient will be the learning-by-doing. As a result of this assumption the externality will affect the dynamics of comparative advantage.

Krugman (1988) has also focused on endogenous technological progress and has developed a model based on Schumpeterian premises, where firms undertake innovations based on expected future monopoly rents. The model

considers a three period economy with  $N$  goods produced per period, and one factor of production -- labor. In period 1 firms have to decide whether to invest in improving the production process. If they do, they obtain monopoly rents in period 2; in period 3, however, the new technology becomes common knowledge and the monopoly rents disappear. A crucially important feature of this model is that the existence of monopoly rents imply a tradeoff between static welfare losses (i.e., the traditional triangles) and dynamic innovative gains. For our purposes, however, the most interesting result is that "the presence of endogenous technological development increases the gains from international integration." Recent work by Shleifer (1986) and Murphy, Shleifer and Vishny (1988) also make use of the Schumpeterian framework to develop interesting models of growth. In particular, this latter paper exploits the existence of multiple equilibria to give formal underpinnings to Rosenstein-Rodan's (1961) "big-push" hypothesis. Once again, however, these models do not deal with the narrower question of the relation between trade policy and growth.

There is little doubt that these new developments in growth theory have opened up a highly promising area of inquiry that will help answer a number of questions that could not be tackled satisfactorily by the traditional approach.<sup>27</sup> However, although many of these authors refer to their research as dealing with fundamental development issues, most of these papers have been derived with the structures of the advanced countries in mind. For instance, the models of endogenous growth focus on the determinants of the rate at which innovations are created, rather than on the rate at which existing innovations are absorbed. While, undoubtedly, the development of

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<sup>27</sup>Other important papers include Rebelo (1987), Kohn and Marion (1987), Barro (1988), and Jones and Manuelli (1988).

new inventions should be central in any attempt to explain the historical patterns of growth in today's mature economies, the question of the rate of absorption of technology is the more important one for the developing countries. A second problem with this line of research is that very little effort has been made to provide empirical support for these theories. As Krugman (1988) has recently indicated, "the priority is really not how to construct cleverer models, but how to build a bridge to reality" (p. 29).

#### V. New Evidence on the Relation Between Trade Regime and Economic Performance

The purpose of this section is to present new tests and evidence on the relation between trade regimes and economic performance. These tests differ from previous work in two respects. First, an attempt has been made to find an index of trade regime orientation that, at least partially, satisfies the three requirements discussed in Sections II and III: (i) objectivity; (ii) continuity; and (iii) comparability. Second, for the first time (at least to my knowledge) an attempt is made to test the liberal trade regime hypothesis. In effect, we make use of an index of trade intervention that penalizes equally the presence of import taxes and export subsidies. The section starts with the presentation of a minimal model on the relation between trade orientation and growth. As most of the literature reviewed in Section IV, the model emphasizes the role of technological innovations. However, contrary to that literature we focus on the rate of absorption of technological advances.

##### V.1 Trade Orientation, the Absorption of Technological Progress and Growth

In this subsection a minimal model on the relation between trade orientation and growth is derived. This model provides the basis for the cross-country empirical results reported below, and differs from the works

discussed in Section IV in two respects. First, it concentrates on out of steady state situations and, second, it assumes that the country of interest is a small developing country that faces given prices and, more important for our purposes, is inserted in a world where innovations take place in the advanced countries. That is, our economy faces exogenous technological progress; the key question, then, is how fast, and how efficiently it absorbs this technological progress.

Of course, the idea of focusing on out of steady state situations when attempting to explain growth is not new. For instance, Corden (1971) follows this approach in his two-stage production model of trade and justifies it by stating that: "It may be uninteresting to describe a state which is many years ahead and which may indeed never be reached ... [F]ocusing on a theoretical ultimate state is thus purely an expositional device ... [A] concern only with steady states would have obscured significant aspects of the trade and growth process" (p. 219). Moreover, Lucas (1988) has recently recognized that one possible way of overcoming some of the limitations of the traditional growth theory is, indeed, to explore the characteristics of out-of-steady state situations.<sup>28</sup>

Our model is based on an important insight developed by W. Arthur Lewis in his monumental work Theory of Economic Growth. In this study Lewis argues that those developing countries that are more integrated to the rest of the world will have an advantage in absorbing technological innovations generated in the advanced nations. In Lewis' words: "New ideas will be accepted more rapidly in those societies where people are accustomed to ...

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<sup>28</sup>He says: "Off steady state behavior would open up some new possibilities, possibly bringing the theory into better conformity with observation ..." (p. 14). However, he then goes on to say: "I do not view this route at all promising".

change ... [A] country which is isolated is ... by contrast unlikely to absorb new ideas quickly ..." (1955, p. 178).

There are a number of ways in which Lewis' insight can be formalized at the microeconomic level. One possibility is to postulate a "learning-by-looking" process of the type proposed by Findlay (1977).<sup>29</sup> According to that framework the mere association with newer commodities and technologies increases the efficiency with which innovations are absorbed. In this section, however, I will not try to provide the microfoundations of this absorption process, but I will derive a simple aggregate that captures Lewis' insight regarding the connection between trade orientation and growth.<sup>30</sup> The model itself is a simple adaptation of the Nelson-Phelps (1965) study on the relation between human capital and growth.

Let's start with an aggregate production function of the form assumed in equation (3) (which is reproduced here for convenience):

$$Y_t = F(K_t, L_t A_t) \quad (6)$$

from where we have already shown that the rate of growth of real output can be expressed as:

$$g = \eta \left( \frac{I}{Y} \right)_t + \epsilon n + \epsilon \left( \frac{\dot{A}}{A} \right)_t \quad (7)$$

(where the notation used in Section IV has been maintained).

Contrary to traditional growth models we will consider the rate of technological change as endogenous. More specifically, we will assume that

<sup>29</sup> A 1984 study by Dalham, Ross-Larson and Westphal provide microeconomic empirical support to this general view. Rodrick (1988) develops optimizing models that yield to opposite results.

<sup>30</sup> The formulation of such a micro model would have to be based on some of the new and rich literature on North-South trade.

in every period the change in the technology parameter  $A$  is proportional to the difference between the technological level achieved by "the" world economy,  $W$ , and the degree of technological process in the domestic country:

$$\dot{A} = \theta(W-A); \quad 0 < \theta \leq 1 \quad (8)$$

where  $\theta$  is a parameter that measures the speed at which technological progress generated in the rest of the world is absorbed by the domestic country.<sup>31</sup> Lewis' effect is captured by assuming that  $\theta$  is a function of the country's trade orientation. In particular, let  $\tau$  be a continuous index of a country's trade regime whose value achieves a minimum under free-trade (*laissez-faire*) and increases as the extent of trade intervention grows.<sup>32</sup> In such a case the relation between  $\theta$  and  $\tau$  will be given by:

$$\theta = \theta(\tau); \quad \theta'(\cdot) < 0. \quad (9)$$

Then, if it is assumed that the stock of world's technological knowledge,  $W$  grows at the rate  $\omega$ :

$$W_t = W_0 e^{\omega t}, \quad (10)$$

it is easy to show that the trajectory of the domestic stock of technology will be given by:

<sup>31</sup>An alternative would be to assume that the  $\theta$  index determines the proportion of innovations that is actually absorbed. An undesirable characteristic of this formulation, however, is that the gap between the domestic and "world" stocks of knowledge would grow unboundedly.

<sup>32</sup>Lewis is not clear on whether he considers openness as the key determinant of the rate of absorption of innovations, or whether the crucial variable is how distorted the external sector is. This, of course, is related to the debate on export-promotion vs. liberal regimes. In this model we interpret  $\tau$  as a measure of distortions. Whether this is appropriate is, of course, an empirical question.

$$\bar{A}_t = (A_0 - \frac{\theta}{\theta+\omega} W_0) e^{-\theta t} + (\frac{\theta}{\theta+\omega}) W_0 e^{\omega t} \quad (11)$$

The steady state of this model, then, is characterized by three important properties. First, in the steady state the stock of domestic knowledge will be:

$$\bar{A}_t = \frac{\theta}{\theta+\omega} W_0 e^{\omega t} \quad (12)$$

Second, the steady state will imply the existence of an equilibrium technological gap (G):

$$G = \frac{W-\bar{A}}{\bar{A}} = \frac{\omega}{\theta} \quad (13)$$

which, in turn, will depend positively on the degree of trade intervention:  $\partial G/\partial \tau > 0$ .

Third, the equilibrium level of domestic knowledge,  $\bar{A}$ , will be negatively affected by increases in the trade orientation index:

$$\frac{\partial \bar{A}}{\partial \tau} = \frac{\theta' \omega}{(\theta+\omega)^2} W_0 e^{\omega t} < 0 \quad (14)$$

This means that a country with a higher degree of trade intervention will have a lower equilibrium level of technological knowledge, and a larger technological gap, than a otherwise identical economy. This fact is depicted in Figure 1 where the two  $\mu$  schedules represent different rates of growth of A; i.e.,  $\mu = \dot{A}/A = \theta[(W-A)/A]$ .  $\mu(\tau_L)$  is the  $\dot{A}/A$  schedule corresponding to a low value of the intervention index, while  $\mu(\tau_H)$  corresponds to a high value of  $\tau$  and, consequently, to a larger equilibrium technological gap. This result not only has implications for the levels of output in the steady state but also suggests that as an economy goes through a trade liberalization (lowering  $\tau$ ), it will grow faster than an otherwise

identical economy that maintains its degree of intervention. On the other hand, the out of steady state effects of changes in  $\tau$  on the actual rate of accumulation of knowledge is:

$$\frac{\partial \mu}{\partial \tau} = \left( \frac{W-A}{A} \right) \theta' < 0 \quad (15)$$

This expression states that, for a given gap  $(W-A/A)$ , a higher degree of trade intervention  $\tau$  will reduce the rate of growth of knowledge accumulation in the domestic country. In terms of our growth equation (7) this implies that after taking into account the contributions of capital accumulation and labor force growth, and after controlling for the technological gap, a higher degree of trade intervention will reduce the rate of growth during the transition towards a more regulated regime. The empirical analysis presented below makes wide use of this result.

A difficulty with the empirical application of this model, however, is that the relation between the technological gap and the  $\theta$  coefficient is nonlinear. To overcome this problem, in the empirical analysis we have mainly concentrated on a linear specification that allows us to isolate the role of trade intervention. Equation (16) provides the linear specification that captures this out of steady state property of the model:

$$g_j = \eta' \left( \frac{I}{Y} \right)_j + \epsilon n_j + \gamma \tau_j + \sigma G_j + e_j \quad (16)$$

where  $g_j$  is the growth rate of real output in country  $j$ ,  $n$  is the rate of growth of the labor force in country  $j$ ,  $\tau$  is a trade intervention index in country  $j$ ,  $G_j$  is the technological gap in that country, and  $e_j$  is an error term. The interest of our empirical study is to determine whether the coefficient of  $\tau$  is indeed negative as suggested by the model. A serious difficulty in implementing this equation, however, refers to finding an

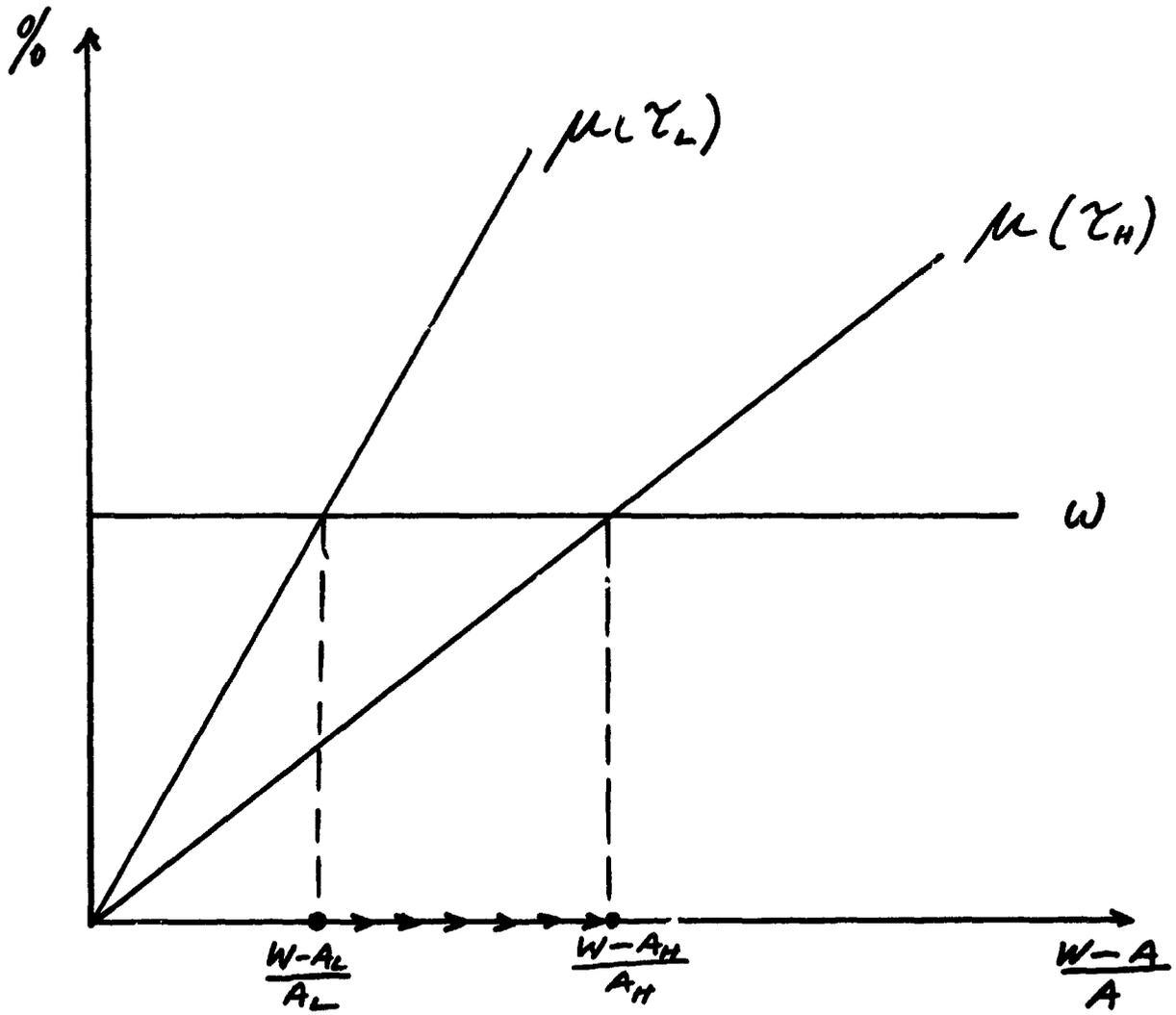


FIGURE 1

adequate index of trade orientation. The subsection that follows deals with this issue.

## V.2 An Index of Trade Intervention

There is little, if any, hope that researchers will ever be able to construct the ideal index of trade intervention that will capture all the subtleties of reality. Empirical research, then, has to proceed on the basis of finding proxies for this ideal index. If better, more reliable, and less controversial proxies to this index are developed, the quality of that research will tend to improve.

In a recent paper on openness Edward Leamer (1987) has used a large cross country data set to compute patterns of trade according to comparative advantage. He then takes "[t]he difference between the 'predicted' and actual trade intensity ratios ... as an indicator of trade barriers" (p. 7). In this paper we use these intervention indexes as a proxy for the extent of trade intervention.

Leamer uses a traditional Heckscher-Ohlin general equilibrium model of trade as his theoretical framework. "Predicted" comparative advantage trade ratios are computed using a regression analysis that considers three goods aggregates and seven factor of production. Leamer then defines a rate of intervention which "measures the extent to which trade is distorted by policy, positively or negatively" (p. 26). For every country this intervention index is defined as the ratio of the sum of the absolute value of the residuals from the regression to GNP.<sup>33</sup>

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<sup>33</sup>Leamer also constructs an alternative intervention index where the denominator is the sum of the absolute value of predicted net trade. In private communication, however, Leamer has argued that for the purpose at hand using GNP as the denominator is more reasonable.

The Leamer index has a number of attractive features. First it is, as far as any index can possibly be, objective. No attempt whatsoever has been made a priori to classify the countries' trade regimes. A debatable point, of course, is whether the three goods, seven factors empirical model used to predict trade is adequate to capture comparative advantage. In this respect, recent massive empirical evidence provided by Leamer (1984) himself indeed indicates that this is a reasonable model. The second attractive feature of this index is that it reflects all types of trade interventions, independently of whether they are export promoting or import substituting. In that regard, the export promoting activities of a number of countries will be reflected in a very high intervention index. As a consequence of this property, this index can be useful to test the "liberal trade regime" hypothesis. A third desirable property of this index is that it is comparable across countries.

However, the index has some limitations. First, it has been computed for only one year (1982). It is not possible, then, to analyze the evolution through time of the degree of trade intervention for any particular country. Second, the index is only as good as is the model used to predict "comparative advantage trade".

Another important variable of the model derived above is the technological gap. Obviously, however, there are no direct measures of this gap. In this study a measure of the level of education achievement was used as a proxy for it. The specific variable was defined as the percentage of people enrolled in secondary schools as a fraction of each age group. An advantage of this proxy is that it focuses on labor augmenting technological progress, which is the type of technological knowledge captured by the model. Additionally, this variable is available for all countries for 1982

and for all but two in 1970.<sup>34</sup> When other proxies for the gap were used -- such as income per capita -- the results obtained were not altered in any significant way.

### V.3 Trade Restrictions and Cross Country Differences in Growth: Some New Evidence

The question we want to address is whether there is a relation between trade regimes and the rate of growth of output in the developing countries. More specifically we want to know if differences in trade orientation help to explain the observed differences in economic performance across countries. Ideally, an analysis on this type should capture the evolution of the relevant variables during several years, however, our index of trade orientation  $\tau$  is only available for one year (1982). This problem was tackled in the following way. First, it was assumed that  $\tau$  captured the cross-country differences in trade orientation for a period longer than 1982. Regressions were then estimated using that index together with 1970-82 averages for output growth, the investment ratio, labor force growth and the level of educational attainment. These data were obtained from World Development Report 1984. Since the assumption that the intervention index applies to the whole 1970-82 period is not fully satisfactory, regressions were also estimated for the year 1982 only.<sup>35</sup> In this case, the data on labor force and education still came from the World Development Report 1984, while those for growth and investment ratios were obtained from the IMFs

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<sup>34</sup> Alternatively one could use the Harbison-Myers index, that include enrollment rates in higher education. A limitation of this index, however, is that it is a flow index only.

<sup>35</sup> Notice, however, that what is required is that the distribution of the  $\tau$ 's across countries captured by the 1982 index reflects its behavior along the whole period and not that the absolute values of the index are maintained.

International Financial Statistics.

Given the likely presence of heteroskedasticity in cross-country regressions of this type, equation (10) was estimated using a weighted regression procedure, where each country's income per capita was used as the weight. The results obtained are reported in Table 5. As can be seen from equations (14.1) and (14.2), the coefficients of the investment ratio and of the rate of growth of the labor force have the expected signs and are significant in every regression. More importantly for our purposes, the coefficients of the intervention index were always negative and highly significant. These results provide evidence supporting the hypothesis that higher trade intervention affects negatively economic performance. In equations (15.3) and (15.4) we have included the product of the intervention index and the technological gap as an independent variable. This was done because equation (15) suggested a nonlinear relation between growth and trade intervention is nonlinear. As before the results support our hypothesis.

An interesting question refers to whether the relation between growth and trade intervention is strictly linear or if we can detect some nonlinearities. When a  $r^2$  term was incorporated the following result was obtained using weighted regressions:

$$g_j = -1.742 + 0.286 (I/Y)_j + 1.489 n_j - 0.039 G_j$$

$$\begin{matrix} (-0.972) & (6.353) & (3.556) & (-1.641) \end{matrix}$$

$$- 3.758 r_j + 0.520 r_j^2$$

$$\begin{matrix} (-1.982) & (0.536) \end{matrix}$$

Period: 1970-82  
N: 28  
R<sup>2</sup>: 0.706

As can be seen, the coefficient of the intervention index is negative and that of its square is positive. This last coefficient, however, is not significant.

TABLE 5  
Growth and Trade Orientation in Developing Countries:  
Weighted Regressions

	<u>Eq. (14.1)</u>	<u>Eq. (14.2)</u>	<u>Eq. (14.3)</u>	<u>Eq. (14.4)</u>
Period	(1960-82)	(1982)	(1960-82)	(1982)
Constant	-1.924 (-1.111)	-7.935 (-2.575)	-4.225 (-2.780)	-9.661 (-3.768)
Investment Ratio	0.280 (6.533)	0.323 (4.506)	0.302 (5.755)	0.343 (4.277)
Labor Force Growth	1.461 (3.573)	1.992 (2.966)	1.496 (4.369)	1.916 (3.142)
Technology Gap	-0.037 (-1.611)	-0.020 (-0.575)	-	-
Trade Intervention	-2.697 (-3.766)	-3.137 (-2.491)	-	-
Trade Intervention Tech. Gap	-	-	-0.065 (-3.336)	-0.052 (-2.169)
N	28*	30	28*	30
R <sup>2</sup>	0.702	0.503	0.656	0.473

\*The 1960-82 regressions exclude Ethiopia and Portugal because there are no data on early educational achievements. The countries included in the regressions are listed in the Appendix.

Numbers in parentheses are t-statistics. R<sup>2</sup> is the coefficient of determination.

It was also investigated whether the relation between trade regime and economic performance was dependent on the stage of development. Helleiner (19--), among other authors, has argued that the hypothesized positive relation between openness and performance does not apply to very poor countries. According to this view only after a certain threshold of development is reached, outward orientation and export growth will have a positive impact on real income growth. In order to investigate this possibility, a new explanatory variable (INTPC) was added to equation (16). This is an interactive term constructed as the product of the intervention index and the level of income per capita. The following result was obtained in this case:

$$g_j = -1.629 + 0.269 (I/Y)_j + 1.465 n_j - 0.038 G_j - 2.828 r_j$$

(-0.784) (4.332)
(3.507)
(-1.600)
(-3.227)

+ 0.005 INTPC
Period: 1970-82  
(0.270)
N: 28  

R<sup>2</sup>: 0.703

Consistent with Helleiner's hypothesis the coefficient of INTPC is positive; however, it is not significant. The coefficient of the intervention index itself, on the other hand, remains significantly negative.<sup>36</sup>

In general, the regression analysis reported above provides support for the hypothesis that there exists a negative relationship between the degree of restrictions on international trade and economic performance in the developing countries. In all regressions the coefficient of the index on trade impediments was negative and statistically significant. These regressions indicate that after taking into account the roles of capital accumulation, growth in the labor force, and technological gap, countries with higher degrees of trade intervention tend to grow, on average, slower

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<sup>36</sup>When the nonlinearity and the Helleiner hypotheses were jointly tested for the year 1982 only, very similar results were obtained.

than countries with lower trade restrictions.

Finally, it is important to notice that in the regressions reported in Table 5, as well as in the different variations of them, the  $R^2$  was considerably high for a cross country analysis. Those values for the coefficient of determination suggest that our model, that combines elements of the production function approach with the trade orientation literature, is capable of explaining approximately one half of the cross country variation in real growth.

## VI. Concluding Remarks

This paper has discussed a number of important issues related to the literature on the relation between trade orientation and economic performance in the developing countries. It was argued that a major shortcoming of the current policy debate is its increasingly dichotomized and ideologized tone. In the last few years not only have positions become more rigid, but also we have witnessed an increasing confusion on what the key concepts, such as liberalization, outward orientation and so on, exactly mean.

Three main conceptual shortcomings were detected in the current debate. First, the notion of a continuum of trade regimes (which was present in the early works) has been lost. Second, "liberalization" is no longer understood as a process that can have different intensities. And third, a number of authors have confused liberalization with laissez faire. This last problem has resulted in people advocating what, at least to some (including myself), seem to be contradictory positions, such as favoring openness and outward orientation at the same time as opposing "liberalization".

### Defining Trade Regimes and Liberalization

There is no doubt that the only way to put order back into the debate is to start by clearly defining the different concepts involved. In that regard Bradford and Branson's recent taxonomy of trade regimes, discussed in Section II, is a useful beginning. This taxonomy has a number of attractive features. First, it contemplates a continuum of trade regimes. Second, it places two dirigiste regimes at the extremes. And third, it recognizes explicitly that a neutral trade regime -- characterized by a bias ratio equal to one -- is different from laissez-faire.

Undoubtedly the debate will be enriched if the concept of liberalization is used as referring to a process that can have different intensities. In that regard a definition close to that of the original Krueger-Bhagwati NBER project is possibly the most useful one: Trade Liberalization is a process that makes greater use of the price system, making the trade regime more transparent and bringing domestic prices closer to world prices. This is a rather vague definition of liberalization, but the choice of it has been completely deliberate. This is because the vagueness disappears as soon as we provide two key pieces of information: (1) the initial trade regime, and (2) the actual intensity of the liberalization process. In terms of the Bradford-Branson taxonomy an economy would be undertaking a liberalization process whenever it moves from either extreme towards the laissez faire position.

### Trade Regimes and Economic Performance

Thus far we have discussed the definition of trade regimes and of liberalization. But, is there a relation between how liberalized a trade regime is (i.e., how close it is to laissez faire) and economic performance? Is there an "optimal" trade regime? If so, is that "optimal" regime

independent of the country's specific characteristics? These of course, are the key policy questions. Their answer has both a theoretical and an empirical dimension.

A well known, and disturbing property of traditional neoclassical growth models is that changes in policy affect only the steady state level of income per capita, and do not affect the equilibrium rate of growth of output. Although applied development economists have always been aware of this feature of the model they have continued using it in their empirical investigations, trying to determine whether there has been a sustained relation between trade (and other) policies and growth. The theoretical basis of these empirical analyses have usually been less than rigorous.

Recently, however, we have witnessed a renewed interest in growth theory. A number of authors have tried to develop equilibrium models that are able to capture some of the more salient stylized facts of actual growth processes: First, rates of growth don't seem to converge across countries as the traditional theory suggests. Second, policy packages do seem to make a difference. Some of the important contributions to this literature were reviewed in Section IV. It was argued that an important shortcoming of these models is that they take the economic structure of the large mature economies as a starting point.

In the meantime, and as the theoretical underpinnings are revised and greatly improved, the policy debate continues. In Section III the empirical literature on the relation between trade regimes and economic performance was selectively reviewed. Although this literature has provided a persuasive general case supporting the hypothesis that there is a relation between policy measures, export expansion and output growth, it has two major limitations. First, it lacks a firm theoretical basis. Second, it provides

indirect tests that don't shed much light on the issue of trade regimes. The problem is mainly one of measurement. These studies have not been able to construct a convincing objective and continuous index of trade intervention.

In Section V we derived a modified neoclassical growth model and presented new cross section results that do use an index of intervention that satisfies most of the requirements discussed in Sections II and III. The model is based on Arthur Lewis' proposition that a more open economy and less distorted trade regime will result in a faster rate of absorption of technological progress originating in the advanced countries. The model is very simple and uses an aggregative neoclassical framework to analyze the out of steady state relation between trade intervention and growth. The empirical analysis used a 30 country cross section data set. The results obtained provided strong support for the model indicating that, after controlling for the relevant variables, a higher degree of trade intervention will imply a decline in the rate of growth of output.

Although these results are very encouraging, there are a number of unresolved issues that should be tackled by future research. First, more detailed micromodels of the process of technology absorption should be explored. Second, the search for an even better index of intervention should continue.

TABLE A.1

## Countries Included in Regression

## Analysis of Section V

Bangladesh  
Ethiopia  
Pakistan  
Sri Lanka

Turkey  
Dominican Republic  
Ecuador  
Indonesia  
Philippines  
Nicaragua  
Colombia  
Egypt  
Cameroon  
Thailand  
El Salvador  
Peru  
Morocco  
Ivory Coast  
Costa Rica

Brazil  
Yugoslavia  
Israel  
Greece  
Argentina  
Panama  
Malaysia  
Portugal  
Trinidad-Tobago  
Hong Kong  
Singapore

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