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## Trade, Growth, and Poverty: A Selective Survey

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**Abstract**

<p>The views expressed in this Working Paper are those of the author(s) and do not necessarily represent those of the IMF or IMF policy. Working Papers describe research in progress by the author(s) and are published to elicit comments and to further debate.</p>
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This survey of the recent literature asks: how important is trade policy for poverty reduction? We consider the effects of openness on poverty in two components: the effect of openness on average income growth, and the effect on distribution for a given growth rate. Evidence from a variety of sources (cross-country and panel growth regressions, industry and firm-level research, and case studies) supports the view that trade openness contributes greatly to growth. Moreover, trade openness does not have systematic effects on the poor beyond its effect on overall growth. Trade policy is only one of many determinants of growth and poverty reduction. Trade openness has important positive spillovers on other aspects of reform, however, so that the correlation of trade with other pro-reform policies speaks to the advantages of making openness a primary part of the reform package.

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## I. INTRODUCTION

Twenty years ago a consensus had emerged that trade liberalization strongly promoted growth and poverty reduction. The intervening period has seen a large wave of trade liberalization in the developing world. There has also been a surge of research on openness, growth, and poverty reduction, in part inspired by this experience. In this paper we survey the recent literature to ask how important trade policy is for poverty reduction. We consider the effects of openness on poverty in two components: the effect of openness on average income growth, and the effect on distribution for a given growth rate. We ask two main questions: is trade openness an important determinant of growth, and is the growth that is associated with trade liberalization particularly pro- or anti-poor?

We focus on the links between trade and growth because changes in average per capita income are the main determinant of changes in poverty. In the past 20 years, the share of extremely poor people in the world (those living on less than two 1985 dollars per day) has fallen sharply, from 38 percent in 1978 to 19 percent in 1998. Because of population growth, the absolute numbers of poor have declined less, though the reduction in the number of poor from 1.4 billion to 1 billion is probably unprecedented.<sup>2</sup> These changes in poverty are almost entirely attributable to growth itself, not changes in the world income distribution.<sup>3</sup> More generally, there is no systematic relationship between growth and changes in income distribution. Thus, the income of the poor tends to grow proportionally with mean per capita growth.<sup>4</sup>

This suggests that our focus on growth as the core of a poverty-reduction strategy is well-founded. Changes in income distribution could still be important sources of changes in poverty within countries, however, even if they tended to “average out” across countries.<sup>5</sup> Moreover, if faster growth were associated with worsening income distribution, then there would be a limit

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<sup>2</sup> These numbers are from Sala-i-Martin (2002), who measure poverty rates based on income for developing and developed countries. Chen and Ravallion (2001) find similar trends though higher poverty rates. They define poverty in terms of consumption and consider only developing countries. The focus on consumption is *a priori* attractive but only makes a substantial difference only if it is assumed that the extreme poor save a significant share of their income.

<sup>3</sup> Changes in the world distribution of income during the 1987 through 1998 period have been slightly pro-poor (Chen and Ravallion (2001)).

<sup>4</sup> See, for example, Roemer and Gugerty (1997), Dollar and Kraay (2001), and Deininger and Squire (1998). Ghura et al. (2002) find in large panel of countries that the elasticity of income of the poor with respect to average income at 0.94 is close to (though significantly different from) one.

<sup>5</sup> Ravallion (2001).

on how much improvement in poverty we could expect from growth alone. In fact, neither concern turns out to challenge the primacy of growth in driving poverty reduction. The variance in income distribution through time is much smaller than the variance in average per capita income. Moreover, changes in the income distribution and real income per capita through time are weakly, if at all, correlated. These two facts mean that, whatever the causal relationship between growth and changes in income distribution, most variation in income of the poor must be a result of changes in average growth, not changes in income distribution, unless the changes in income distribution are of historically unprecedented magnitudes.<sup>6</sup>

Consider the important example of China. As Quah (2002) shows, no plausible increase in inequality could have swamped the effects of China's rapid per capita growth from 1980 through 1992. Per capita incomes grew by an average of 3.6 percent per annum over that period. During that time, China's Gini coefficient increased from 0.32 to 0.38, a large increase by international standards. Despite the rise in inequality, the number of poor (measured as those living on less than two dollars/day) fell by some 250 million, as rapid income growth swamped the effects of the increase in inequality. Inequality in China would have had to grow more than twice as fast as it did (much faster than observed in any other country during the postwar period) to undo the effects of the rapid income growth.<sup>7</sup>

Even though in general changes in poverty are mostly due to changes in average incomes, it might be that the growth that is due to trade liberalization is different from growth in general. That is, it is possible that trade liberalization generates a sort of growth that is particularly anti- (or pro-) poor. There are strong reasons to suppose that trade liberalization will benefit the poor at least as much as it benefits the average person. If, nonetheless, trade liberalization worsens the income distribution enough, then it is possible that it is not after all good for poverty reduction, despite its positive overall growth effects. This paper thus also addresses the questions of the relationship between openness and growth and whether trade-related growth or openness has a particular effect on inequality.<sup>8</sup>

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<sup>6</sup> Quah (2002) emphasizes this point.

<sup>7</sup> In India, also, a huge (in terms of headcount) reduction in poverty has taken place. Measurement of poverty in India has been subject to substantial dispute, but a careful analysis in Deaton and Drèze (2002) suggests that poverty fell dramatically, from 35 percent in 1987/1988 to 29 percent in 1993/94 and 23 percent in 1999/2000. The fall would have been to 21 percent had growth in the 1990s been exactly income neutral. Meanwhile there are also many cases of growth with improvements in the income distribution.

<sup>8</sup> Note that we are concerned here with the incidence of absolute poverty, not relative poverty. We discuss income distribution because the information on whether openness has particular implications for poverty *beyond its effects on the growth rate* is largely contained in the literature on openness and income distribution.

In Section II, we discuss some conceptual questions about the relationship between openness and growth. We review the many reasons why openness may contribute to growth, noting, though, that theory is ultimately ambiguous about the relationship. Theoretical developments of the past 15 years have raised the presumption that openness contributes to growth but also elaborated the alternative “infant industry” view. We then discuss the central question of how to define and measure openness. The various measures of trade liberalization and openness that have been used include measures of policy such as tariff rates and nontariff barrier coverage, on the one hand, and outcome measures such as trade volumes on the other. We conclude that openness measures are all imperfect, but our preferred measure for many purposes (within the feasible set) is that of Sachs and Warner (1995).

In Section III we demonstrate two central propositions. First, we show that increases in openness to trade are an important contributor to growth. Second, there is nothing special about trade-led growth that systematically worsens the income distribution and so would undercut openness’ powerful positive effect on poverty reduction through faster growth.

In the fourth section, we return to the question of the nature of openness by discussing its place in the broader set of policy reforms. We emphasize that it is hard to disentangle the effects of openness from those of the broader reform package. We argue, though, that while trade is indeed only part of the package, it is often a key and early instrumental part. Thus, while the association of trade with other positive reforms is an econometric problem, it is a policy opportunity.

## **II. CONCEPTUAL ISSUES**

### **A. Openness and Growth**

In theory, the openness of an economy is the degree to which nationals and foreigners can transact without artificial (that is, governmentally imposed) costs (including delays and uncertainty) that are not imposed on transactions among domestic citizens. Tariffs and nontariff barriers, domestic content requirements, health and safety requirements (or inspection delays) above and beyond those imposed on the domestic products raise the cost of buying from abroad.<sup>9</sup>

In theory, openness is desirable because relative international prices reflect the international marginal rate of transformation (in a competitive international economy) and should be equated with domestic prices for an efficient allocation of resources.<sup>10</sup>

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<sup>9</sup> Transport costs are not artificial—except in cases where high-cost domestic shipping is protected, since they reflect real resource costs.

<sup>10</sup> A rigorous statement of the optimality of free trade requires a number of additional assumptions, such as an absence of (or tax compensation for) externalities and other market imperfections, well-functioning competitive domestic factor markets, and no monopoly power

The mechanisms through which an efficient static allocation of resources affects growth are less clear-cut, although a number of channels have been identified. These include: a) an increased efficiency of investment, particularly given the importance of imported capital goods in developing countries; b) an ability to expand at constant (rather than diminishing) returns for a longer period through access to larger markets (Ventura (1997)); c) a higher real return to capital in unskilled labor abundant countries that exploit their comparative advantage; d) the higher rate of domestic saving and/or foreign capital inflow that may be attracted by (a) and/or (b); e) possible endogenous growth effects arising from more rapid short-term growth in response to trade opening; f) the discipline imposed on a government to undertake other pro-growth economic policy reforms if there is an open trade regime; g) the reduction in rent-seeking activities inspired by trade restrictions; h) the spur to innovation and entrepreneurial activity resulting from competition and access to larger markets; and i) openness to ideas and innovations generated by openness to trade.

The theory and empirics of long-run economic growth have developed enormously in the past 20 years, so it is natural to place an assessment of the relationship between openness and growth in this framework. The workhorse has been the neoclassical model based on Solow (1963). In this framework, the level of GDP per capita in the steady state will depend on anything that affects the level of productivity, such as distortions that affect the allocation of resources, as well as determinants of the level of the steady-state capital stock, such as the savings rate. The implication for us is that openness, by allowing a more efficient allocation of resources, raises the steady-state level of income and also the growth rate for any country out of equilibrium. In the past 20 years, the main theoretical innovation has been the development of endogenous growth theory. A central theme of endogenous growth theory is that openness may promote long-run growth in a number of ways. Models that emphasize diffusion of technology as the engine of long-run growth can be constructed to predict that countries that are more open will have higher steady-state growth rates (Grossman and Helpman (1991)). Learning by doing is emphasized in Lucas (1988) and Young (1991). Earlier arguments to the effect that opening to trade could allow specialization in industries with scale economies and thereby increase long-run growth are precursors of this sort of argument (See Bhagwati (1988) and Krueger (1980), for example.)

Should we focus our empirical attention on the relationship between growth and openness or on the relationship between growth and *changes* in openness? For example, if we believe that openness is important for growth, should we be puzzled that China might grow extremely fast while remaining fairly closed, or should we instead focus on the fact that a dramatic increase in the degree of openness has been associated with an increase in the growth rate? Theory makes no clear prediction. In the neoclassical model the most natural formulation is that openness raises the steady-state level of real income. Thus, increases in openness would cause increases in growth rates during convergence to the new higher level. The endogenous growth literature,

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in trade. But even if these assumptions were fully met, the issues of measurement that we address in the next section would still arise.

given its concern to explain country-specific long-run growth rates, would tend to focus on the relationship between growth and openness. However, those endogenous growth models that emphasize how international diffusion of ideas or technology can produce faster growth in developing countries would also imply that changes in openness would lead to increases in growth rates. In practice, we can expect that a variety of processes operate at different times in different countries.<sup>11</sup> Overall, though, our reading is that the most important relationship is between the level of openness and the level of income, or (equivalently) between liberalization and growth.

Despite a consistent emphasis in the literature on how openness can promote growth, theory has always been ambiguous on this point.<sup>12</sup> From a static point of view, the general theory of the second-best suggested that in the presence of other distortions, free trade might not be best for growth. The most notable example of such a distortion has always been the infant industry argument. Despite its focus on learning, openness, and growth, endogenous growth modeling has given some credence to long-run versions of the traditional infant-industry argument. Endogenous growth models can easily imply that a more open country may get “stuck” in industries without learning-by-doing. In this case, closing the economy may help the relatively backward country grow faster. Easterly (2001), for example, emphasizes that models with increasing returns to scale or sufficient externalities can generate a situation in which factors flow from poor to rich areas, so that the poor can get stuck in “growth traps.”

Even if growth-inducing channels are dominant, one could challenge their quantitative significance.<sup>13</sup> The importance of openness for growth is therefore an empirical question. One implication is that what we mean by openness, and how we measure deviations from free trade, are key.

## **B. Measurement of Openness**

A range of analytical issues arises in defining and measuring of openness. Since much of the theoretical case for openness as a source of growth is about the costs of market distortions, we should be concerned with policies that distort the market allocation, such as the level and dispersion of tariffs and nontariff barriers (NTBs). Outward orientation does not require the

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<sup>11</sup> Pritchett (2000) points out the need for an eclectic set of models.

<sup>12</sup> Indeed, to the extent that many analysts have a tendency to move from the proposition that something is true in a given model to the view that this is somehow evidence for its truth, theory has gotten in the way of an analysis of trade policies. See Krueger (1997) and Srinivasan (2001).

<sup>13</sup> The same, of course, applies to the empirical importance of infant industry considerations.

absence of all such distortions; it requires only that the overall system of export subsidies and trade barriers not be biased against exports.<sup>14</sup>

Most empirical analyses of openness look directly at policy measures that restrict trade, such as tariffs, nontariff barriers, and so on. Severe problems arise in the analysis of each of these measures. It is not clear how to aggregate across goods to arrive at a meaningful overall measure. A higher tariff (or tariff-equivalent) on commodity A may have lower welfare costs than a lower tariff on commodity B; the same tariff rate may have different effects in different countries; issues arise in comparing different tariff structures regarding the dispersion of tariff rates, and so on. Simple averaging does not capture the relative importance of different categories of goods, while using actual trade weights gives too little weight to high-tariff categories, precisely because the tariff has discouraged trade in that good. Moreover, there is no necessary relationship between official and collected tariff rates.<sup>15</sup> Nontariff barriers are extremely hard to quantify, for a variety of reasons.<sup>16</sup> Finally, discriminatory exchange rate policies that offer exporters a more appreciated exchange rate than importers are equivalent to a tariff. This latter policy is easier to measure as the black market or parallel exchange rate premium, though clearly this variable is related not just to trade policy but also to macroeconomic policy more broadly (a point to which we return later).<sup>17</sup>

A variety of measurement problems arise when a country is not wholehearted about its trade liberalization. For example, across-the-board reductions in tariff rates will show up as a reduction in average tariff, but customs officials in reluctant countries frequently respond by reclassifying goods from low- to high-tariff categories, so actual tariffs may remain the same.<sup>18</sup> In addition, there are questions as to how to quantify the uncertainty (regarding, for example, the likelihood of antidumping actions or delays in customs clearance) that can affect openness.

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<sup>14</sup> A uniformity of incentives, including a low variance of import and export tariffs and subsidies across products, is also important, however. See Krueger (1995) for a discussion of the relationship between free trade, outward orientation, and laissez-faire policies.

<sup>15</sup> Pritchett and Sethi (1994) find almost no relationship between official rates and collection rates for a given item in three developing countries.

<sup>16</sup> Anderson and Neary (1996) introduce an index number designed to measure the overall restrictiveness of a system of trade protection. Unfortunately, its implementation is sensitive to assumptions regarding the structure of nontariff barriers that are difficult to justify empirically.

<sup>17</sup> Edwards (1998) and Barro and Lee (1994) demonstrate the use of the black market exchange rate premium as a measure of distortion and lack of trade openness.

<sup>18</sup> See Berg et al. (1997) for an example.

It has been amply documented that countries tend to switch from one form of protection to another, rather than smoothly remove (or increase) protection.<sup>19</sup> Moreover, whether a change in one form of protection has any impact on effective openness depends on whether other forms of protection are binding. For example, a reduction in a tariff rate may not matter if binding nontariff barriers prohibit imports of that good. Thus, in measuring openness it is important to try to control for the possible substitution between various policy measures. Sachs and Warner (1995) attempt to do so by constructing a dummy variable that takes a value of 1 for a country that passes each of five tests of openness: (1) an average tariff rate below 40 percent; (2) NTBs covering less than 40 percent of trade; (3) a black market exchange rate premium below 20 percent on average during the 1970s and 1980s; (4) the absence of a socialist economic system; and (5) the absence of an extractive state monopoly on major exports. In our view, this represents a fairly successful effort to measure the overall importance of trade policy restrictions, though it does not differentiate degrees of restrictiveness of trade regimes. A country barely passing the Sachs-Warner tests would be far from fully open.<sup>20</sup>

The Sachs-Warner measure has been criticized on three main grounds.<sup>21</sup> First, the black market premium measures factors other than trade policy. For example, to the extent that it captures chaotic macroeconomic policy, the Sachs-Warner measure is attributing to openness benefits that should be attributed to macroeconomic stability. We would nonetheless argue that a high premium on the secondary market for foreign exchange acts substantially like a tariff, in that it is likely to drive a wedge between the exchange rate exporters effectively receive (assuming they are supposed to sell their proceeds at the official exchange rate) and the rate paid by importers (who on the margin are likely to pay the parallel rate given the incentives to smuggle). A high black market premium may also reflect chaotic macroeconomic policy in the context of exchange controls. Indeed, Krueger (1978) and many other authors have argued that among the main costs of protection in practice were the associated macroeconomic disequilibria. This represents a much more substantial problem for econometric efforts to distinguish between the influence of macroeconomic stability and openness than it does for policy.

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<sup>19</sup> Dean et al. (1994), discussed below, documents this nicely for a large number of countries.

<sup>20</sup> The Sachs-Warner measure may suffer from being a product of its times, in that many protectionist countries have turned to different mechanisms than those emphasized in this measure, such as phytosanitary, sanitary, and technical standards that serve protectionist purposes. Moreover, many countries engage in contingent protection, in which there is a threat to impose large tariffs in the event of major import penetration. The share of imports covered at any point in time is small, but the deterrent effect on imports may be large.

<sup>21</sup> See Rodriguez and Rodrik (1999) and Harrison and Hanson (1999). Sachs and Warner (2001), upon which we draw here, provide a spirited defense of their measure. See also Orsmond (1992) on black market exchange rates.

A second criticism is that the marketing board component amounts to a sort of African dummy plus, as it was taken from a World Bank study of African economies undergoing structural adjustment, so that other countries (even other African countries) with powerful export monopolies were excluded. In fact, however, the only countries that are considered closed by this criteria are those in which a mandatory export marketing board controls a large majority of total exports and holds a monopoly position in the sale of foreign exchange for imports, in the process driving a wedge between the rate received by exporters and that paid by importers. Thus, marketing boards in countries such as Canada, Indonesia, and Mauritius do not satisfy these criteria and would not have been classified as closed according to the Sachs-Warner criterion. It is true that most, though by no means all, African countries were rated as closed by this measure. This reflects the facts for Africa, however.<sup>22</sup> More generally, African growth experience is indeed unusual in the postwar era. The fact that coercive and export marketing arrangements are strongly coincident with a regional dummy is suggestive, though of course it hardly captures the richness of the issues with respect to growth in Africa. We place much more weight in what follows on results that are invariant to the inclusion of regional dummies.

Finally, the tariff and quota measures that are subsets of the Sachs and Warner openness variable do not work as well independently as does the aggregated measure. This, however, is consistent with the motivation for such a multivariate indicator in the first place—the frequent substitution of one for the other method of protection.<sup>23</sup>

It is nonetheless clear that these measures of policy are not fully satisfactory. The Sachs and Warner measure as well as others that are available for large cross-country and panel studies simply do not address most of the measurement problems we raised above, most notably inadequacies of average tariff rates and NTB coverage ratios. For this reason, a direct measure of openness, exports plus imports as a share of GDP, is sometimes useful. Of course, this measure of openness reflects the level of economic development, geographic factors such as distance from trading partners, and resource endowment, in that countries with unusual resource endowments are likely to trade more. Whether it is still interesting depends on the use to which it is put. For example, empirical results in which endogeneity of this measure of openness is

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<sup>22</sup> Bates (1981) discusses the harmful implications of extractive marketing boards at great length.

<sup>23</sup> Thus, the conclusion in Pritchett (1996) that various measures of trade policy, such as tariffs and NTB coverage rates, are not correlated is not surprising. His result that outcome-based measures and each of the various policy measures are not correlated is more surprising, though it may reflect a negative correlation among the various measures as well as other measurement problems. Wang (2001) finds that bilateral trade in different categories of goods is highly dependent on the bilateral tariffs on those goods. He shows that where the policy is well measured, the results can be clear. Moreover, Alcalá and Ciccone (2001) show that the Sachs-Warner measures, as well as some of its components, predict their measure of “real openness.”

controlled for through the use of exogenous, mostly geographic, determinants of trade are the most useful.

Alcalá and Ciccone (2001) note that this traditional openness measure has a drawback: productivity gains in the traded-goods sector (perhaps due to trade) lead to a rise in the relative price of nontraded services, which may decrease measured openness. Thus, more trade that leads to growth reduces measured openness, biasing downward an estimate of the effects of openness on growth. A solution is to measure what they call “real openness,” defined as imports plus exports as a share of GDP in purchasing-power-parity dollars.<sup>24</sup>

Measuring openness as exports and imports as a share of GDP has the feature that it combines the effects of “natural” openness and trade policy. A refinement to measures of effective openness involves adjusting the trade share for nonpolicy determinants of trade shares, such as level of development, distance from potential trading partners, country size, and relative factor endowments. The idea is that the residual from a regression of trade shares on these determinants is a measure of policy openness. Unfortunately, our empirical models of the determinants of trade flows are not sufficiently robust that it is safe to identify the residual with policy, as any specification or other errors in the regression also appear there.<sup>25</sup>

More fundamentally, natural openness as well as policy openness may matter for growth. For example, trade policy openness would be of interest where the concern is the influence of distortions on relative prices and the laissez-faire equilibrium, but natural openness would matter to whether trade causes growth through the sharing of ideas and technology that it implies.

In our survey of empirical work, we necessarily take an eclectic approach to the measurement of openness. Case studies and microeconomic studies often allow for the most detailed and careful measurement of trade barriers. We also consider many analyses that use policy-based measures of openness, particularly that of Sachs and Warner (1995), partly because that is the direction the literature has taken and partly because we consider this to be a broadly sensible, if imperfect, measure. Other simpler policy measures such as average tariffs may be informative in some circumstances. Finally, we pay some attention to studies that use outcome-based measures of openness, such as trade shares in GDP, particularly if care has been taken to control for the endogeneity of openness so measured.

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<sup>24</sup> Dollar and Kraay (2002) also measure openness as exports plus imports as a share of PPP GDP. Of course, PPP measures are also highly imperfect. Moreover, as Rodrik et al. (2002) point out, “real openness” as defined above may introduce a bias opposite to that it attempts to correct, in that any improvements in productivity of traded good production may result in higher measured “real openness.”

<sup>25</sup> Wolf (1994), Leamer (1988), and Spilimbergo et al. (1999) attempt to measure openness as a residual.

### C. Trends in Trade Policy

Given the measurement problems, it is perhaps not surprising that it is exceedingly difficult to get systematic measures of the degree of trade liberalization through time and across countries. Dean et al. (1994) document the character and extent of liberalization in 32 countries in South Asia, Africa, Latin America, and East Asia from 1985 to 1992/93. They examine in some detail a variety of information on average tariffs, coverage of NTBs, and tariff dispersion. They find that trade liberalization has indeed occurred extensively, and sometimes dramatically, though with important regional differences: Latin American countries tended to move the fastest and most comprehensively; most of the South Asian countries made little progress until 1991 outside of reductions in NTBs, while the main source of protection in non-CFA Africa has been and remains lack of foreign exchange and associated black market premia and extensive exchange controls.<sup>26</sup>

A larger set of countries can be examined, though at a cost in terms of the richness of the openness measures. Tables 1 and Table 2 present data on maximum and average tariff rates, while Table 3 shows the coverage of NTBs, the size of black market premia, and the incidence of current account restrictions over the past several decades. Figure 1 shows average tariff rates by region. Only a few data points are available for the period prior to 1980. Nonetheless, it is clear that there has been a substantial degree of trade liberalization in recent decades.<sup>27</sup> We now turn to the central question of the paper, which is what impact trade liberalization has had on the incidence of poverty.

Table 1a. Maximum Tariff Rates

	1960s Maximum Tariff Rates	Current Maximum Tariff Rates
Argentina	521	35
Chile	255	7
Colombia	400	35
Peru	158	20
Singapore	6	0

Source: Choksi et al. 1991 for 1960s' tariff rates and IMF data for current tariff rates.

<sup>26</sup> Sharer et al. (1998) collect detailed information on NTBs and tariffs for six countries in the 1990s. They combine the results on NTBs and tariffs into one signal measure. This measure is available since 1997 for a large number of countries.

<sup>27</sup> Krueger (1995) discusses trends in trade policy in the post-war period. See World Bank (2001) and Martin (2001) for data on trade barriers since 1980.

Table 1b. Trends in Average Tariff Rates for Developing Countries, 1960-2002

Country	Earliest (60-70)	Earliest (80-85)	Average (86-90)	Average (91-95)	Latest (96-02)
Argentina	181	28	25	11	14
Bangladesh		100	93	63	26
Bolivia		12	18	10	9
Brazil		44	42	17	13
Burundi		38	37	7	
Cameroon		28	32	19	18
Chile	83	35	17	11	8
China		50	39	40	14
Colombia	47	61	29	14	12
Costa Rica		21	19	12	7
Côte d'Ivoire		31	26	22	15
Egypt		47	40	33	30
Ghana		43	19	17	16
Guinea		76	10	11	17
India		74	94	54	40
Indonesia	58	29	26	20	7
Israel		8	7	8	8
Jordan		16	16	17	15
Kenya		40	40	30	20
Korea	40	24	18	10	9
Libya		13	23		20
Malawi		22	18	20	16
Malaysia		11	15	14	9
Mexico		27	14	13	17
Morocco		54	23	24	34
Nigeria		33	32	33	25
Pakistan		78	67	57	24
Peru	73	19	41	17	14
Philippines		41	28	23	8
Sierra Leone		26	31	30	16
Singapore	1	0	0	0	0
South Africa		29	15	9	13
Sri Lanka		41	28	24	16
Taiwan, Prov. of China		31	15	11	9
Thailand		32	40	32	17
Tunisia		24	26	28	36
Turkey		40	27	27	14
Uruguay 1/	384	47	30	16	12
Average LDCs	108	36	29	22	16

Sources: World Bank data; IMF data; Choksi et al. 1991.

1/ Weighted average tariff rates in 1961. Weights calculated by weighting four-digit ISIC sectors.

Table 2. Standard Deviation of Tariff Rates

	1990-94	1995-98
South Asia		
Bangladesh	114.0	14.6
India	39.4	12.7
Sri Lanka	18.1	15.4
Sub-Saharan Africa		
South Africa	11.3	7.2
Malawi	15.5	11.6
Zimbabwe	6.4	17.8
East Asia and Pacific		
Philippines	28.2	10.2
Thailand	25.0	8.9
Indonesia	16.1	16.6
China	29.9	13.0
Latin America and the Caribbean		
Argentina	5.0	6.9
Brazil	17.3	7.3
Colombia	8.3	6.2
Mexico	4.4	13.5
Middle East and North Africa		
Egypt, Arab Republic of	425.8	28.9
Tunisia	37.4	11.7
Turkey	35.7	5.7

Source: World Bank (2001).

Notes : Country observations are for one year in the time period noted above.

Table 3. Reductions in Barriers to Trade

Frequency of Total Core Nontariff Measures for Developing Countries, 1989-98

Region	1989-94	1995-98
East Asia and Pacific (7)	30.1	16.3
Latin America and the Caribbean (13)	18.3	8.0
Middle East and North Africa (4)	43.8	16.6
South Asia (4)	57.0	58.3
Sub-Saharan Africa (12)	26.0	10.4

Source: World Bank (2001)

Notes: Average number of commodities subject to nontariff measures as a percentage of total. Figures in parentheses are the number of countries in each region for which data are available.

Countries Imposing Restrictions on Payments for Current Account Transactions  
(Percent)

Region	1980	1991	1995
East Asia and Pacific (9)	33	33	22
South Asia (5)	100	100	40
Middle East and North America (6)	67	67	33
Sub-Saharan Africa (23)	85	83	39
Latin America and the Caribbean (30)	44	60	17
Europe and Central Asia (17)		94	47
Industrialized economies (12)	17	8	0
Total (102)	55	65	27

Notes : Figures in parentheses are the number of countries in each regional grouping.

Source : World Bank (2001)

Average Black Market Premium  
(Percent)

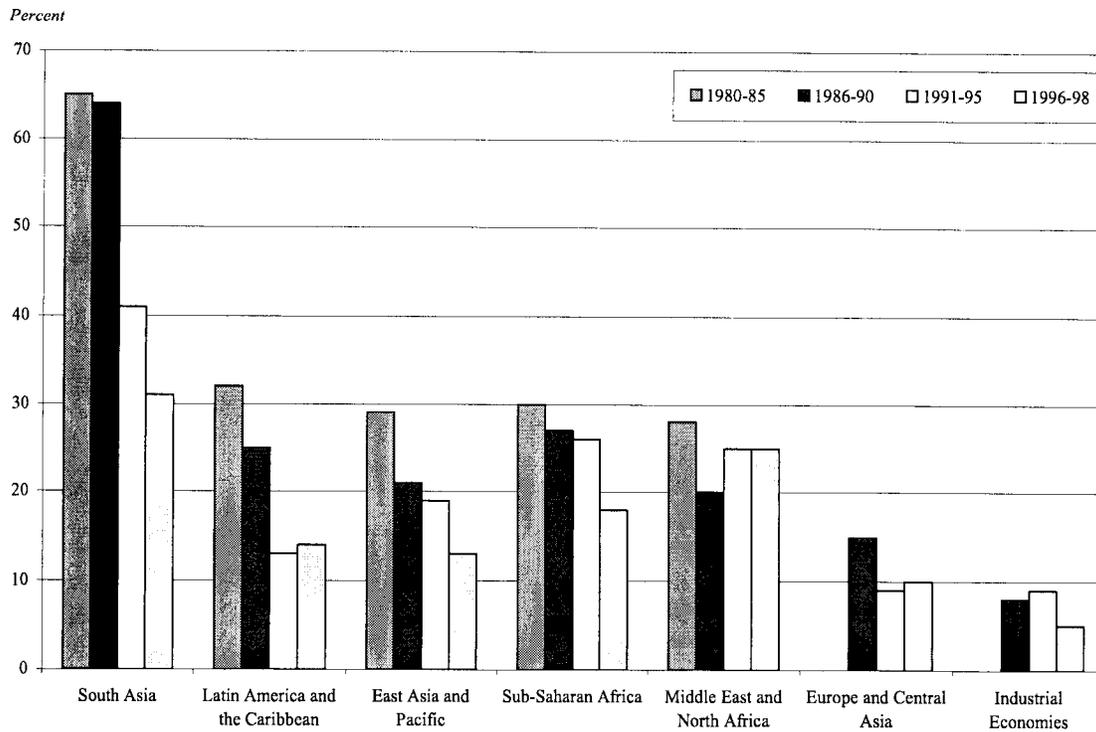
Region	1980-89	1990-93	1994-97
Total 1/	82.0	78.2	20.3
East Asia and Pacific	3.6	3.6	3.2
Middle East and North Africa	165.6	351.6	46.5
Excluding Outliers 2/	7.1	8.8	1.4
Latin America and the Caribbean	48.7	13.1	4.4
South Asia	40.8	45.1	10.1
Sub-Saharan Africa	116.5	28.6	32.2
Excluding Nigeria	112.1	25.8	9.6

Source: World Bank (2001)

1/ Sample of 41 developing countries.

2/ Algeria and the Islamic Republic of Iran.

Figure 1. Average Unweighted Tariff Rates by Region



Source: World Bank data, and World Trade Organization data.

### III. THE RELATIONSHIP BETWEEN TRADE AND POVERTY

#### A. Trade and Growth

The literature on trade and growth is almost as vast as that on growth itself, since openness is a part of much recent theory and most empirical work. Disagreements and contradictions abound. We can, however, extract several principles that are both plausible and well established. Overall, and perhaps not surprisingly, we find that, while there are deep problems with the measurement of openness, and while establishing causality from openness to growth is difficult, the weight of the evidence, from a variety of sources, is strong to the effect that openness is an important element explaining growth performance.

#### B. Absolute Convergence

There is some evidence of absolute convergence, at least for sufficiently similar regions within countries and, less clearly, for countries that are integrated through trade. That is, poor countries or regions tend to grow faster than rich regions if they are sufficiently integrated with each other. This suggests that poor countries will grow, and reduce poverty, if they are sufficiently open.

Among regions that are sufficiently open to each other in all senses and with sufficiently similar overall policy environments, poorer ones tend to grow faster than average. Barro and Sala-i-Martin (1995) demonstrate this “absolute convergence” for states of the United States, regions of Europe, and prefectures of Japan over periods of several decades, as well as OECD countries from 1960 through 1985. Over these long and relatively stable periods, poorer regions converged to richer ones at a rate of about 2 percent per year in all three areas. As a result, measures of the variation of intra-regional inequality have fallen steadily.<sup>28</sup>

The implication of this result, particularly as extended to countries in the OECD sample, is that poor countries will not just grow but grow relatively fast if they are sufficiently integrated with faster growing countries. Of course, these groups of regions are integrated in many ways other than through trade: they have common laws, factor mobility, no barriers to trade, and common currencies (except for the regions of Europe and the OECD). Thus, this evidence does not speak to whether trade liberalization itself is sufficient to permit poor countries to grow fast. But it does suggest that if a poor region adopts enough common institutions and liberalizes enough (and if its partners liberalize fully as well), then relatively fast growth will ensue.

The OECD countries represent a potentially important exception to the rule that integration must be complete for absolute convergence. How much integration is required? Sachs and Warner (1995) suggest the powerful result that openness to trade, measured as described in Section II above, is enough. That is, as shown in Figure 2, there was absolute convergence among all countries in the world that were open to trade in 1970.

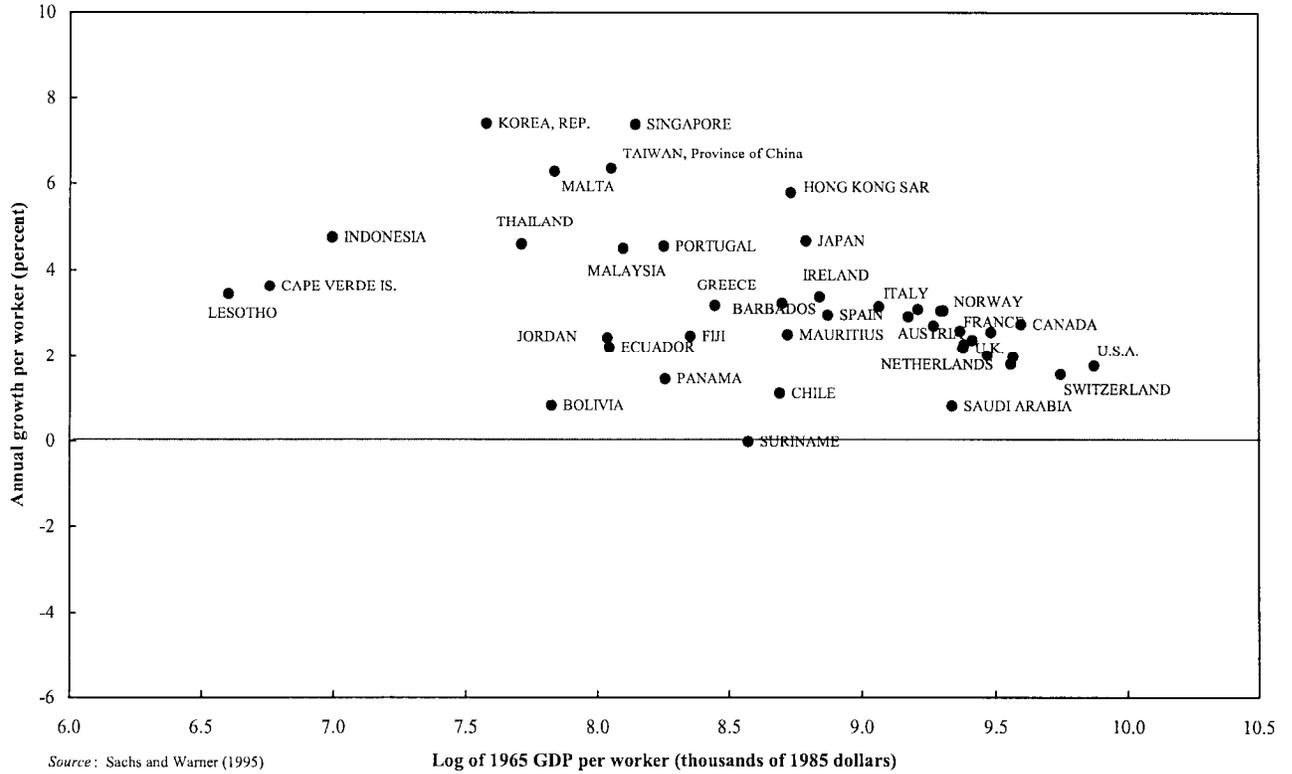
Does this result hold for other measures of trade liberalization and over other time periods? There is some evidence that it does, at least for developed countries. Ben-David (1993) argues that convergence among the main European countries only became marked after 1958, once the trade liberalizations associated with the European Economic Community took place. He also finds that convergence accelerated among various other developed country groups when they executed free trade arrangements. Finally, Ben-David (1996) finds some direct evidence that trade is the mediating factor. He groups countries into sets that trade intensively with each other, and then compares them to random groups of countries and finds that the trade-linked countries tend to display absolute convergence, while the random groups do not.

Both the Sachs and Warner (1995) results and the Ben-David results have been challenged. Rodriguez and Rodrik (1999) have disputed the meaningfulness of the Sachs-Warner openness variable; as we discussed above, we think the variable is a plausible measure of trade openness. Rodriguez and Rodrik (1999) have also questioned Ben David’s results, among other things pointing out that it is difficult to distinguish the convergence observed among the European

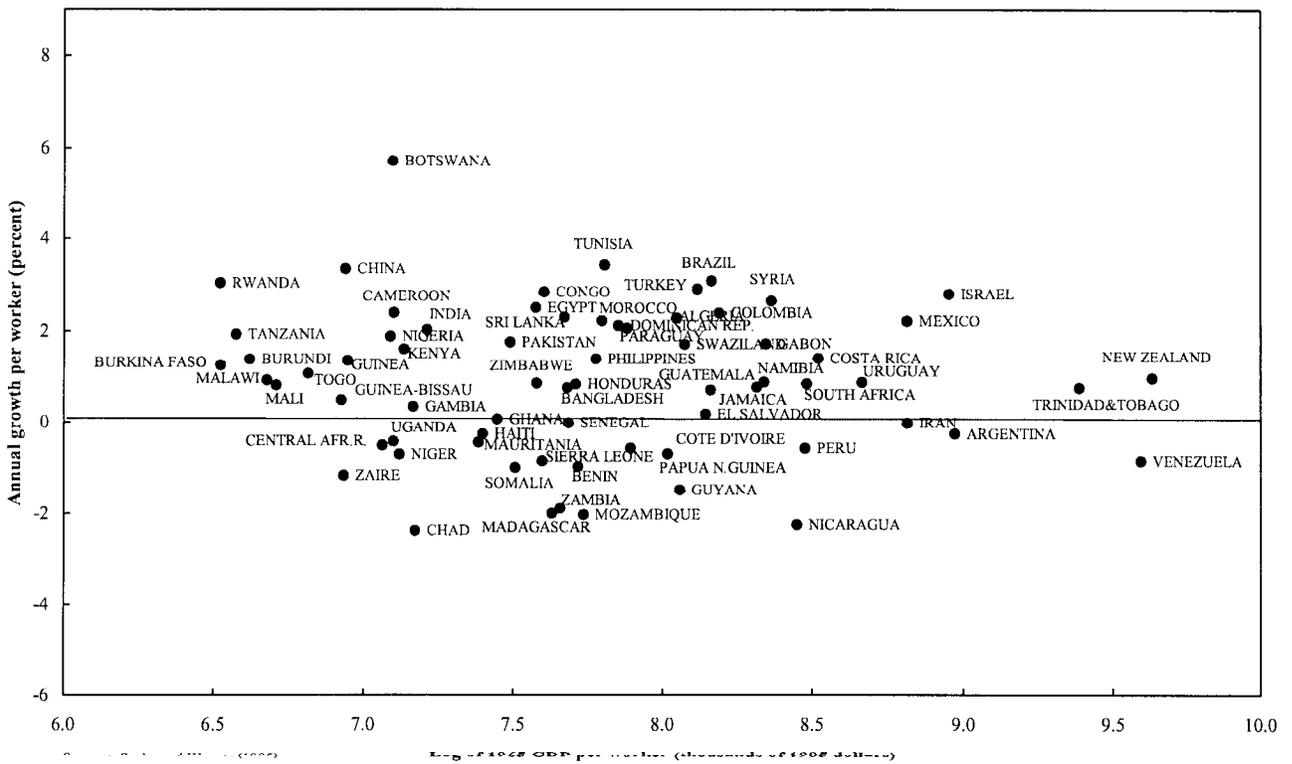
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<sup>28</sup> The fall over time in the standard deviation of incomes across countries is “sigma convergence.” For the world as a whole, there has not been absolute convergence if countries are the basic unit of analysis. For individuals, there has been convergence in recent decades; the difference between the two results is due to the relatively rapid growth of India and China.

Figure 2. Growth Per Worker and Initial GDP Per Worker, Open Economies, 1965-90



Growth Per Worker and Initial GDP Per Worker, Closed Economies, 1965-90



countries in the postwar period from the convergence also observed among these countries since 1870 or so (though with the important exception of the interwar period).

What if we compare systematically the change in speed of convergence before and after a group of countries liberalizes trade, with the change in convergence observed over the same time periods for a control group that did not liberalize trade? Slaughter (2001) finds that there is no evidence that the trade liberalizations lead systematically to faster convergence. He does not examine the Sachs-Warner sample, but the point is that perhaps the countries that were open in 1970 were converging even faster in the previous period, when they were closed. Trade openness can be important, as shown by the examples of the OECD countries and the Sachs-Warner results, but it not necessarily enough. Given the large number of other factors that contribute to growth, we find this result unsurprising. But trade openness is an important piece of the puzzle.

### **C. Output and Openness: Regression Evidence**

Differences across countries in the level of output per capita are systematically and importantly related to openness. This result seems to hold up even when the endogeneity of openness is taken into account and when controls for other important determinants, such as the quality of institutions and geography, are included.

Empirical work of the past 15 years has concentrated on cross-country and panel regression analyses. Many papers have concluded that openness to trade is a significant explanatory variable for the level or the growth rate of real GDP per capita.<sup>29</sup>

These results have been challenged on a number of grounds. Most broadly, it is difficult to believe that a simple linear model can capture the deeply complex growth process.<sup>30</sup> Nonetheless, this line of inquiry is worthwhile and has produced, in our view, strong and believable results, despite the difficulties of the enterprise. There is no question that such regression analysis can capture only a small piece of the picture. Nonetheless, the forces that shape the relationship between openness and growth seem so strong that they emerge fairly clearly. Similarly, measurement of all of the variables is difficult, particularly but not only across countries. We have discussed the issue of how to measure openness itself, but similar

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<sup>29</sup> A few selected examples are Alcalá and Ciccone (2001), Dollar (1992), Edwards (1998), Harrison (1996), Barro and Lee (1994), Lee (1993), Easterly and Levine (2001), Dollar and Kraay (2001), Dollar and Kraay (2002), Irwin and Tervio (2000), Islam (1995), Sala-i-Martin (1997), Hall and Jones (1999), Frankel and Rose (2000), Frankel and Romer (1999), Greenaway et al. (1998) Surveys of the growth literature are numerous; we have drawn on Edwards (1993), Durlauf and Quah (1999), Klenow and Rodriguez-Clare (1997), Barro and Sala-i-Martin (1995), and Easterly (2001).

<sup>30</sup>Srinivasan (2001).

problems plague the other interesting variables, including real GDP per capita itself. Again, it is remarkable that the results obtain despite the surely pervasive measurement error.

A second deep potential problem relates to the question of causality. It is evident that openness, however measured, may well depend on growth or the level of income. The possible channels are numerous. Wealthier countries can afford better infrastructure for trade; poor countries may need to tax trade relatively heavily; higher incomes may shift preferences in favor of traded goods; and fast growth or high incomes may reduce political pressures for protection. We concentrate on results that are able to disentangle cause from effect through careful use of instrumental variables.

Third, trade policy and outcomes are likely be highly correlated with other determinants of growth. If these other variables are omitted, trade falsely may take the credit. If they are included, colinearity may make it impossible to tell which really matters. We accept the notion that the links between trade and growth are hard to separate from the policies that typically accompany more open trading regimes, such as more stable macroeconomic policies, more openness to foreign direct investment, more liberalization of domestic markets, less rent-seeking, stronger rule of law, and so on. This makes it more difficult to tell whether trade or some other aspect of the “package” is what matters, or indeed whether the different components are too interrelated to assign an independent benefit to one piece. As we will discuss in Section IV, we view this confluence of policies to be an advantage of open trade policies. Thus we are not troubled by an interpretation of the results that says that more open trade, and the policies that are typically associated, leads to higher incomes.

Rather than review the many papers in this area, we concentrate on two complementary strands. The first looks at the relationship between levels of income and trade openness across countries, using a variety of instruments to control for the possibility of reverse causality from growth to trade and also attempting to test whether the inclusion of other determinants of growth, such as institutional quality and geography, eliminate the relationship between trade and growth. The findings of these papers are that the cross-country variation in the level of GDP per capita and total factor productivity depends on openness, even when openness, measured either as the share of trade in GDP or the policy-based Sachs-Warner measure, is instrumented with plausibly exogenous variables such as distance from trading partners. Another conclusion is that openness is often highly correlated with institutional quality, where institutional quality is defined broadly in terms of the importance of rule of law, the effectiveness of the government, and so on. In an effort to unravel this colinearity of openness and institutional quality across countries, we will turn to a second strand of analysis that examines the relationship between changes in openness and changes in per capita GDP through time.<sup>31</sup>

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<sup>31</sup> Dollar and Kraay (2002) take this approach. Two highly influential papers in the neoclassical tradition, Mankiw et al. (1992) and Young (1995) emphasized factor accumulation as the source of growth. These papers shed little light on the role of openness, however. Mankiw et al. argue that most (in fact about three-quarters) of the variation in levels of output per capita can be

We focus first on Hall and Jones (1999), who attempt to explain cross-country differences in income per capita. Their basic specification is:

$$\log Y/L = \alpha + \beta \tilde{S} + \varepsilon$$

where  $Y/L$  is output per worker and  $\tilde{S}$  is the (instrumented) value of the “social infrastructure.” Social infrastructure is an average of two components. The first is government anti-diversion policies (GADP), as estimated by a private firm, Political Risk Services. This measures law and order, bureaucratic quality, corruption, risk of expropriation, and government repudiation of contracts. The second is the fraction of years during the 1950 to 1994 period that the country was open according to the Sachs-Warner measure of policy openness. These are instrumented with various plausibly exogenous variables that are designed to measure Western European influence: the extent to which Western European languages are spoken, the distance from the equator, and the predicted trade share of an economy, based on a gravity model of international trade that uses only a country’s population and geographic characteristics, from Frankel and Romer (1999).

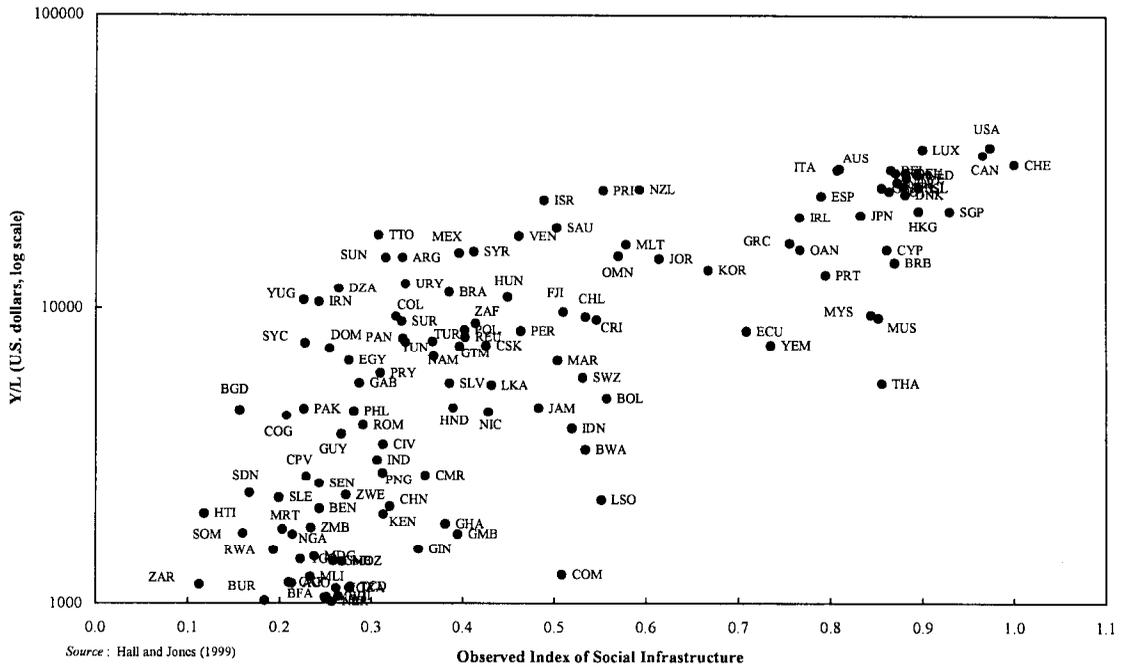
The basic result is that social infrastructure instrumented in this way is highly significant and explains much of the differences across countries in output per worker. (Figure 3 shows the impressive strength of the simple relationship between output per worker and social infrastructure.) More importantly for our purposes, the results are similar when using Sachs-Warner openness alone, though apparently it is sufficiently correlated with GADP that disentangling which of the two variables matters most is not possible.

This is a powerful result that addresses many of the toughest specification problems. First, we are comfortable with the association of openness with “social infrastructure” and accept that the two are hard to tell apart, for reasons we have discussed. Second, the instruments are clearly exogenous to income in 1990. Moreover, the OLS estimates of the effect of openness on income are smaller than the IV estimates, suggesting any reverse causality from income to openness is

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explained by variations in the (exogenous) rate of savings and population growth. Young demonstrates that most of the growth in the four Asian tigers during the post-1960 period can be attributed to (exogenous) accumulation of capital, especially human capital. We, in contrast, wonder about the role of openness in permitting such high savings rates over a long period to be used productively and about the relationship between openness and incentives to invest. In our examination of the empirical evidence below, thus, we concentrate on papers that attempt to explain these factors in terms of policy as well as other determinants such as institutions and geography. See Durlauf and Quah (1999) and Klenow and Rodriguez-Clare (1997) for related comments.

Figure 3. Social Infrastructure and Output per Worker



dwarfed by errors in the measurement of openness that bias the OLS coefficient down. Third, there is no evidence that the instruments affect income except through their impact on openness.

Suppose, in contrast, that it is not really openness that is the cause of growth; suppose instead that the higher incomes are due to deeper structural and cultural factors that are themselves related to the instruments used in the regression, that is, to distance from partners, language use, and so on. In this case, though, the residuals from the regression of income on trade (instrumented with those structural factors) ought to be correlated with the structural factors themselves. Why? Because the variation of these structural factors not associated with trade openness ought to matter for income. In fact, the residuals are not correlated with the instruments. This allows a rejection of the hypothesis that any of the instruments belong in the income regression. Finally, the result is robust to the inclusion of a variety of other variables on the right-hand side of the income equation, notably distance from the equator and ethnolinguistic fractionalization.

Similar strong results obtain when openness is measured by trade shares in GDP, rather than the Sachs-Warner policy-based measure, as long as it is also properly instrumented. This result originates in Frankel and Romer (1999) and is expanded in Frankel and Rose (2000). They measure openness as the share of exports plus imports in GDP, and then create a predicted openness measure based on geographic variables such as distance from trading partners, size, having a common border, and being landlocked. This fitted openness measure is not subject to reverse causality from income, but itself is a powerful determinant of the level of real income

per capita across countries. As above, the errors in the income regression are not correlated with the instruments, making it possible to reject the hypothesis that these variables belong in the income regression directly. To control for the possibility that this fitted openness variable is proxying for other factors that may be correlated with the instruments, they include a variety of control variables, including distance from the equator, regional dummies, a measure of institutional quality. They find that the fitted openness variable largely survives the inclusion of these additional variables.<sup>32</sup>

This general finding is not entirely ironclad. For example, Irwin and Tervio (2000) extend the Frankel-Romer regressions to various time periods in the 20<sup>th</sup> century. They find that trade, instrumented by geographic variables, explains income, but that inclusion of a variable measuring distance from the equator greatly attenuates the effect in some samples. Rodrik (2000) also shows that the addition of enough additional variables can make openness insignificant.

A recent refinement to the measure of openness appears to substantially strengthen the robustness of the link between openness, instrumented by geographic variables, and income. As noted above, Alcalá and Ciccone (2001) argue that openness should be measured as exports plus imports as a share of GDP in purchasing-power-parity dollars. These authors find that the level of income is strongly related to real openness, when the latter is instrumented with the usual geographic variables. Moreover, this result holds up when a large number of controls are introduced, including institutional quality, expropriation risk, and geographic variables such as distance from the equator, as well as regional dummy variables. These effects are large. Their baseline estimate suggests that an increase in real openness that takes the country from the 20<sup>th</sup> percentile to the median value almost triples productivity.<sup>33</sup>

To summarize, the cross-country evidence is strong that openness causes higher incomes. This is true when openness is measured in terms of policy, as in the Sachs-Warner variable, and when it is measured as an outcome in terms of the ratio of exports plus imports to GDP. In the latter case, using PPP GDP instead of GDP, that is eliminating the effects of cross-country differences in the price of nontraded goods, seems to make the results stronger. This remains true when openness is instrumented using plausible exogenous variables, which themselves appear not to belong in the income regression. Finally, it withstands the introduction of a variety of specifications that add other additional variables, notably controls for geographic factors such as distance from the equator and even regional dummies.

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<sup>32</sup> Jones in a personal communication reports that the explanatory power of the social infrastructure variable remains strong with the inclusion of a regional dummy variable for Africa, which itself is marginally significant and negative.

<sup>33</sup> Dollar and Kraay (2002) also find that using PPP GDP in the denominator yields a more robust determinant of income. As discussed in footnote 24, Rodrik et al. (2002) note that this way of measuring openness creates its own distortions.

This line of research shows, though, that it is difficult to separate the effects of openness and institutional quality in a satisfactory way. Partly, this reflects the fact that the components of each that can be identified as exogenous (because they are correlated with predetermined instrumental variables such as distance from trading partners and historical determinants of institutional quality) are highly correlated with each other. That is, the variation across countries in the variables and their deep determinants do not allow the identification of separate effects.<sup>34</sup> We therefore turn to a second set of regressions that emphasize differences in openness through time as determinants of changes in growth rates through time, thereby abstracting from slowly changing institutional and geographic issues. Dollar and Kraay (2001) explain growth in the 1990s and 1980s for a set of roughly 100 countries as a function of growth in the previous decade and the change in openness over the decade, plus other controls:

$$Y_{ct} = \beta_0 + \beta_1 Y_{c,t-k} + \beta_2 X_{ct} + \eta_c + \gamma_t + v_{ct}$$

and, taking first differences,

$$Y_{ct} - Y_{c,t-k} = \beta_1 (Y_{c,t-k} - Y_{c,t-2k}) + \beta_2 (X_{ct} - X_{c,t-k}) + (\gamma_t - \gamma_{t-k}) + (v_{ct} - v_{c,t-k})$$

where  $Y_{ct}$  is the log-level of per capita GDP in country  $c$  in time  $t$ ,  $k$  is 10 years,  $X_{ct}$  is a set of control variables, in particular openness, measured as an average over the decade between  $t-k$  and  $t$ ,  $\eta_c$  is an unobserved country effect that is constant over time,  $\gamma_t$  is an unobserved time-period effect that is common across countries, and  $v_{ct}$  is a serially uncorrelated error. Dollar and Kraay estimate the regression in first differences. Openness is measured as the exports plus imports as a share of GDP.

This approach avoids the difficulty associated with distinguishing the roles of slowly changing geographic, institutional, and cultural factors from openness by looking only at differences through time. In other words, the time invariant country specific term  $\eta_c$  drops out from the estimated equation, so they do not matter for the estimates. This procedure also takes an entirely different approach than the cross-country level regressions to controlling for reverse causality from income to openness, since it permits the use of lagged values of the endogenous predictive

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<sup>34</sup> A debate about whether it is possible to distinguish between institutions, openness and geography has continued in several very recent papers. Easterly and Levine (2002) report, in regressions similar to Hall and Jones (1999), that institutions trump openness when both are instrumented. In a similar framework, Rodrik et al. (2002) report that institutions trump openness and geography. On the other hand, Dollar and Kraay (2002) show that when both institutions and openness are instrumented, it is difficult to distinguish the two effects. It would seem that whether it is possible to distinguish these effects depends on exactly which specification and sample are used.

variables, openness and growth, as instruments.<sup>35</sup> While again these instruments pass the appropriate tests of whether they are in fact uncorrelated with the errors in the growth equation, these tests may have low power and the instruments may not be appropriate. We would emphasize, though, that the problems here are entirely different from those associated with the instruments in the cross-country levels approach. Thus, the two sets of results reinforce and complement each other.

The basic result is that changes in trade volumes are highly correlated with changes in growth, with a point estimate suggesting that an increase in the trade share of GDP from 20 to 40 percent over the decade would raise real GDP per capita by 10 percent. This result turns out to be robust to the inclusion of a variety of additional control variables, specifically inflation, government consumption as a share of GDP, and (as measures of time-varying institutional quality) the frequency of revolutions and the amount of contract-intensive money (i.e., M2/GDP).<sup>36</sup>

A further interesting result is foreign direct investment (FDI) as a share of GDP predicts growth in a similar manner to trade openness, and these two variables are too correlated for the data to tell whether each is independently important. While it is unfortunate that the data do not allow us to gauge the relative importance of these two variables, we find it reasonable that the benefits of trade cannot be distinguished from the benefits of openness to FDI. As we discuss in the last section, the fact that trade policy is typically part of a set of reforms, including liberalization to FDI, suggests the importance of trade openness as part of the overall reform package.<sup>37</sup>

We have focused on a small number of regression studies and emphasized how two very different approaches yield a similar result: openness is fairly robustly a cause of growth. Two important caveats are in order. We recognize that there is substantial uncertainty surrounding these estimates. In some specifications openness is not robust, for example, and frequently related variables of interest are too correlated for the data to tell which matters most. As we

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<sup>35</sup> Specifically,  $Y_{c,t-3k}$  is an instrument for the first term, while  $X_{c,t-k}$  is an appropriate instrument for the change in the second term. The required identifying assumptions are that openness may be correlated with contemporaneous or lagged shocks to GDP growth but not with *future* shocks to the growth rate, and that the shocks to GDP per capita  $\nu_{ct}$  are serially correlated. See the original paper or Caselli et al. (1996) for details.

<sup>36</sup> Dollar and Kraay (2002) find that changes in a variety of other measures of institutional quality also do not affect growth.

<sup>37</sup> Easterly and Levine (2001) apply a similar technique to a panel of 73 countries over the 1960 to 1995 period, using non-overlapping 5-year periods rather than decades. Their key result is that two measures of openness, trade shares and the black market premium, are both significantly related to growth in a panel of countries, even when controlling for endogeneity, permanent country-specific effects, and a variety of other possible determinants of growth.

discussed at the beginning of this section, broad regression exercises of these sorts can only go so far in exploring many of the complexities involved. We thus turn to other sorts of evidence.

#### **D. The Effects of Liberalization on Income: Case Studies**

Case studies have also tended to show benefits from trade liberalization. Clearly, opening to trade does not guarantee faster growth. But one striking conclusion from the last 20 years of experience is that there are no examples of recent take-off countries that have not opened to an important extent as part of the reform process.

An earlier literature convincingly detailed the mechanisms through which import substitution policies worked, or more precisely did not work. Krueger (1978) and Bhagwati (1978) report on studies that measure in detail the degree of effective protection and anti-export bias in nine developing countries. They analyze the phases through which liberalizing countries proceeded during their moves from import substitution towards an outward-oriented trade policy (i.e. one without an anti-export bias). They describe how the distortions from various sorts of protection work their way through the economy in mostly unplanned and undesirable ways. They show how exports and growth responded in those cases where there were substantial trade liberalizations and appropriate accompanying macroeconomic policies.

In more recent years a variety of studies have followed this approach, attempting to define liberalization episodes in a sample of cases and examine the effects of liberalization. The largest, Choksi et al. (1991), analyzes the design, implementation, and outcome of trade liberalizations in each of the 36 episodes in 19 countries between 1946 and 1986. They provide a subjective assessment of the depth of liberalization in each of the episodes. They find that strong and sustained liberalization episodes result in rapid growth of exports and real GDP.

A variety of other multicountry studies of liberalization episodes gives mixed results on effect of liberalization on growth.<sup>38</sup> A central complication is that it is critical not just to label a structural adjustment loan with trade components as liberalization—measuring actual follow-through is critical. Indeed, as demonstrated in Andriamananjara and Nash (1997), most liberalizations are in fact gradual, with different layers of protection being gradually peeled away. Exceptions, such as Chile in the 1970s and Mexico in the 1980s, are rare. Thus, the liberalization event study is difficult to interpret, particularly if actual implementation is not carefully assessed case by case.<sup>39</sup>

What has happened to liberalizers since 1980? There is a relative dearth of systematic case studies completed in the past few years that review the experience of liberalizers in the past

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<sup>38</sup> Greenaway et al. (1998) and Harrigan and Mosley (1991) review this literature.

<sup>39</sup> Greenaway et al. (1998) find in a broad panel with annual data that liberalization episodes do indeed lead to growth, though there is some evidence of a “j-curve” effect with an initial negative effect.

10 years or so. Dollar and Kraay (2001) classify countries into globalizers and nonglobalizers based on three criteria: (i) those whose trade as a share of GDP rose most (the top third of the distribution, i.e. the top 24 countries in their sample) between 1975-79 and 1995-97; (ii) those who have the largest reductions in average tariff over the 1985-89 to 1995-97 period; and (iii) those nine countries that are in both groups.<sup>40</sup> They show that the globalizers enjoyed a substantial increase in growth rates in the 1990s relative to the 1980s (from 1.4 to 3.8 percent growth per year in real per capita GDP growth for the third group), while growth of non-globalizers went from -0.1 percent to 0.8 percent.<sup>41</sup>

Sachs and Warner (1995) examine the experience of countries that opened (according to their measure) since 1975, and find higher growth in the two years after liberalization and further out, relative to the years prior to liberalization (even excluding years immediately prior to opening).

Individual case studies inevitably present a varied picture. Country experiences differ radically and trade is only part of the story. Disentangling the various factors is difficult. In our view, though, a common thread across most successful cases of “take-off” is a significant degree of trade liberalization, even if this is not obviously decisive in each case and even if it is not sufficient. (It is less clear that it is not necessary, in that cases of successful and sustained take-off in the postwar years in the absence of trade liberalization are rare to vanishing.)

#### **E. The Channels Through Which Trade Affects Growth: Sectoral and Micro Studies**

Detailed country-specific sectoral studies from the 1970s and 1980s showed substantial costs to inward-oriented policies and failed to find dynamic gains from protection as predicted by infant industry arguments. More recent microeconomic evidence documents several channels through which openness leads to higher productivity. There is thus ample microeconomic basis for the aggregate relationships discussed above. Support for the infant industry proposition at the sectoral level remains weak.

Perhaps the central finding from the large cross-country studies of trade liberalization in the 1970s and 1980s was the highly distortionary nature of the import substituting regimes being considered; these proved to be much greater than the simple average tariff rates would suggest. These studies emphasized the ways in which inward-oriented trade policies reinforced

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<sup>40</sup> These nine are Argentina, Bangladesh, Brazil, China, Colombia, India, Nicaragua, Thailand, and Uruguay. The different base year for tariffs is mandated by lack of prior data. Rodrik (2000) criticizes this procedure on various grounds, including the different base years. He finds the results sensitive to details of how the two groups are formulated.

<sup>41</sup> This result is true for simple and population averages and if globalizers are defined only in terms of changes in trade shares. For the second group of globalizers, based on changes in tariffs, the nonglobalizers and globalizers have similar increases in growth rates from the 1980s to the 1990s.

poor macroeconomic and exchange rate policies. In their careful study of the differences between inward- and outward-oriented regimes in practice, these analyses can be contrasted with many recent discussions of the merits of openness, which are impoverished through a lack of a concrete counterfactual.

Some recent direct evidence that trade promotes productivity growth in developing countries comes from Coe et al. (1997), who find that total factor productivity in a panel of 71 developing countries is significantly related to the stock of research and development carried out by trading partners. There is clear evidence that trade, particularly the import of machinery and equipment, mediates the diffusion of knowledge: the interaction of trading partner R&D stock with the quantity of machinery and equipment imported from that partner is an important determinant of the size of the productivity effect.

There has been, until recently, little evidence with respect to gains from trade liberalization at the industry and firm level.<sup>42</sup> Bhagwati (1988) argued that there was little direct evidence that export promotion was associated with greater innovation or less x-inefficiency. Recent studies at the firm and industry level have, however, provided support for the idea that trade liberalization has spurred increased productivity, through a variety of mechanisms.<sup>43</sup> Increased import competition lowers margins and increases turnover and innovation. Exit is only the most visible part of the story. For example, Wacziarg (1997) shows that entry rates of new firms into liberalizing sectors were 20 percent higher than in other sectors, in 11 trade liberalization episodes during the 1980s.

While many studies have shown that exporting firms are more productive, causality has been hard to establish, given the plausible hypothesis that increases in productivity (for some other reason) may encourage firms to export.<sup>44</sup> A set of papers has recently examined the relationships between export performance and productivity growth using detailed panels of plant-level data and found, for developed and middle-income countries, that at the plant level, causality seems to run from productivity to exports, not the other way around.<sup>45</sup> That is, export growth follows increases in productivity, but there is little sign that strong export performance implies faster subsequent productivity increases. Thus, if exporting increases productivity, the evidence from richer countries suggests that it does so other than through direct effects on plant-level productivity. Firms in the poorest countries presumably have the most to learn. Thus, it is

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<sup>42</sup> Rent-seeking behavior (Krueger (1974)) has also been hard to quantify.

<sup>43</sup> This section draws heavily on Hallward-Driemeier (2001).

<sup>44</sup> Roberts and Tybout (1997) develop and test a model in which sunk costs of entry into exporting imply that only relatively productive firms will find it worthwhile to export. They find that causality goes from productivity to exporting, not the other way around.

<sup>45</sup> Clerides et al. (1998) look at Mexico, Colombia, and Morocco and Bernard and Jensen (1999) at the United States, with similar results.

not surprising to find evidence that firms in such countries achieve more productivity growth after entering export markets. Bigsten et al. (2000) find that firms in four African countries do learn from exporting, as well as self-selecting for the export sector, while Kraay (1999) finds learning effects in Chinese enterprises.

Even if exporting firms enjoy unusual productivity increases only prior to entering the export market, causality may still run from the entry into the export market to the productivity increase. Hallward-Driemeier et al. (2000), using data from five East Asian countries, find that the productivity gains observed prior to entering into the export market are associated with specific behaviors that suggest directed efforts aimed at penetrating the export market, such as using more foreign technology and imported inputs.

Other studies have looked beyond plant-specific effects of trade in promoting productivity growth. One mechanism that appears important is that exporting plants, which are relatively highly productive, may grow faster than nonexporting plants. Thus, average productivity growth rates are higher as resources shift into the exporting plants. This mechanism appears very important in the United States. According to Bernard and Jensen (1999), from 1983 through 1992, more than 40 percent of total factor productivity growth in the manufacturing sector of the United States resulted from the fact that high-productivity exporting plants grew faster than lower-productivity nonexporting plants. Thus, exporters accounted for much more of the productivity growth in the sample than their share in total employment. It is plausible to expect that of the various channels through which trade could promote productivity growth, those that operate through the diffusion of more advanced technologies from abroad would play the smallest role in the United States. Thus, trade may have more beneficial effects on productivity growth in developing countries than these results suggest.<sup>46</sup>

Trade may also promote productivity growth through its effects on the quality of imported intermediate and capital goods. Many studies show a positive correlation between access to imported inputs and productivity.<sup>47</sup> Demonstration effects across firms and higher competitiveness may also induce innovation and increases in productivity. For example, Clerides et al. (1998), who found no within-plant learning from exporting per se, found that firms in regions with substantial export activity had lower costs.<sup>48</sup>

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<sup>46</sup> However, Isgut (2001) finds strikingly similar results for Colombian firms. Hallward-Driemeier (2001) argues that this is a consistent finding in studies that compare firms before and after liberalization episodes.

<sup>47</sup> Hallward-Driemeier (2001) discusses some of them briefly.

<sup>48</sup> Many studies have shown important demonstration or proximity effects for foreign multinational corporations on productivity of nearby exporting domestic firms (see Aitken et al. (1997) for Mexico and Haddad and Harrison (1993) for Morocco). More generally, there is

Much evidence thus suggests that openness helps productivity growth in manufacturing. This is inconsistent with the infant industry idea that protection helps support the growth of industry and eventually industrial productivity. Some evidence for learning by doing can be found, suggesting some role for protection to enhance productivity growth and allow new industries to eventually become competitive.<sup>49</sup> However, in most cases there is no evidence that protected industries grow faster than others, and even where they do, the costs of protection in terms of higher prices for domestic consumers seem to greatly outweigh any benefits. Krueger and Tuncer (1982) found no evidence that protection abetted productivity growth in a cross-section of Turkish industries.<sup>50</sup> More generally, Bell, Ross-Larson, and Westphal (1984) conclude in their survey that infant firms have experienced relatively slow productivity growth. They believe that underlying this result is the fact that achieving international competitiveness results not just from learning-by-doing, as would be abetted by high levels of protection, but a more active effort. This is consistent with the results from above on the positive influence of both import competition and the availability of export markets on productivity growth.

More recent work has continued to deprecate the infant industry argument. Luzio and Greenstein (1995) study the effect of Brazil's prohibition on microcomputer imports in the 1990s. The domestic industry developed rapidly, but more slowly than international competitors, so the price/performance frontier in Brazil lagged international standards by three to five years. The costs to consumers of computers have been as high as high as 20 percent of domestic expenditures on microcomputers.

The above evidence focused on post-WWII international experience. It has often been claimed that late-19<sup>th</sup> century tariffs in the United States successfully promoted infant industries, most clearly in the case of the tin-plate industry. In a methodologically careful recent paper, Irwin (1998) finds that the tariffs did allow the industry to arise in the United States about a decade earlier than it otherwise would have. Nonetheless, his welfare calculations suggest that the protection did not pass a cost-benefit test. Whatever learning-by-doing was taking place was outweighed by the higher prices paid by domestic users of tin-plate in the United States as a result of the tariff.

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strong evidence of the productivity-enhancing effect of foreign direct investment at the plant level. In Section V we touch on the relationship between FDI and trade openness.

<sup>49</sup> Of course, even in this case, subsidies would be preferred to protection.

<sup>50</sup> This result has been criticized by Harrison (1994), who noted that in some specifications there is actually a positive relationship between the degree of protection of the industry and productivity growth. As noted in Krueger and Tuncer (1994), however, the underlying point remains. While the evidence on productivity differentials is mixed and depends somewhat on the specification used, in no case can the size of a productivity growth differential in favor of the protected industry begin to justify the level of protection afforded that industry, in present value terms.

More recent evidence on the relationship between protection and productivity growth comes from Jonsson and Subramanian (2001), who look at the relationship between productivity and the decline in protection across industries in South Africa over the 1990s. They find strong effects: a decline in the output price of 10 percent due to tariff reduction results in an increase in the total factor productivity growth rate of 3 percentage points. There is no sign of a larger decline in employment in those industries with the larger decline in tariffs.<sup>51</sup> Support from another direction comes from Dodzin and Vamvakidis (1999), who examine the impact of international trade on industrialization in developing agricultural economies. Those economies that increased their openness (using the Sachs-Warner measure) during 1975 to 1995 experienced an *increase* in their share of industrial production at the expense of agricultural production. Indeed, the least industrialized countries at the time of liberalization tend to experience the most rapid industrialization thereafter.<sup>52</sup>

### F. Trade and Poverty

There are strong reasons to suppose that trade liberalization will benefit the poor at least as much as the average person. Trade liberalization tends to reduce monopoly rents and the value of connections to bureaucratic and political power. In developing countries, it may be expected to increase the relative wage of low-skilled workers.<sup>53</sup> Liberalization of agriculture may increase (relatively low) rural incomes. On the other hand, trade liberalization might also worsen the income distribution, for example by encouraging the adoption of skill-biased technical change in response to increased foreign competition.

If trade liberalization worsens the income distribution enough, particularly by making the poor poorer, then it is possible that it is not after all good for poverty reduction, despite its positive overall growth effects. We have seen that this seems unlikely based on the weak general relationship between growth and inequality. But perhaps trade-based-growth is different. We first examine the systematic cross-country evidence then briefly review some of the vast microeconomic literature on the effects of trade liberalization on income distribution. We are

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<sup>51</sup> Jonsson in personal communication argues that reverse causality from productivity growth to tariff reductions is implausible. His discussions with policymakers suggested that they did not know which industries had higher productivity or a fortiori were likely to have higher productivity growth. Tariffs tended to be cut in sectors with high initial tariffs; political factors were also important. See also Choudhri and Hakura (2000), who find across countries that increased import competition enhances overall productivity growth.

<sup>52</sup> In their survey, Bell et al. (1994) also find little evidence supportive of infant industry protection.

<sup>53</sup> Evidence on this latter question is mixed.

not looking here at the question of how trade openness affects income distribution; rather, we want to know how trade openness matters for absolute poverty beyond its effects on growth.<sup>54</sup>

Though the evidence is somewhat mixed, it leans strongly towards the conclusion that there is no systematic relationship between openness and the income of the poorest, beyond the effect of openness on overall growth. Dollar and Kraay (2001) provide the clearest evidence. Using a large panel (137 developing countries from 1950 to 1999), they regress the income share going to the lowest quintile on mean per capita income in their sample. They find that the income of poorest quintile grows one-for-one with average incomes (consistent with the finding we noted in the introduction, that growth does not systematically correlate with changes in the income distribution). They also find that, given growth, openness has a tiny and statistically insignificant effect on income of the poor.<sup>55</sup>

Other studies using panel and cross-section data report similar results: no significant evidence of links between openness and changes in the *relative* well-being of the poor.<sup>56</sup> For example, Cashin et al. (2001) analyze a cross-section of countries between 1975 and 1998. They estimate the relationship between economic policies and improvements in a human development index, which is highly correlated with poverty, for a given rate of growth of GDP per capita. They do not find significant and robust evidence that any openness variable (the ratio of foreign trade to GDP or the black market premium) was associated with pro-poor or anti-poor growth.<sup>57</sup>

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<sup>54</sup> A good recent survey is found in Bannister and Thugge (2001).

<sup>55</sup> This result is robust to the inclusion of regional dummy variables and decade dummy variables. It also holds for relatively poor countries only, and whether the income of the poor is regressed on growth using ordinary least squares, or whether, given the possibility of reverse causality from income distribution to growth, growth is instrumented. The result on the irrelevance of openness to distribution holds whether openness is measured in terms of trade volumes, trade volumes purged of the effects of geography as a measure of policy, or the Sachs-Warner variable.

<sup>56</sup> That is, these studies have not found links between openness and the well-being of the poor beyond those associated with higher average per capita income growth. See for example Edwards (1997), Roemer and Gugerty (1997), and Ghura et al. (2002).

<sup>57</sup> Lundberg and Squire (1999), in contrast, find in a panel of countries that the Gini coefficient for income inequality is significantly and positively related to instrumented Sachs-Warner openness. In separate regressions by income group, Sachs-Warner openness is negatively correlated with growth among the poorest 40 percent, but strongly and positively correlated with growth among the middle 60 percent and wealthiest 40 percent (these are overlapping samples). One reason these authors get a different result than Dollar and Kraay (2001) and others in the literature may be that they have a much smaller sample, a result of their effort to include many more explanatory variables in the regression, variables that are only available for a subset of the countries analyzed in Dollar and Kraay (2001).

These statistical analyses with large numbers of countries are in many ways unsatisfactory. The data underlying them are highly problematic, and they attempt to fit different sorts of trade liberalization episodes, in different countries, into a common framework. An alternative approach to looking at how trade liberalization affects the poor is to study in detail individual liberalization episodes. This allows a consideration of the rich variety of mechanisms through which liberalization can affect poverty and of the various ways that specific characteristics of the individuals involved can influence the results. We would like to emphasize, though, one important problem that is more-or-less common to these studies: it is much easier to see what happens to individuals or groups that are directly affected by trade liberalization than it is to observe how the opening plays out throughout the entire economy through time.<sup>58</sup>

On the question of whether the poor benefit more or less than others, no clear pattern emerges from the numerous studies of individual liberalization episodes.<sup>59</sup> This is not surprising, as any particular liberalization will change relative prices and incentives throughout the economy. A few generalizations can nonetheless be extracted from these studies. Poor consumers tend to benefit from trade liberalization as do other consumers. Liberalization of agricultural trade typically has the strongest effects on the poor, since in most countries most poor are engaged in small-scale agriculture. In general, trade protection usually induces an anti-agricultural bias, so liberalization should help; the poorest among small farmers may, though, be relatively ill placed to benefit.

#### IV. TRADE AND THE BROADER POLICY ENVIRONMENT

We have examined a large amount of evidence about the effect of openness on growth and poverty. Much of this evidence is vulnerable to the criticism that the effect of openness has not been isolated from the effects of many other reforms that were often implemented at the same time. In the case studies and before-after comparisons, for example, effects of liberalization of trade are hard to disentangle from the effects of macroeconomic stabilization, internal price liberalization, changes in the foreign exchange system and the exchange rate, liberalization of the capital account, the introduction or elimination of social safety net programs, and a host of other measures.

This correlation of openness with other elements of reform is indeed a difficult econometric problem. We do not consider it to be a problem from the point of view of the design of reform programs, however. First, trade is a particularly important component of reform. Second, trade openness has important positive spillovers on other aspects of reform so that, on the whole, the

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<sup>58</sup> For example, we noted earlier that exports seem to promote productivity growth not through what they do to individual plants but through how they allow the exporting plants to grow faster, drawing resources from other less productive sectors.

<sup>59</sup> This paragraph and the next draw heavily on McCulloch et al. (2001).

correlation of trade with other pro-reform policies speaks to the advantages of making openness a primary part of the reform package. Finally, there is little evidence that there are other reforms that must precede an effective trade reform, though there are many reforms that are complementary.

Insofar as the data do speak, they tend to single out trade openness as a particularly important reform. The various policy variables hypothesized to promote growth are in many cases highly correlated. But as Sala-i-Martin (1997) has shown, among the variables more robustly related to growth are the Sachs-Warner openness measure and the black market exchange rate premium. According to Easterly and Levine (2001), openness (measured as the ratio of trade to GDP) and the black market premium are highly significant in a regression including several other policy variables.

It is indeed true that reforms tend to come in packages of various sorts. Thus, this is a problem for identifying the effects of different sorts of reforms. It is not, however, a policy problem. On the contrary, in our view trade reforms are a central aspect of the overall reform package. If trade openness is associated with lower inflation, for example, then it makes it more difficult to say which is the key factor in a regression or case study, but it makes it easier to recommend trade openness.

In interpreting the role of trade reform as distinct from other aspects of policy, it is important to distinguish between preconditions, desirable complements, and beneficial reform “spillovers.” In our view, there are few true preconditions, that is reforms in the absence of which trade openness is a poor idea. Openness seems to promote growth in the poorest countries as well as in others. Ades and Glaeser (1999) find that, among relatively closed economies, the poorest in 1960 also grew the slowest between 1960 and 1985, but that low initial income is *not* correlated with slower subsequent growth in open economies. They argue that in closed economies low initial income reduces potential benefits from scale economies, but that trade openness, by allowing access to broader markets, overcomes this problem. More broadly, there is little evidence of a “growth trap” in the sense of a situation in which countries become too poor to take off. For example Jones (1997) notes that, of the 18 poorest countries in 1965 in his sample of 121, 4 grew at least one point faster than the United States over the 1960 to 1988, while 11 grew about as fast as the United States. Parente and Prescott (2000) point out that all the growth miracles of the 20<sup>th</sup> century occurred in countries starting far behind the richest. Ng and Yeats (1996) argue that protectionist trade policies and related macroeconomic distortions played a key role in Africa’s relative marginalization in world trade between the 1950s and 1990, not external protection in OECD markets or an unfortunate specialization in exporting goods of declining world importance, though the latter also played a role.

Many factors can make trade reform more or less successful. For example, a more egalitarian initial income distribution implies that a given amount of (distribution-neutral) growth has a

larger impact on the poverty rate, all else held equal.<sup>60</sup> There is also evidence that certain factors such as higher rates of education permit the poor to benefit more fully from growth.<sup>61</sup> Of course, these are not arguments against trade reform but rather for pursuing these complementary reforms as well. Some measures may be co-requisites of trade liberalization, at least in the sense that in their absence, the trade liberalization policy may not endure. As Choksi et al. (1991) argue based on case studies, for example, trade liberalizations in the presence of chaotic macroeconomic environments and overvalued exchange rates are likely to be reversed.<sup>62</sup>

The most important set of relationships, in our view, has to do with positive spillovers from trade reform. In many cases and in many ways, trade liberalization is itself a precondition or a complement to other sorts of reforms and thus facilitates their success. The fact that trade reform often happens as a package, from this point of view, is a strength of trade reforms, even if it is an econometric challenge.

There are a variety of reasons why trade openness might promote other sorts of reforms. Openness provides powerful channels for feedback on the effect of various policies on productivity and growth. For example, competition with foreign firms can expose inefficient industrial policies. Trade raises visibility of failure in other areas. Trade raises the marginal product of other reforms, in that better infrastructure, telephones, roads, and ports translate into better performance of the export sector and, less visibly, this raises productivity for domestic goods as well. Trade liberalization may change the political reform dynamic by creating constituencies for further reform.<sup>63</sup>

Two areas in which trade interacts with the capital account deserve special attention. First, the evidence is clear that FDI has important benefits for growth, and hence for poverty, in developing countries. As has been recognized for some time, allowing FDI behind important trade barriers can lead to large and stubborn distortions. Moreover, openness to FDI is highly

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<sup>60</sup> This comes from the interaction between the shape of the income distribution and the effect of an equiproportional increase in income for everyone.

<sup>61</sup> Ravallion and Datt (2001) make this argument in looking at the effects of growth on poverty across regions of India.

<sup>62</sup> Bannister and Thugge (2001) emphasize the value of making reforms as broad as possible, sequencing and phasing them to allow for adjustment, and implementing social safety nets and other reforms that facilitate adjustment to the new trade policy. Poulton et al. (1999) emphasize the value of targeted welfare interventions to ensure that the poorest rural households benefit from trade liberalization. Sharer et al. (1998) put more weight on the need to consider fiscal implications when designing trade liberalization programs.

<sup>63</sup> Krueger (1980) makes this argument and provides various examples.

correlated with openness to trade. Thus, an open trading regime is an important counterpart to allowing in substantial and productive FDI.<sup>64</sup>

Second, the large crises observed in several emerging markets in the past decade have given new force to an old sequencing argument: that trade liberalization should precede capital account liberalization more broadly. There is mixed evidence that the income distribution systematically worsens during crises, but of course the poorest are likely to be least able to adjust to declines in income.<sup>65</sup> Trade shocks and openness have not, in general, been important causes of recent exchange rate crises.<sup>66</sup> On the other hand, growth following crises and sharp contractions in the current account deficit is stronger in more open economies, presumably because the exchange rate depreciation associated with the crisis leads to a stronger export response in more open economies. Thus, trade openness is increasingly important in a world that is growing otherwise more integrated.<sup>67</sup>

It is sometimes argued that an absence of adequate prior institutional reform may limit the gains from openness. Dani Rodrik, for example, has argued that the efforts spent implementing trade reform would be better spent on other sorts of reform, primarily institutional.<sup>68</sup> It should be clear that, in our view, the positive spillovers from openness to other reforms are more than powerful enough to overcome this sort of effect. Successful institutional reform is likely to be a powerful complement to trade liberalization, but there is little or no evidence to suggest that waiting on such institutional reform is a good idea. On the contrary, there is strong evidence that openness may encourage institutional reform and in particular reduce corruption, as argued in

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<sup>64</sup> See for example Michaely (1986), Edwards (1986), and Choksi et al. (1991).

<sup>65</sup> Lustig (2000) finds strong and durable negative effects of crises on the poor. de Janvry and Sadoulet (2000) find that recessions have strong negative effects on inequality in Latin America. Over a broader sample, Baldacci et al. (2002) and Dollar and Kraay (2001), looking systematically across episodes, find little evidence of a consistent relationship between economic downturns or crises and income distribution.

<sup>66</sup> The important emerging market crises of the 1990s, for example, were not in general associated with terms of trade shocks. See Kaminsky and Reinhart (1999) and Berg et al. (1999).

<sup>67</sup> Gupta et al. (2000) and Milesi-Ferretti and Razin (1998). Easterly et al. (2000) find broadly supportive results in their large panel. In their sample of 60 developing countries, trade openness does not increase the probability of economic downturns. They also find that openness has mixed effects on the volatility of output. Openness causes higher growth, which itself lowers the volatility of growth, though there is also a direct positive effect of openness on volatility.

<sup>68</sup> See for example Rodrik (2001).

Krueger (1974). Ades and Di Tella (1999) find that corruption is higher in countries where domestic firms are sheltered from foreign competition by natural or policy-induced barriers to trade, and that the size of this effect is large: almost a third of the corruption gap between Italy and Austria can be explained by Italy's lower exposure to foreign competition.<sup>69</sup>

## V. CONCLUSION

We have surveyed the literature and extracted three main propositions about trade policy and poverty: (1) poverty reduction is mainly about growth in average per capita income; (2) trade openness is an important determinant of growth; (3) the growth that is associated with trade liberalization is as pro-poor as growth in general.

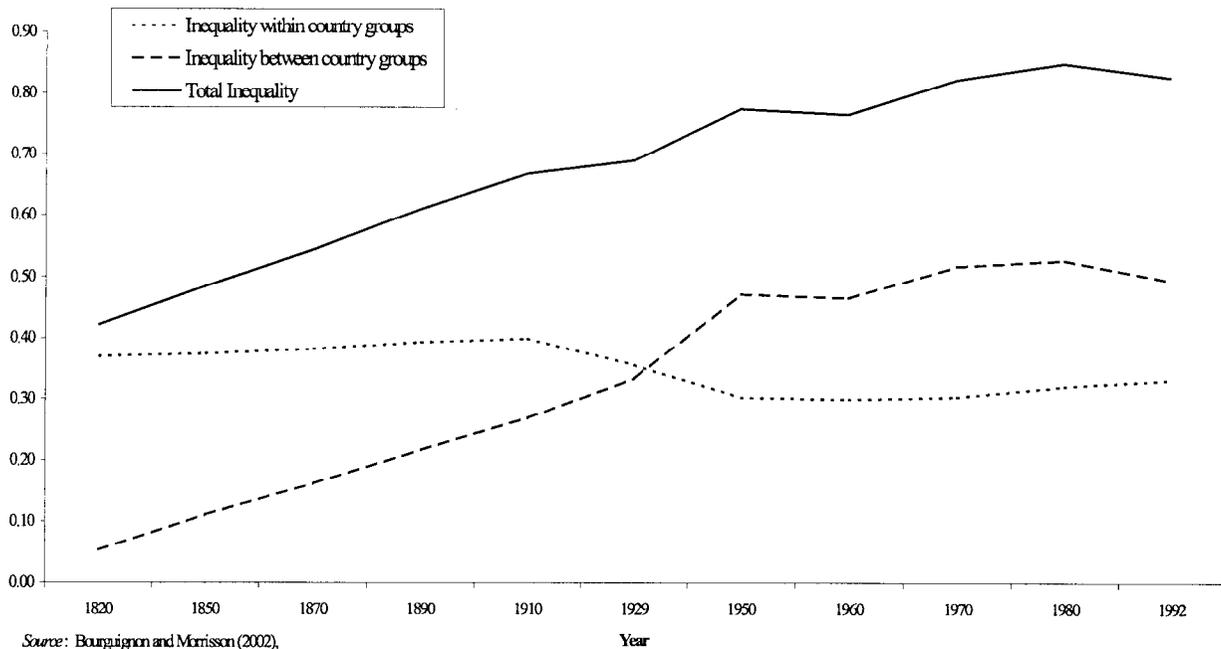
On the first proposition, there is ample evidence that the main cause of changes in absolute poverty is changes in average per capita income. Long-run trends reinforce the point that the relationship between poverty and openness is dominated by growth. First, within-country inequality has been relatively stable and not a source of much of the change in overall global inequality. Thus, any globalization-induced changes in within-country inequality are a small part of the story. Bourguignon and Morrisson (2002) chart global individual inequality between 1820 and 1992 and divide it into between-country and within-country components (shown in Figure 4). Most of the story of world income distribution is the rise in between-country inequality until about 1950 and perhaps the slight decline since 1980. Sala-i-Martin (2002) concentrates on the more recent period and finds that overall global inequality has been falling since 1980, thanks to between-country convergence.

By concluding that openness tends to increase growth, we suggest that if poor countries opened more, poverty would fall. Both Bourguignon and Morrisson (2002) and O'Rourke (2001) in their surveys of historical trends in globalization and inequality conclude that globalization has been, broadly speaking, a force for between-country convergence among participating countries. Until the third quarter of the 20<sup>th</sup> century, though, other factors such as unequal spread of the Industrial Revolution and nonparticipation by some countries in the world economy overwhelmed this effect.

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<sup>69</sup> Ades and Di Tella (1999) measure outward orientation in two ways: trade distance (that is, the distance from major trading partners) and import penetration (imports as a share of GDP). They instrument with country size and population to control for the endogeneity of this measure. The difference in outwardness between Italy and Austria is due to the second of these two measures. See also Gatti (1999). Wei (2000) regresses trade intensity on natural determinants such as distance from trading partners, and argues that it is the component of openness that is correlated with these natural factors that explains corruption across countries, not the residual, which might be associated with policy. Rodrik et al. (2002) also find that trade openness has a positive influence on the quality of institutions.

Figure 4. World Income Inequality



With respect to the second proposition, the evidence that trade openness is an important determinant of growth is varied. First, we know that countries and regions that are sufficiently similar along a broad number of dimensions, such as states in the United States, regions of Europe, or even countries of the OECD, tend to converge to similar levels of income. It is plausible that trade openness is an important part of this convergence process and hence part of bringing poverty rates down in poorer countries. Of course, many other factors are potentially at play in this convergence process.

Cross-country and panel regressions allow us to examine the separate roles of some of these factors. In cross-country regressions of the level of income on various determinants, openness seems to be the most important policy variable, despite the measurement problems. The toughest question is how to disentangle the effects of openness from those of the good institutional environment that usually accompanies openness. A quick perusal of the variables considered in measuring good institutions makes it clear why these must be important in the development process: voice and accountability, lack of political instability and violence, effective government, manageable regulatory burden, rule of law, and absence of corruption. Trade can only be an aspect of the development process, and these institutions are also clearly central. We argue, though, that openness is in many ways a contributor to a strong institutional environment. More broadly, the fact that openness is highly correlated with quality of institutions across countries should give long pause to anyone contemplating the adoption of what amounts to a novel (or tested and failed) development strategy that does not involve openness to trade.

The regression evidence on determinants of changes in income within countries through time allows us to distinguish between the effects of institutional variables and trade openness, for the simple reason that institutional variables do not vary much through time, so that it is unlikely that changes in trade openness can be confused with their effects. These regressions also show a central role for increases in openness in promoting growth.

We would not find these regression results particularly convincing if there were not a substantial quantity of case study and industry and firm-level research documenting the various ways in which openness contributes to export, productivity, and ultimately income growth. Perhaps the central finding from the large multicountry studies of trade liberalization in the 1970s and 1980s was the highly distortionary nature of the import substituting regimes prior to liberalization. Somewhat more recently, others have followed this approach, attempting to define liberalization episodes in a sample of cases and examine the effects and also finding that strong and sustained liberalization episodes result in rapid growth of exports and real GDP. Recent studies at the firm and industry level have delineated some of the ways that trade liberalization and the resulting increase in import competition works to increase productivity and shown that an emphasis on exports helps as well. Consistent with the evidence on the benefits of trade for productivity growth, the infant industry argument has consistently failed to find empirical support.

Our third main proposition is that trade openness, conditional on growth, does not have systematic effects on the poor. The aggregate evidence shows that the income of the poorest tends to grow one-for-one with average income. Of course, in some countries and in some periods the poor do better than average, and sometimes they do worse. But openness does not help explain which of these outcomes occurs. The micro evidence from a large number of individual liberalization episodes also shows that there is no systematic relationship between trade liberalization and income distribution. Thus, trade openness has contributed to growth that has resulted in an unprecedented decline in absolute poverty over the past 20 years. Changes in income distribution within countries have, on the other hand, contributed little to net changes in poverty incidence (This is true also over longer periods). Indeed, the change in income distribution in the last 15 or so years has been slightly pro-poor.

Much of the evidence that openness promotes growth and poverty reduction is vulnerable to the criticism that the effects of openness have not been isolated from those of other reforms undertaken prior to or with trade liberalization. This is an econometric but not a policy problem, however. Openness has important positive spillovers on other aspects of reform, so the correlation of trade with other pro-reform policies speaks to the advantages of making openness a primary part of the reform package. Moreover, there is little evidence that other reforms must precede an effective trade reform, though there are many that are complementary.<sup>70</sup>

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<sup>70</sup> India's experience over the last 20 or so years illustrates many of the important points in our argument (see Krueger (2002)). As noted in footnote 7, India has benefited from rapid increases in average income and a large reduction in poverty since 1987. Meanwhile, it began some modest reforms, including trade opening, at about the same time, with a substantial deepening

Openness is not a “magic bullet,” however. Trade policy is only one of many determinants of growth. Thus, it should not come as a surprise that, even though trade is an important determinant of growth, and there has been substantial trade liberalization in the last 20 years, growth in the 1980s and 1990s has been disappointing, resulting in a correspondingly modest (if unprecedented) decline in poverty.<sup>71</sup> This should not distract us from the importance of trade liberalization in developing countries, however. Trade can only be an aspect of the development process. However, the breadth of evidence on openness, growth, and poverty reduction, and the strength of the association between openness and other important determinants of high per capita income such as the quality of institutions, should give long pause to anyone contemplating the adoption of a novel (or tested and failed) development strategy that does not center around openness to trade.

In this paper we have emphasized the importance of the policies of developing countries themselves in generating growth. Industrial countries have also maintained market access barriers and agricultural policies that penalize typical developing country products, and their removal would help reduce poverty and guarantee greater benefits from developing country trade liberalization.<sup>72</sup> Nonetheless, it is a deep mistake to consider trade opening and tariff reductions to be a game in which only bilaterally negotiated liberalizations are advantageous.

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of reform in the early 1990s. India’s example is a reminder of the importance of concentrating on the relationship between openness and the level of income: some reforms, including trade liberalization, made a large difference to a very poor country, but India remains poor and relatively closed. Moreover, a variety of institutional and economic reforms in addition to further openness are needed to sustain progress. But the centrality of trade opening in the progress achieved to date cannot be doubted.

<sup>71</sup> Easterly (2001) finds that good policy continued to matter for growth in the 1980s and 1990s, but overall disappointing performance was mostly due to negative shocks, particularly declines in developed country growth rates and increases in U.S. interest rates.

<sup>72</sup> On this topic, see IMF Staff (2002).

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