Making Trade Policy Work for the Poor:

Shifting From Dogma to Detail[1]

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August 25, 2002

Version 3.0

[1] Updated versions of this paper will be posted on www.columbia.edu/~sr793

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1. Introduction[3]

It has recently been argued that one of the surest ways for poor countries to alleviate poverty is to pursue policies of trade liberalization. It has been claimed that trade liberalization will lead to faster aggregate income growth that will in turn lead to dramatic poverty reduction (see, e.g. Dollar and Kraay (2001)). A careful examination of economic theory and empirical evidence suggests, however, that the relationship between policy, trade, aggregate income, and poverty is far more complex than is usually assumed in such arguments.

We examine below the complex relationship between trade and poverty in LDCs, surveying both the economic theory and empirical evidence concerning the links between trade, aggregate income, and poverty. We conclude that while there certainly are circumstances under which greater openness can lead to poverty reduction, these circumstances do not always obtain. Trade liberalization will only be an effective instrument of poverty reduction under specific structural conditions. There may be more direct and effective means of attaining anti-poverty objectives.

In order to examine the effect of trade liberalization on poverty, it is necessary to conceptualize what poverty is and how to measure changes in its extent and depth. Poverty is conceptualized here as consisting in the inadequate possession of some set of essential human capabilities.[4] Although poverty should ultimately be conceived of as involving the lack of a range of "elementary capabilities" (such as adequate nourishment), we focus largely (although not exclusively) on the income dimension of poverty in what follows. There are two main reasons for this focus. The first is that the thrust of recent claims on behalf of trade liberalization has been specifically that it reduces the income dimension of poverty. As our task is to critically assess these claims, we too focus on the income dimension of poverty. The second reason is that existing theory and evidence permits a readier study of the relation between trade and the incomes

[3] We are most grateful to Kevin Watkins, for his patience and his suggestions. We are also most grateful to Christian Barry and Julia Harrington for their encouragement.
[4] For a fuller treatment of this view of poverty see e.g. Sen (1985, 1992).

of the poor than of the non-income dimension of well being. Of course, to the extent that income is an important influence on the capabilities of people, understanding effects of trade liberalization on the incomes of the poor is of great importance to understanding its effect on poverty. It must, however, be kept in mind throughout that a *full* assessment of the impact of trade on poverty must extend to its non-income dimensions as well.

All changes in the income dimension of poverty can be decomposed into two effects: a change in level of the aggregate income of a society and the relation between this aggregate change and the real incomes of the poor. Thus, trade liberalization can influence poverty both by influencing the level of aggregate income and by influencing the distribution of income among persons. For trade liberalization effectively to reduce poverty by increasing the level of aggregate income, it must be the case that there are no countervailing distributional effects of sufficient strength to overwhelm the effect of the increase in aggregate wealth. Trade liberalization may affect the level of aggregate income and the distribution of this aggregate among the forms of income (e.g. wages and profits) accruing to different factors of production (e.g. labor or capital). However, to understand the impact of trade liberalization on *poverty*, one must in turn consider the effect of changes in the level or factor distribution of aggregate income on the distribution of income *among persons*. Hence, in what follows we examine two kinds of relationships in turn: the relation between trade and the level and factor distribution of aggregate income, and the relation between the level and factor distribution of aggregate income and the real incomes of the poor.

We argue that while economic theory predicts that under certain circumstances, trade liberalization will indeed lead to increased levels of aggregate output and even sustained growth in aggregate income, it likewise predicts that there are circumstances under which this will not be the case. As some of the conditions under which liberalization may not be optimal are likely to obtain in LDCs, theoretical predictions as to the efficacy of trade liberalization in LDCs are ambiguous. More importantly, economic theory and evidence provide many reasons to doubt that expansions in aggregate income caused by trade will alleviate certain forms of poverty. The presence of certain structural features of

developing country economies, such as the geographic isolation of certain groups, poor infrastructure, structural unemployment, and segmented labor markets, all give rise to the possibility that there may be groups of the poor who do not share in the gains of trade induced growth as well as to the possibility that poverty can even worsen as a result of trade liberalization. Without the presence of complementary policies to ensure that increased trade translates into income growth that will reach the poor, trade liberalization will not be the effective force for poverty reduction that it can be. Policies other than trade liberalization may be more immediately effective at furthering anti-poverty objectives in many circumstances.

The remainder of this paper is organized as follows. In section 2, as a way of drawing out the general difficulties that have beset attempts to identify a strong empirical relation between trade policy and poverty, we offer some critical comments on the recent influential paper "Trade, Growth, and Poverty" by David Dollar and Aart Kraay, which purports to present evidence that trade liberalization leads to faster growth in average incomes and that this in turn leads to poverty reduction. We then proceed to examine more carefully what existing economic theory and empirical evidence can tell us about the links between trade, aggregate income, and poverty. In section 3 we survey the predictions of economic theory concerning the effects of the liberalization of international trade policy upon the level and growth rate of aggregate income and the empirical evidence regarding these effects. In section 4 we examine the possible impact of trade liberalization upon the distribution of aggregate income across factors of production. In section 5 we consider what economic theory and empirical evidence has to say about relationship between the real incomes of the poor and of changes in the level and factor distribution of aggregate income occasioned by trade. We draw lessons from the analysis as a whole in section 6.

2. Is There a Fact of the Matter? A Critique of Dollar and Kraay on Trade, Growth, and Poverty

In their paper, "Trade, Growth, and Poverty,"[5] Dollar and Kraay claim to present evidence that trade liberalization leads to faster growth in average incomes, and that this growth in average incomes in turn increases the incomes of the poor "proportionately". The paper suggests that one of the surest ways for less developed countries to alleviate poverty is therefore to pursue policies of trade liberalization. We argue, however, that the arguments and evidence presented by Dollar and Kraay are flawed and unconvincing.

Dollar and Kraay attempt to show on the basis of empirical evidence that: (1) Post-1980 'globalizers,' or developing countries that undertook greater shifts in favor of a more open trade regime than others in the period from the early 1980's to the late 1990's, have experienced greater increases in growth of per capita incomes than others (2) More generally, growth of the share of trade in gross domestic product (henceforth, trade volume) is positively associated with increases in the growth in average incomes; and (3) there is no systematic tendency for the share of national income captured by the bottom quintile of the income distribution to change as per capita national income grows. The first two claims are each intended to support the view that "trade liberalization leads to higher growth of average incomes" while the third claim is intended to support the view that "growth of average incomes increases the incomes of the poor proportionately." We argue that both the findings of Dollar and Kraay as well as their interpretation of their results are plagued by a number of serious problems. We critically examine below the claims of Dollar and Kraay.

2.1 The Identification and Relative Growth Performance of "Globalizers"

The first conceptual problem concerns the identification of a group of 'globalizers' and the evaluation of the growth performance of the members of this group in comparison to that of other developing countries. As Dollar and Kraay themselves note, trade

[5] See http://www.wider.unu.edu/conference/conference-2001-1/dollar%20and%20kraay.pdf . We comment on the version dated March 2001.

liberalization often occurs at the same time as many other reforms (see also Rodriguez and Rodrik (2000)). Thus, identification problems plague inferences that differences in growth rates are due to differences in trade policy. Differences in growth rates between countries identified according to their trade policies may be due to other policy changes that also differentiate these groups of countries.

How should globalizing countries, or "countries that have significantly opened up to foreign trade" be distinguished from non-globalizing ones, or "countries that have remained more closed"[6]? An obvious possibility is to differentiate countries by measures that indicate the extent of the obstacles to trade that they erect, such as tariff and non-tariff barriers. However, Dollar and Kraay assert that such direct measures of trade policies (such as the average level of tariff rates) capture poorly the extent of actual openness[7]. Instead, they use changes in trade volumes as a percentage of GDP as a "proxy" for the extent of trade liberalization.

Is this a reasonable strategy for distinguishing globalizers and non-globalizers? Clearly, many factors *other* than policies affect the volume of trade (such as geography, country size, technological and organizational capabilities, domestic institutions, and the attitudes of potential trading partners). Dollar and Kraay recognize that this dependence of trade volumes on multiple factors makes it difficult to make inferences that trade volumes are due to trade policies alone. As we argue below, the dependence of trade volumes on multiple factors also makes it difficult to make credible inferences that changes in trade volumes are due to changes in trade policies, as Dollar and Kraay wish to do.

A related issue is that there are many reasons that *causal* inferences about the relation between trade volumes and growth can be mistaken. First, it is possible that higher growth rates cause a country to have higher volumes of trade relative to GDP. This is

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[6] See Dollar and Kraay (2001), page 7 for these descriptions of what it means for countries to be 'globalizers' or 'non-globalizers'.

[7] In support of this view, Dollar and Kraay cite reasons such as that there may be unobserved 'non-tariff' barriers to trade, that average tariff rates may not accurately capture the obstructions created by tariffs, that the level of enforcement of tariffs may vary across countries, and that trade-weighted measures of tariffs

both because growth in incomes typically leads to growth in import demand, and because income growth may lead to faster export growth. There are many reasons that more rapid export growth may be triggered by income growth. For a variety of reasons, firms may achieve more competitive costs on international markets as national income increases. For example, higher incomes may make possible the overcoming of the asset, liquidity and credit constraints that had previously limited firms from investing adequately in their export capacity.[8]

Second, factors unrelated to trade policy that cause countries to have higher growth rates may *also* cause countries to have higher trade volumes relative to GDP, creating a correlation between these two factors despite the absence of any direct causal connection. For instance, investment in domestic infrastructure (in transportation and marketing, for instance) may facilitate domestic market development (and therefore growth) while simultaneously reducing the costs of bringing domestically produced goods to international markets and international goods to domestic markets, thereby increasing the share of exports and imports in GDP. Since higher growth may be the cause of higher trade volumes (rather than the other way), and since there may exist unidentified third factors that are causes of both increased growth and trade volumes, the inferences made by Dollar and Kraay are suspect.[9]

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give little or no weight to commodities for which trade is low or non-existent precisely because tariffs are high.

[8] This is only one example. More generally, growth in GDP as the result of the development or structural change of a country's economy might be associated with lowered unit costs for a wide variety of reasons: Higher national income may permit greater investment in infrastructure (such as roads and ports), which in turn may reduce transport costs and other costs of trade. Domestic markets for many products may also expand, allowing firms to become more productive due to the presence of economies of scale. Development may also increase the competitiveness of domestic market environments, forcing firms to reduce 'X-inefficiency' and to approach the "frontier" of potential productivity that is given by existing technological and organizational capacities. Finally, development may be associated with advances in technology and in entrepreneurial capabilities, enhancing firms' productivity and allowing firms to expand the "frontier" of efficient production possibilities itself.

[9] While Dollar and Kraay do recognize the problems with the use of trade volumes as a proxy for trade policies and *attempt* (as we discuss below) to deal with some of these problems in the context of their cross country growth regressions, they make no attempt to correct for these problems in the current context (the comparison of the growth performance of groups of countries classified as 'globalizers' and 'non-globalizers'). It is interesting to note that the use of changes in trade volumes relative to GDP as a proxy for changes in trade policy leads to a number of the problems we identify. These problems could in many instances have been avoided if changes in tariffs had been used instead, although if this had been done the authors' conclusions would also have been different.

Recognizing some of the possible shortcomings of using trade volumes as the primary selection criterion for globalizers, Dollar and Kraay identify two other sets of 'globalizers': one consisting of countries that had the greatest reductions in average tariffs and one consisting of countries that were *both* among those that saw the greatest increases in trade volumes and among those that saw the greatest reductions in average tariffs. Dollar and Kraay claim that for all three groups of 'globalizers' (i.e. those which had the largest increase in trade volumes, those which had the largest reductions in average tariffs, and those which were on both of the prior lists), globalizers saw greater increases in growth rates than non-globalizers. These claims are superficially plausible, but as we discuss below, do not withstand scrutiny.

Inconsistent Criteria:

Because very little tariff data was available before 1985, Dollar and Kraay use tariff reduction data from the period 1985-89 to the period 1995-97, whereas the trade volume data they use is from 1975-79 to 1995-97. Because the construction of the group of globalizers using reductions in average tariffs is based only on reductions in average tariffs from the 1985-89 period to the 1995-97 period, the comparison of the performance of this group of 'globalizers' with that of non-globalizers before the 1985-89 period has no meaningful interpretation[10]. It is true that each group of 'globalizers' saw greater increases in growth from the 1975-79 period to the 1995-97 period than did 'non-globalizers'. However, it is *not* the case that all three groups of 'globalizers' saw greater increases in growth than non-globalizers during the *meaningful* period for such comparisons, which in the case of globalizers selected on the basis of reductions in tariffs is only the period from 1985-89 to 1995-97. Dollar and Kraay's own Table 3 (reproduced in part in our Table 1) shows that for the group of globalizers and non-globalizers constructed on the basis of reductions in average tariffs from 1985-89 to 1995-97, non-globalizers saw increases in growth rates of 1.7% for the weighted average (going from –

[10] In order to meaningfully compare the performance of globalizers versus non-globalizers from 1975-79 and 1995-97, one would need to select globalizers on the basis of those that had reduced tariffs the most from 1975-79 and 1995-97, but as Dollar and Kraay point out it is impossible to construct such a group, as they only have tariff data from the 1985-89 period to the 1995-97 period.

0.6% in the 1985-89 period to 1.1% in the 1995-97 period) and 1.3% for the unweighted average (going from –0.4% in the 1985-89 period to 0.9% in the 1995-97 period) as against increases in growth rates for the globalizers of 1.3% for the weighted average (going from 3.6% in the 1985-89 period to 4.9% in the 1995-97 period) and 1.1% for the un-weighted average (going from 1.0% in the 1985-89 period to 2.1% in the 1995-97 period). Thus, for the only period in which it is *meaningful* to compare the performance of globalizers and non-globalizers selected on the basis of reductions in average tariffs (from 1985-89 to 1995-97), non-globalizers actually *outperformed* globalizers in terms of increases in the growth rate of GDP!

Dollar and Kraay state that "Given the problems of measuring trade liberalization that we have discussed, there cannot be a definitive list of recent liberalizers: any one of our three groups of countries constitutes a reasonable candidate set of 'globalizers.'"[11] If it is believed, as Dollar and Kraay appear to, that increases in trade volumes relative to GDP, reductions in tariffs (and the combination of both) are all plausible selection criteria for 'globalizers' (or countries that have pursued rapid trade liberalization) then applying these criteria over meaningful comparison periods must lead to the conclusion that the relative growth performance of globalizers and non-globalizers presents a *mixed* record. Globalizers identified on the basis of changes in trade volumes relative to GDP from 1975-79 to 1995-97 saw greater increases in growth over this period than non-globalizers, while globalizers identified on the basis of reductions in average tariffs from 1985-89 to 1995-97 actually saw smaller increases in growth over this period than non-globalizers.[12]

Tariffs vs. Trade Volumes:

[11] Dollar and Kraay (2001), 8.

[12] There is some evidence that even the result that globalizers identified on the basis of trade volumes had greater increases in growth rates is somewhat dependent upon the period examined. As Rodrik (2000) has noted, using changes in trade volumes relative to GDP from the 1985-89 period to the 1995-97 period leads to the selection of a very different group of 'globalizers,' and one whose growth rates are significantly lower than that obtained by Dollar and Kraay. In particular, the group obtained by Rodrik using the same data but using the same base year for both tariffs and trade volume shows higher growth rates *before* the 1980's and 1990's than after, which would suggest, if anything, that globalization had been detrimental in the later period.

As we have seen, the use of changes in tariffs as the criterion for the selection of globalizers leads to the inference that liberalization is linked to lower growth. Dollar and Kraay may be overly eager to reject the use of average tariffs as a measure of the openness of trade policy, and to favor the use of trade volumes as an alternative. Rodrik (2000) argues that while average tariffs may not accurately capture the degree of protection of relatively more important commodities or the extent of non-tariff barriers, they are nevertheless an important means of capturing the degree of overall openness or restrictiveness of trade policy regimes. This is both because average tariffs tend to be highly correlated with the extent of protection of the most important commodities and because countries tend to employ similar levels of tariff and non-tariff barriers to trade. Rodrik presents a table of countries with the highest and lowest average tariffs, and argues that none of the countries in these groups would be badly misclassified as possessing more restrictive or open trade regimes, respectively. Tariff data is an important source of information on trade policy openness. However, the selection of globalizers on the basis of tariff data leads to results contrary to those claimed by Dollar and Kraay.

Openness: Levels vs. Changes:

Dollar and Kraay refer to the countries with the largest reductions in tariffs or increases in trade volumes in the period that they study as globalizers. Strikingly, however, the countries with the largest reductions in tariffs are those that retain the highest tariffs, and the countries with the largest increase in trade volumes are those with the lowest trade volumes[13]. In what sense are Dollar and Kraay's 'globalizers' really globalizers then? As we mentioned above, 'globalizers' selected on the basis of *reductions* in average tariffs from 1985-89 to 1995-97 had *lower increases* in growth rates over this period. It is true, however, that 'globalizers' selected on this basis had higher levels of growth than 'non-globalizers' in both the 1980s and the 1990s. But 'globalizers' selected on the basis of *reductions* in average tariffs from the 1985-89 period to the 1995-97 period also

[13] See Figures 1 and 2 and Table 3 (reproduced in part in our Table 1) in Dollar and Kraay (2001).

actually had *higher levels* of average tariffs than 'non-globalizers' in both the 1980s and 1990s. The countries with higher levels of average tariffs in the 1980s undertook greater cuts in tariffs from 1985-89 to 1995-97, but still had higher levels of average tariffs after the cuts (in the 1990s). The *greater cuts* in average tariffs were associated with *lower increases* in growth, while the *higher levels* of average tariffs in both the 1980s and 1990s were associated with *higher levels* of growth in both decades. Dollar and Kraay's own data thus seems to suggest, if anything, that when it comes to tariffs, countries with the least open trade regimes perform the best in terms of the growth rate of average income, and that countries that open their trade regimes the least perform the best in terms of increases in the growth rate of average income!

Similarly, as we saw above, the only groups of 'globalizers' selected by the authors that outperform 'non-globalizers' over a meaningful period of comparison are those selected on the basis of having the greatest changes in trade volumes. However, the countries with the greatest change in trade volumes happen to be those with the lowest initial and final ratios of trade volumes to GDP. It is rather surprising in this context to refer to these countries as 'globalizers'. It is possible that countries with higher initial levels of trade volumes initially had rather open trade regimes and simply did not further liberalize their trade policies over the period in question, while countries with lower initial levels of trade volumes were initially more closed and only began to liberalize their trade policies during this period. If this is the case, while it might be true that the latter group had "significantly opened up to foreign trade" over the period, it would be misleading to characterize the former group as those "that have remained more closed", as Dollar and Kraay do. If the purpose of the selection and evaluation of the growth performance of 'globalizers' and 'non-globalizers' is to gain insight into the efficacy of trade liberalization, it would be important to look not only at how much a country liberalized its trade policy over a given period, but at how liberalized that country's trade policy was at the beginning and the end of the period. Dollar and Kraay's results suggest that countries that had the greater increases in trade volumes saw the greater increases in growth, but that countries with greater levels of trade volumes saw lower levels of growth. This would seem to suggest that the effects of trade liberalization on growth are

mixed.[14] In Dollar and Kraay's sample, 'globalizers' selected on the basis of changes in trade volumes relative to GDP are found to have higher increases in growth. However, it is also true that the countries with more open economies (in level terms) had lower increases in growth![15]

2.2 Cross-Country Relationships Between Changes in Trade Volumes and Average Incomes

The authors' second exercise is a cross-country regression analysis of the effects of trade liberalization on growth, using changes in trade volumes as a proxy for changes in trade policy. The authors begin by reviewing many of the problems with the existing literature on this subject. They revisit the difficulties involved in measuring trade policy either directly through tariffs or indirectly through trade volumes. They also note the issue (raised prominently in Rodriguez and Rodrik (2000) and Rodrik (1997)) that causal inferences based on statistical associations found in such regressions are plagued by the possible presence of omitted variables. The 'true' causes of higher growth may be empirically correlated with changes in trade policy (or more specifically with changes in trade volumes) for entirely contingent reasons. For example, macroeconomic stabilization or institutional changes (such as clearer definition of property rights) often take place alongside trade liberalization, although there is no inherent reason for them to do so. If

[14] If anything this pattern might suggest an 'inverse-U-shaped' relation between openness and growth. In this case there might be an 'optimal' level of openness. In particular, a country possessing a trade regime more closed than this 'optimal' level would increase growth by liberalizing, but a country possessing a trade regime more open than this 'optimal' level it would see lower levels of growth.

[15] It is entirely possible (as indeed Dollar and Kraay argue) that levels of trade volumes may be more influenced by variables not related to trade policy (such as geography and institutional factors) than changes in trade policy. We concede that the inference that the level of a country's trade volume is due to its trade policy is *more* problematic than the inference that the *change* in the country's trade volumes is due to change in its trade policy. However, it is nevertheless the case that trade policies *are* among the determinants of the level of trade volumes and (as we argue elsewhere) that there are non-trade policy determinants of changes in trade volumes. For both of these reasons, Dollar and Kraay's inferences are misplaced. In particular, we wish only to point out the anomaly that countries with greater increases in trade volumes had lower initial and final levels of trade volumes, while countries with smaller increases in trade volumes had higher initial and final levels of trade volumes, and to raise the *possibility* that this could be due to the fact that the countries in the former group began and ended the period with more closed trade policies while the countries in the latter group began and ended the period with more open trade policies. In this case, it would not be correct to infer that more open trade policy increases growth, as it may be that

they are omitted from the analysis, then their effect will be misattributed to trade policy. The authors claim that they have taken measures to avoid this problem. In particular, they claim that their focus on the relationship between *changes* in trade volumes and *changes* in growth rates allows them to control for the effect of unchanging factors such as geography and settled institutions on the level of trade volumes. Unfortunately, the approach of Dollar and Kraay is still prone to such problems of omitted variables. One (already mentioned) reason for this is that the effect of omitted country-specific factors that *do* change over time and that influence growth and trade (such as institutions and infrastructure) will be misattributed to trade by this procedure. The authors claim that their focus on *changes* in trade volumes controls for the effect of omitted variables that lead to both growth and trade policy (or trade volumes) and that do not change over time. By their own admission, therefore, the effect of such variables that *do* change over time will be picked up and mis-attributed to trade. Dollar and Kraay suggest that institutions probably do not change much over time, but since their sample spans decades, there is no reason to assume this.[16] Similarly, (as we mentioned above in our discussion of Dollar and Kraay's use of changes in trade volumes as a selection criterion for 'globalizers') there are numerous reasons to believe that higher growth may cause higher trade volumes (rather than the other way around), or that there may exist overlooked third factors unrelated to trade policy (such as the development of domestic infrastructure and the productivity of firms) that are simultaneously the causes both of increased growth and of increased trade volumes.

The second reason is that unchanging non-trade-policy factors (such as geography or institutions) may have *different* effects on trade volumes at *different* points in time, either because of structural changes in the national or world economy (and therefore of the pattern of causal relations that determine trade volumes) or because of 'interaction effects' in which the effect of unchanging factors depends on the effects of changing ones. Changes in the global economic system may have made certain unchanging features of countries (such as their geography) more or less relevant over time to

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the more open trade policy of countries with already high trade volumes that is the *cause* of their lower growth .

explaining the impact of *other* causal factors (including trade policy) on growth [For instance, lower communications and transportation costs might make geography a decreasingly significant determinant of trade volumes]. These effects will not be adequately accounted for simply by including time as an explanatory variable in the regression analysis, as the authors do. There exist additional reasons to question the authors' econometric methodology and results, related for instance to their other attempts to control for the presence of omitted variables[17], and to the possibility that increases in growth are the cause of increases in trade volumes rather than the other way around.[18]

2.3 The Relationship Between Growth in Average Incomes and the Income of the Bottom Quintile

To support their third claim, Dollar and Kraay make reference to their previous paper, Dollar and Kraay (2000), which presents an econometric argument that there is no *systematic* tendency for the share of income possessed by the bottom quintile of the income distribution in countries to change as countries grow. However, this is very different from the claim made by the authors that in any *given* country an "increase in growth rates…leads to *proportionate* increases in the incomes of the poor" (italics added). Although across countries the factor of proportionality between the growth of

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[16] In particular, Rodrik (2000) lists Chile, Korea, and China as counter examples.

[17] Dollar and Kraay also attempt (p.17) to avoid omitted variable bias by including a number of relevant variables. They argue that changes in the variables they choose (government consumption, inflation, and the 'average number of revolutions' and a measure of 'contract-intensive money' supply (bizarrely described as 'rule of law') are less correlated with changes in trade openness than levels of these variables are correlated with the level of trade volumes. However, for a number of the variables examined this is not markedly true, and in at least one instance is simply untrue (see the comparison between correlation in levels and correlation in changes for government consumption/ GDP and for log (1+inflation rate) in Dollar and Kraay's Table 5).

[18] Dollar and Kraay attempt (p.18) to control for 'endogeneity' (the possibility that growth influences trade rather than vice-versa) by using the level of trade volumes in the 1970s as an 'instrument' for trade openness. This strategy makes use of the assumption that trade volumes in the 1970s could not have been 'caused' by changes in growth in the 1990s, and the observation that *chang*e in trade volume in the 1990s is correlated with the level of trade volumes in the 1970s. This is a puzzling strategy as there is no obvious economic rationale as to why later *changes* in trade volumes should be correlated positively with the initial *level* of trade volumes. Moreover, the authors do not account for the possibility that both the level of trade volumes in the 1970s and the changes in growth in the 1990s might be caused by common factors operating over a very long period on the level of trade and on the path growth, such as institutional quality and entrepreneurial capabilities.

average incomes and the average income of those in the bottom quintile of the income distribution may on average be one, this does not imply (indeed it is not the case!) that in most countries the factor of proportionality actually *is* one. Indeed, for many countries in the Dollar and Kraay sample, the factor of proportionality relating the incomes of the bottom quintile and average incomes was either significantly less than or significantly more than one; few saw incomes of the bottom quintile rise exactly (or even nearly) one for one with income. The average result is the consequence of the co-presence of cases in which the income of the bottom quintile rises more than proportionately with average income and cases in which it rises less than proportionately with average income.[19]

Dollar and Kraay are therefore incorrect when, in considering the possible consequences of growth in aggregate income in a specific country (as they do with Burma), they claim that "based on other countries' experiences, there is no reason to expect any large change in household income inequality."[20] Because the majority of countries in the Dollar and Kraay sample *did* see deviations from 'one-for-one' movements between aggregate income and the income of the bottom quintile, if anything it can be expected that Burma would see a change in household income inequality that could be quite substantial.[21] The direction and magnitude of this change would obviously depend upon the structural specificities of Burma's economy. It would be necessary to enquire into these specificities to determine exactly what effects might reasonably be anticipated.

There is little evidence that the income of the bottom quintile will increase 'one for-one' with average incomes in any *given* country (or even in most), as suggested by Dollar and Kraay. Moreover, just what would it mean if this was true? As Ravallion (2001) points out, it would not mean that growth in average income raises the income of the bottom

[19] Ravallion (2001) presents evidence from a sample of 47 developing countries that in 46 percent of the cases inequality rose with changes in income, while in 53 percent of case inequality fell with changes in income.
[20] Dollar and Kraay (2001), 6.
[21] As one can see from a look at Dollar and Kraay's figure 4, the deviations from 'one-for-one' movement between aggregate income and the income of the bottom quintile in the Dollar and Kraay data are in many cases quite substantial. Figure 4 shows that there is a sizable number of cases in which aggregate income increased but the income of the bottom quintile actually decreased.

quintile "by about as much as it raises the incomes of everybody else."[22] A "one-for-one" relation between average income and the bottom quintile as described by Dollar and Kraay implies only that the income of the bottom quintile will increase by the same proportion as does aggregate income, but because the incomes of the poor are smaller than average incomes, the absolute income gain to the bottom quintile will be smaller than that to the non-poor. In particular, the rich will capture a larger share of any given increment to national income than will the poor. As Ravallion (2001) notes: "For example, the income gain to the richest decile in India will be about four times higher than the gain to the poorest quintile; it will be 19 times higher in Brazil. The fact that, on average, the rich will tend to capture a much larger share of the increment to national income from growth than the poor is directly implied by the empirical results in the literature, including Dollar and Kraay." The initial distribution of income determines the amount of income received by the bottom quintile, even if its income rises 'one-for-one' (in Dollar and Kraay's sense) with average income. This can be illustrated by a simple contrast. Under existing patterns of income distribution, a country like Brazil would have to grow at something like five times the rate of Vietnam to achieve the same increase in the average income of the poorest 20 per cent.

Another way to think about the efficacy of growth in terms of poverty reduction under a scenario in which the incomes of the poor rise "one-for-one" with average incomes would be to consider how effective aggregate growth is from the point of view of targeting. If the objective of a policy-maker is to increase the income of the bottom quintile by a certain amount, a completely targeted policy would identify members of this group and increase their incomes by that amount. A completely untargeted alternative would increase the incomes of everyone by the same amount, incidentally increasing those of persons in the bottom quintile in the process. If targeting is costless or inexpensive, then the first policy is a more efficient means of attaining the objective than the second. However, from this standpoint aggregate growth would under the 'one-for-

[22] Description of the Dollar-Kraay results in *The Economist*, May 27, 2000, p.94; taken from Ravallion (2001).

one' assumption be *even less* efficient than a completely untargeted policy: in an unequal society, it would increase the incomes of the non-poor by *more* than those of the poor!

Further, what does any of this concern about the bottom quintile of the income distribution have to do with *poverty*? If what is meant by poverty is the possession of inadequate resources with which to attain a relevant set of elementary capabilities, then the income of the bottom quintile is not a very reliable measure of it. As Foster and Szekely (2001) point out, using the bottom quintile of income distribution as the measure of poverty will overstate absolute poverty in wealthy countries (since many in the bottom quintile will have sufficient access to the material preconditions of basic capabilities) and understate it in poorer countries (since many people with income above that of those in the bottom quintile still will not possess elementary capabilities).

It is also widely recognized that it is necessary to account not only for the extent of deprivation (just how many poor people there are) but also for the depth of deprivation (just how poor the poor are). To address this concern, Foster and Szekely adopt a family of measures they call "general means". These measures aggregate the wealth of each person in a society, but give a person progressively less "weight" in the aggregate the more wealth the person has. Such measures are 'absolutist' in that they focus on the absolute level of real incomes, but do not employ an arbitrary poverty line, and incorporate concern for the depth of poverty by giving more weight to a person the poorer the person is. Using a set of 144 household surveys from 20 countries over 25 years, Foster and Szekely examine the relationship between average incomes and poverty as measured by the class of "general means." They find that poverty as measured by general means that are sufficiently sensitive to the bottom of the income distribution decreases significantly less than 'one-for-one' with increases in average income. Moreover, they find that the more sensitive to the lowest incomes a 'general mean' measure of poverty is, the less it increases with increases in average income (i.e. the lower the factor by which the general mean measure will increase for a given increase in average income). Thus, if a measure of poverty that is sensitive to the bottom of the income distribution is used, it *does* appear that there is a systematic discrepancy between

the rate of growth of average incomes and the rate of poverty reduction, and moreover that growth is *less* effective at reducing poverty the *more* weight one gives to the very poorest people.

Dollar and Kraay do not present convincing evidence that increased trade liberalization leads to growth in average incomes or that growth in average incomes reduces poverty 'one-for-one' in a sense that is relevant to policy selection. The authors' strategy of identifying a group of 'globalizers' that supposedly experienced both more trade liberalization and more growth is dogged by problems. The criteria adopted to select 'globalizers' are deeply flawed. 'Globalizers' selected by the authors on the basis of their reductions in average tariffs from the period 1985-89 to the period 1995-97 actually performed slightly *worse* in terms of increases in growth than non-globalizers over this period; it is only by selecting globalizers on the basis of changes in trade volumes (a suspect criterion, particularly because of its weak relationship to trade policy) or by undertaking an inappropriate comparison over mismatched time periods, that Dollar and Kraay come to their conclusions. Countries with large increases in trade volumes often have low levels of trade, casting doubt on whether they can really be characterized as 'globalizers'.

The cross-country regression analysis of changes in growth in relation to changes in trade volumes fails adequately to isolate the effect of trade liberalization on growth. Many factors other than trade policy affect the size of trade volumes. The use of changes rather than levels of trade volumes does not avoid this problem, as it neither controls fully for the influence of time-invariant factors that influence trade volumes in a varying way over time, nor for important omitted variables (such as the quality of infrastructure and institutions) that do change over time.

In conclusion, consider the authors' claim that trade-induced growth will reduce poverty because, on average across countries, the income of the bottom quintile of the population rises in the same proportion as does average income. The jump from this proposition to

the conclusion that poverty reduction strategies should focus heavily on producing growth in aggregate incomes is unjustified. Even if proportionate changes in the income of the bottom quintile were on average the same as proportionate changes in average income, this fact would have *no* policy implications for any *specific* country. Further, even if this were true in a particular country, it would not imply that the bottom quintile benefits to the same *extent* as does the rest of the nation from an increase in national income. There is also evidence that the incomes of poor (as distinguished from those of the bottom quintile of the income distribution) do grow at a slower rate than do average incomes. In particular, there is some evidence that the factor of proportionality between growth in average incomes and growth in the incomes of the poor becomes progressively smaller as poorer people are considered. Finally, the entire distribution of possible outcomes is of importance to decision-makers. It is insufficient to know the mean outcome resulting from a particular policy choice in order to justify making that choice. The variance of outcomes and other features of the distribution are also of relevance in any decision-making process. For this reason, Dollar and Kraay's result concerning the factor of proportionality between the growth of average income and the income of the bottom quintile of the income distribution would be of rather limited value, even if it held. However, as we have argued above, there is in fact reason to think that the link between the incomes of the *poor* and average incomes is much weaker than suggested by Dollar and Kraay.

The relations between trade, growth, and poverty are real, but our understanding of the links is not advanced by the supposition that these links are simple.

3. The Effect of Trade on Aggregate Income:

Among the strongest arguments for trade liberalization is that under certain circumstances it can be expected to raise the aggregate real income of a society.

Arguments of this kind go back to the very birth of modern economics in the eighteenth century.[23]

A higher national income can have significance for poverty reduction in two distinct respects. The first is that if it is not accompanied by change to the distribution of relative incomes that harms the poor, it implies an improvement in the absolute level of their incomes. The second is that it makes available a larger level of resources out of which to finance poverty reduction activities.[24]

Arguments that trade can be expected to increase the total national income are of two types. Arguments concerning the *static* consequences of trade stress the ability of trade liberalization to raise the *level* of income in a one-time but lasting way. These arguments emphasize the role of trade liberalization in causing improvements in the allocation of resources. Arguments concerning the *dynamic* consequences of trade stress the ability of trade liberalization to improve the level of income *growth* in an ongoing way. These arguments emphasize the role of trade liberalization in creating lasting enhancements in the conditions in which processes conducive to growth, such as learning and innovation, take place.

The majority of the arguments of traditional trade theory clarify the potential static advantages of trade. However, it is generally thought that some reference to dynamic advantages is necessary if the very high benefits often ascribed to trade are to be offered a credible rationale. We briefly survey below the most prominent arguments (and qualifications to these arguments) in both of these categories.

3.1 Static Consequences of Trade

[23] Most famous among these are of course the arguments raised by Adam Smith in *The Wealth of Nations*.
[24] This is true, at least, if raising revenues for such activities does not entail strong distortional effects that in turn reduce national income (for example, through the effect of taxation on work effort and the allocation of resources).

In this section we focus on arguments as to how freer trade may effect one-time increases in the level of national income, through its consequences for the allocation of resources.

The most influential idea of this kind, famously associated with David Ricardo, is that trade permits countries to specialize in the production of goods in which they have a 'comparative advantage'. At given international prices, such specialization allows them to expand their effective income. Irrespective of the final goals of national consumption, these goals can be best satisfied by taking advantage of opportunities provided by international trade to produce and sell goods which the country can produce more cheaply relative to other goods than other countries can, and using the resources thus earned in turn to purchase goods on the international market from the countries that can produce the goods being purchased most cheaply relative to other goods. The result is an increase in the total level of real income for all countries. This "Ricardian' account of the benefits from international trade depends in its simple form on the ability to express relative unit costs of production in terms of a single metric, usually labor input. The core 'Ricardian' theorem regarding the pattern of trade is then that, when trade occurs[25], a country exports that commodity in which it has comparative productivity advantage.[26] However, even this result is indeterminate in the more realistic case in which there are both multiple goods and multiple countries.[27] Nevertheless, the Ricardian approach offers the conceptual foundation for the idea that gains in aggregate income emerge from the opportunity that trade offers to exploit differences in the relative productivity with which different tasks can be done across countries.

An important extension of this idea that underlies modern trade theory as reflected in the 'Hecksher-Ohlin' model is that the comparative productivity advantages of countries in

[25] Whether trade occurs at all may depend on the nature of consumer preferences as well as on the level of transport costs, tariffs etc.
[26] See Bhagwati, Panagariya and Srinivasan (1998).
[27] When there are only two countries and multiple goods, it can be shown that each country will export a range of goods in which it has relatively higher productivity and import a range of goods in which it has relatively lower productivity. However, when many goods and many countries are allowed, no such clean prediction is possible. Although, free trade equilibrium will still correspond to an efficient allocation of production tasks across countries, this assignment of tasks will not in general lend itself to a simple characterization [Ethier (1984)].

the production of different goods are determined by their available supply (known as endowments) of potential inputs to the production process (known as factors of production). The central economic insight of this approach is that the relatively ample endowment of particular factors of production (such as capital or unskilled labor) in particular countries creates downward pressure on their relative price in that country, if countries have similar production technologies. It will accordingly be possible to produce more cheaply the goods that consistently require the more intensive use of particular factors of production in countries in which those factors of production are more abundantly available. A rationale for gains from trade corresponding to that in the Ricardian model emerges as a result. Countries with relatively large endowments of particular factors of production can raise their real income by exporting goods employing these factors intensively in the production process to countries with relatively small endowments of the same factors, and purchase in turn the goods that they require on the world market from other countries that can produce those goods relatively more cheaply - in view of *their* different relative endowments of the factors of production. The result is once again an increase in the level of total national income as a result of participation in international trade. [28] The core Hecksher-Ohlin 'theorem' that corresponds to this intuition can be stated as follows: when trade occurs, each country exports the good that is produced by making relatively intensive use of the country's relatively abundant factor. However, this result is not fully robust to the extension of the model to multiple goods, factors and countries.[29]

Economic theory has constructed a series of persuasive arguments as to how trade liberalization may lead to an increase in the level of aggregate national and world income, especially through the improvements that it effects in the allocation of production activities across countries. However, it also recognizes a series of reasons why trade liberalization may not have this effect. Foremost among these reasons is the

[28] However, as discussed below because this increase is accompanied by distributional changes it may not be possible to say that there has strictly speaking been a rise in the *real* income of all residents of a country in the absence of suitable compensatory transfers.

[29] In particular, analogous results can be established when the number of goods is greater than or equal to the number of factors, but not when the opposite is the case [see e.g. Ethier (1984)].

possibility that individual firms or countries may possess actual or potential market power. For instance, a country that is a large exporter or importer of a commodity may enjoy a degree of market power that causes the imposition of trade restrictions to lead to increases in real national income when compared with free trade. Such improvements are only from the perspective of a particular country and will not generally exist from a world point of view. This issue may however be of considerable significance for developing countries that jointly or individually enjoy a significant share of world production of a specific primary commodity or other good. More generally, departures from the assumptions of perfect competition in goods and factor markets may be of great significance in the determination of the level of aggregate income as well as its distribution, as these departures will influence the propensity of domestic market actors to respond to price signals created by trade liberalization. For instance, higher prices for exportable goods may not create significant output responses in cases in which the monopsonistic structure of wholesale markets significantly dampens the transmission of international price signals to local producers.

A still deeper issue is that high domestic transactions costs (due to lack of internal infrastructural development, poor development of entrepreneurial skills, credit markets and so forth) may cause certain goods that have the potential to be traded in international markets not to be. The potential gains from trade may in substantial measure fail to be reaped in this case, although they may still be realized in relation to those goods that are actually traded.

The presence of increasing returns to scale in production can cause trade liberalization to have complex effects. On the one hand, by enlarging demand multilateral trade liberalization can increase the ability of firms in any one country to reap the available economies of scale, to reduce unit costs and thereby to increase national income. On the other hand, in industries with significant economies of scale, trade liberalization may reduce the viability of firms that previously produced only for the national market, with the support of protection. This will concentrate production in a smaller number of firms throughout the world, both lowering their unit costs and increasing oligopolistic power,

and potentially causing a reduction in national income in countries losing industries. An increase in world income will however generally still result from multilateral trade liberalization in such scenarios.

Finally, trade liberalization can have effects different from those standardly anticipated when resources are not fully employed. When there is 'slack' in the economy, the effect of trade liberalization on demand and thereby on total employment has to be added to the usual considerations.[30] Depending on the reasons for unemployment and its form, these effects can be of various kinds.[31] In particular, re-allocation of production activities across sectors as a result of trade liberalization can be expected to have 'multiplier effects' in the presence of underemployment equilibria. The net impact on employment will depend on the employment multipliers associated with activity in different sectors. A last issue is that if trade liberalization increases the degree of competition among firms, this can lead to a one-time increase in output and therefore employment, because of the effect of competition both on output decisions and on firm-level productivity.[32]

Trade theory generally supports the view that there are one-time increases in total national income to be realized from liberalized trade.

3.2 Dynamic Consequences of Trade

[30] The view that the consequences of trade should be considered in the context of their effects on underemployment equilibria is expressed famously by John Maynard Keynes in Chapter 23 of *The General Theory of Employment, Interest, and Money*. He writes there that "it will be essential for the maintenance of prosperity that the authorities should pay close attention to the state of the balance of trade", although "There are strong presumptions of a general character against trade restrictions unless they can be justified on special grounds".

[31] For instance Brecher (1974a, 1974b) has studied cases in which a rigid 'minimum' real wage leads trade liberalization to generate a decrease in production and 'social welfare', although it may also cause a decrease in unemployment. This outcome is however predicted to result only for countries that export capital intensive goods, which are likely to be more developed. Countries exporting labor intensive goods are predicted to experience beneficial effects.

[32] On the former issue, see Chao and Yu (1997) and Reddy (2000). On the latter see for example Pavcnik (2002).

In this section we focus on arguments as to how freer trade may effect an enduring increase in the rate of growth of aggregate income. As mentioned above, although few arguments of traditional trade theory are of this kind, the view that substantial and sustained gains are to be had from trade liberalization invariable emphasizes some form of dynamic argument.

A highly influential argument of this kind, first expressed powerfully by Adam Smith, is that by widening the size of the market effectively faced by producers, trade liberalization raises the capacity and incentive for innovation. Smith emphasized that a wider market enables the fuller development of the division of labor. Smith suggests this effect has ongoing dynamic consequences, as the rate of innovation increases when the division of labor becomes more detailed, due to the attention that workers are able to offer to potential improvements in more numerous and detailed dimensions of the work process. A related argument is that in an oligopolistic environment, increased competition among producers caused by widening of the size of the market may generate heightened pressures for firms to undertake product innovation as well as to engage in price competition. Finally, a larger size of the market increases the rewards to innovation and thereby may increase its pace.[33]

The pace of innovation can also be increased as a result of the fact that trade in goods can help to transmit technological change. In particular, trade liberalization can facilitate access to capital goods and intermediate inputs that permit more advanced technologies embodies in these inputs to be employed in developing countries. This may have both an immediate effect, as LDCs catch up to the technological frontier, and an ongoing effect, as LDCs are able to stay closer than they were previously to the expanding world frontier of technological innovation. As access to intermediate inputs may also make foreign direct investment more attractive than previously, trade liberalization can also have indirect consequences for encouraging the transfer of technology. Finally, to the extent that trade liberalization increases the attractiveness of exporting goods by changing domestic resource costs in favor of the manufacturers of exportable items, it also

[33] See Romer (1986) and Grossman and Helpman (1993).

increases the incentives for technological innovation in order that producers may produce products that are competitive in both price and quality terms in export markets.

Economic theory also suggests, however, that trade liberalization may not always have positive consequences for growth. Among the reasons why it may not do so are that trade liberalization may lead to allocations of resources that are statically but not dynamically optimal[34], that it may have an impact on savings behavior and demand patterns that has adverse consequences for growth, and that it may impair the ability of government to engage in other growth enhancing activities.

An example of an argument of the first kind, concerning the divergence between static and dynamic optimization, is the idea that countries may specialize excessively in slow growing sectors with static demand such as the production of primary commodities. It may however be more dynamically advantageous (that is, superior over time) for countries to invest early in sectors that face rising demand, despite the lack of apparent current market rationale for pursuing such a strategy. [35] Similarly, the presence of 'learning by doing' may cause industry to be too small under free trade as a result of the failure on the part of individual firms to internalize the benefits of their activity to the future productivity of industry as a whole. [36]

An example of an argument of the second kind pertaining to the effects of trade liberalization on savings behavior and demand patters is the famous view of David Ricardo that the repeal of the protectionist Corn Laws would lead to gains from growth. Ricardo thought that a repeal of the Corn Laws would lower food costs and thereby lead to a decrease in nominal wages, occasioning a rise in the profits of capitalists (who

[34] See the discussion of an argument by Pranab Bardhan in Findlay (1984). Similar arguments are associated with Findlay (1973)].
[35] It is said that officials of the Japanese Ministry of International Trade and Industry historically used exactly this criterion in determining long run sectoral investment priorities. For related examples, see especially Amsden (1989), Johnson (1982), and Wade (1990).
[36] This argument depends upon the presence of some form of externality (such as positive spill-over effects from learning by doing on the part of firms), some form of credit constraint faced by firms, or on the (contestable) ability of government better to foresee the pattern of trends across current and potential industrial sectors than can individual firms.

Ricardo conceived of as saving and investing a good deal) and a decrease in the rents of landlords (who Ricardo conceived of as saving little) leading to an increase in aggregate savings and investment that would increase growth. Free trade in this perspective could be expected to raise the rate of growth in an ongoing way. Related arguments have been developed in the modern literature by Findlay (1973, 1984). Findlay (1984) points out that the Ricardian logic requires that the effect of freer trade on corn exporting regions may be the *opposite* of that in corn importing ones. In this respect, "critics of free trade orthodoxy…may not necessarily have been totally off the mark in their belief that the free trade mechanism somehow benefited the already advanced center at the expense of the less developed periphery". In the contemporary context, the logical counterparts to the unproductive landlords of Ricardo's argument would be primary commodity producers in general, including exporters of minerals and oil (one can think of governments wielding monopolistic control over these resources that have been captured by rapacious interests, or foreign investors who divert the savings realized from resource extraction elsewhere, as being the closest counterpart to Ricardo's landlords).[37]

An example of an argument of the third kind (concerning the impact of trade liberalization on the ability of governments to undertake other activities relevant to growth) is that trade liberalization may impair one of the most important and heavily relied upon tax handles available to governments in developing countries (namely customs revenue)[38], and as a result diminish the ability of government to finance infrastructural development, investment in the knowledge and skills of is citizens, and other activities vital to achieving sustained growth. On similar lines [see Rodrik (1997, 2001)] if achieving liberalized trade is difficult for governments, the costs and benefits of pursuing it must be viewed carefully. Trade liberalization requires that countries bargain

[37] The 'North-South' models of the 1970s (succinctly surveyed by Findlay (1984)) offer a range of implications as to how freer trade may influence growth in the South by affecting the pattern and extent of Northern demand for Southern products. Under free trade, the North becomes the South's 'engine of growth'. As the North's growth slows due to diminishing returns (as expected in the influential Solow growth model) this also causes slower Southern growth. This is a systemic implication concerning the long-run trajectory of an integrated world economy and is unlikely to imply that individual Southern countries should not pursue the gains from trade, although it may have some implications for the approach to trade liberalization that should be pursued by developing countries as a whole.

[38] On this reliance, see for instance Burgess and Stern (1993).

with others (for instance in the context of the WTO) to enter multilateral trade liberalization arrangements, and may be required to make domestically costly political concessions in the process. Even unilateral trade liberalization may be costly politically (for instance, due to the presence of protected industries that have strong political lobbies). If a country lacks "fundamentals" such as political stability, infrastructure, and human knowledge and skills, trade liberalization may do very little to increase growth relative to other policies. If a country is in a position in which it must choose due to the presence of political 'constraints' either to engage in trade liberalization or some alternative policy, it may be that trade liberalization should be foregone in the short run in the interests of a more growth-inducing alternative.

3.3 Empirical Evidence on the Relationship between Trade Liberalization and Aggregate Income

The predictions of economic theory concerning the effects of trade liberalization on aggregate income in the long run are not un-ambiguous and depend upon a variety of factors (such as market structure, the nature of technologies employed, the nature of processes of technological learning etc.). An empirical literature has therefore emerged attempting to identify the relationship between trade liberalization and aggregate income (especially growth).

The major empirical studies on trade and growth undertaken prior to 1992 were surveyed by Sebastian Edwards (1993). While Edwards cites the usefulness of studies that have undertaken detailed analyses of individual country experiences, he concludes that the segment of the literature that attempted to employ statistical regressions to identify systematic patterns existing across large numbers of countries were largely unsuccessful:

> …the cross-country regression based studies have been plagued by empirical and conceptual shortcomings. The theoretical frameworks used have been increasingly simplistic, failing to address important questions such as the exact mechanism through which export expansion affects GDP growth, and ignoring potential determinants of growth such as educational attainment. Also, many papers have been characterized by a lack of care in dealing with issues related to endogeneity and measurement errors. All of

> this has resulted, in many cases, in unconvincing results whose fragility has been exposed by subsequent work.[39]

Moreover, as Rodriguez and Rodrik (2000) have pointed out, much of the literature Edwards criticized focused on the relationship between trade volumes and growth, and not trade policy liberalization *per se*. As we point out in our critique of Dollar and Kraay (2001) in section 2 above, many factors other than trade policy affect trade volumes ,and it is possible that causation runs from higher growth to higher trade volumes rather than from higher trade volumes to higher growth. As a result, understanding the relationship between trade volumes and growth is insufficient to understand the relationship between trade policy and growth.

Several influential papers have come on the scene after those surveyed by Edwards (1993). Two of the most prominent among them have been Dollar (1992), and Sachs and Warner (1995). Dollar (1992) claims to find that greater openness to international trade was associated with higher growth rates for a sample of 95 developing countries over the period 1976-1985, using a measure of the 'distortion' and a measure of the variability of the real exchange rate as indicators of the outward orientation of countries. Dollar explains the use of these measures as indicators of outward orientation as follows: "the index derived here measures the extent to which the real exchange rate is distorted away from its free-trade level by the trade regime"[40] and "High price levels indicate strong protection and incentives geared to production for the domestic market, whereas low price levels reflect relatively modest protection and incentives oriented to external markets."[41] Sachs and Warner (1995) construct a measure of "openness," that qualifies a country as "closed" in case it possesses any of the following characteristics: a level of average tariffs in excess of 40%, non-tariff barriers that covered a percentage of imports in excess of 40%, a socialist economic system, a state monopoly on major exports, or a black market premium that exceeded 20% over the 1970s or 1980s. They find that this measure has a highly and robust association with economic growth.

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[39] Edwards (1993), 1389.
[40] Dollar (1993), 524.
[41] Dollar (1992), 539.

In an important recent paper, Francisco Rodriguez and Dani Rodrik (2000) have comprehensively scrutinized the most influential papers in this literature and subjected them to an incisive critique. Rodriguez and Rodrik raise several deep problems with the interpretation of the 'distortion' and variability of the real exchange rate as a proxy for the openness of trade policy. First, while higher import restrictions will result in a higher level of domestic prices relative to what would be experienced under free-trade, export restrictions will result in a lower domestic price level. Hence, a measure of real exchange rate 'distortion' will vary positively with import restrictions but negatively with export restrictions. One result, as Rodrik and Rodriguez point out, is that "economies that combine import barriers with export taxes…will be judged less protected than those that rely on import restrictions alone."[42] If countries that experience lower growth do so because of the presence of lower export taxes (which may for instance finance productivity-enhancing public goods) rather than the presence of higher import restrictions, then it may be falsely concluded that a less restrictive trade policy is a cause of growth. The authors also point out that for 'distortions' in the real exchange rate to measure the effects of trade policy, the "law of one price" must hold. i.e. in the absence of transport costs and tradable goods prices must be identical in all countries. However, there is reason to doubt that the law of one price holds and that transport is costless. If domestic prices vary relative to world prices due to changes in nominal exchange rates influenced, *inter alia*, by domestic monetary and nominal exchange rate policy, the measure of distortion will capture the effects of these factors as well, and not just the effects of trade policy. Indeed, when Rodriguez and Rodrik regress Dollar's measure of real exchange rate distortion onto several variables including two measures of trade policy (a measure of tariffs and a measure of quotas), it turns out that the measures of trade policy are negatively associated with the distortion measure! Third, Rodriguez and Rodrik cast doubt upon the relevance to trade policy of the measure of the variability of the real exchange rate. It seems to measure economic instability at large more than it does anything else. Finally, Rodriguez and Rodrik note that Dollar's regressions of economic growth do not control for other important determinants of country growth in GDP per capita such as initial income, education, and regional location. When the

[42] Rodriguez and Rodrik (2000), 17.

authors replicate Dollar's results and proceed to include these controls, the measure of real exchange rate 'distortion' loses its statistical significance. Although the real exchange rate variability measure retains significance, as the authors point out the relationship between this measure and trade policy is entirely unclear.

Rodriguez and Rodrik also scrutinize the Sachs and Warner measure of openness and enquire into whether or not any of its five sub-criteria for classifying countries as closed are primarily responsible for its robust association with economic growth. They find that the association of the Sachs and Warner measure with growth derives overwhelmingly from the role of two of its component criteria: having a state monopoly on major exports and having a black market premium that exceeded 20% over the 1970s or 1980s. Rodriguez and Rodrik find that an alternative measure that selects countries on the basis of just these two criteria is just about as highly and robustly associated with growth as the five-criteria Sachs and Warner measure, and that the other three component criteria (a level of average tariffs in excess of 40%, non-tariff barriers that covered a percentage of imports in excess of 40%, and a socialist economic system) are not associated with growth at conventional levels of statistical significance. Having determined that the association of the Sachs and Warner openness measure with growth is driven primarily by the criteria of state monopolies on major exports and black market premia, Rodriguez and Rodrik enquire as to the extent to which either of these criteria are really measures of the openness of trade policy. They find that because the countries were classified according to the black market premium criteria on the basis of a World Bank study that focused exclusively on 29 African economies undergoing structural readjustment, only African countries are included due to this measure, and so its effect may pick up and misattribute to trade policy other causes of poor growth in Africa[43]. Rodriguez and Rodrik also criticize the use of the criterion of whether countries have had a sustained black market premium of over 20%. It is likely that this measure picks up country characteristics detrimental to growth other than trade policy. As the authors point out:

> Such levels of the black market premium are indicative of sustained macroeconomic imbalances. Overvaluation of this magnitude is likely to emerge (i) when there is a deep

[43] It is also the case that well performing African countries that were not undergoing structural readjustment, such as Mauritius, were excluded from consideration.

> inconsistency between domestic aggregate demand policies and exchange rate policy, or (ii) when the government tries to maintain a low level of the exchange rate in order to counteract transitory confidence or balance of payment crises. Such imbalances may be sparked by political conflicts, external shocks, or sheer mismanagement, and would typically manifest themselves in inflationary pressures, high and growing levels of external debt, and a stop-go pattern of policy making. In addition, since black market premia tend to favor government officials who can trade exchange rate allocations for bribes, we would expect them to be high wherever there are high levels of corruption. Therefore, countries with greater corruption, a less reliable bureaucracy, and lower capacity for enforcement of the rule of law are also likely to have higher black market premia.[44]

Rodriguez and Rodrik report that when measures of such country characteristics that are likely to harm growth are included in regressions, the overall openness measure and the black market premium lose their statistical significance, giving strong support to the view that the Sachs and Warner openness measure is actually measuring poor political and macroeconomic performance rather than the effect of trade policy.

The authors survey other papers on the relationship between trade policy openness and growth and reach the conclusion that there have generally been either serious methodological problems the correction of which leads to much weaker results, or that the measures employed have only a weak link to trade policy. They also present evidence that, when direct measures of trade policy (average tariff rates and a coverage ratio for non-tariff barriers to trade) are used, there is no statistically significant relationship between trade policy openness and economic growth. The authors concede that there are potential problems with the use of these direct measures of trade policy, including the fact that that average tariff rates may obscure the true effects of tariffs, that the level of enforcement of trade barriers may vary, and that non-tariff coverage ratios may not discriminate between highly restrictive barriers and barriers that little effect. However, they claim that direct measures such as average tariffs and non-tariff barrier coverage ratios are good overall measures of the openness or restrictiveness of trade policy regimes, and that no existing papers have presented much in the way of evidence to the contrary. Rodriguez and Rodrik (2000), suggest that the existing literature is inconclusive as to the existence of a systematic relationship between growth and trade policy.

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[44] Rodriguez and Rodrik (2000), 32.

4. The Effect of Trade on the Distribution of Income Among Factors of Production

The single most important result in the theory of how trade may affect the distribution of income among factors of production is the Stolper-Samuelson theorem. The theorem specifies conditions under which trade liberalization will under the Hecksher-Ohlin framework raise the real rate of return to a relatively abundant factor of production and lower the real rate of return to a relatively scarce factor of production in a country. In its classic form [see Stolper and Samuelson (1941)] the result states that when there are two countries, which employ identical technologies to each produce the same two goods out of the same two underlying factors of production, then trade liberalization will cause the real rate of return to the factor that is relatively abundant in a country (i.e. in which the country has the larger share of the world supply) to rise, and cause the real rate of return to the factor that is relatively scare (i.e. in which the country has the smaller share of the world supply) in a country to fall. [45] A rough way of thinking about the logic of this result in terms of a simple economic intuition is that trade offers a way of *implicitly* trading factors of production between countries, in a manner that is embodied in exported commodities. In this way, it lowers the effective scarcity of the scarce factor in a country and lowers its rate of return, whereas the opposite is true for the abundant factor. The surprising element in the Stolper-Samuelson theorem is that these effects hold in terms of the *real* rate of return to factors of production, measured as their return in terms of each of the goods, despite the facts that trade liberalization causes the relative price of the exported commodity to rise. [46] If developing countries are thought to possess labor abundantly and developed countries are thought to possess capital abundantly, then in the

[45] Specifically, the result proved by Stolper and Samuelson is that "*International trade necessarily lowers the real wage of the scarce factor expressed in terms of any good*".

[46] How surprising this result was when first shown is made clear by the following statement of Stolper and Samuelson (1941): "..in the beginning we expected to do no more than delineate factors which would indicate a likelihood in one direction or another, and only in the course of the investigation did we discover that unambiguous inferences were possible."

simplified picture of the Stolper-Samuelson theorem trade liberalization can be expected to raise wages in developing countries and lower them in developed countries.

Despite this result, which has been heavily relied upon in the literature[47], the Stolper-Samuelson theorem rests on a series of assumptions, to which it is not wholly robust. Most important among these are assumptions that countries' relative factor endowments are not widely divergent, that the technologies being employed are such that they can be unambiguously ranked according to the degree of their factor intensity (the factor intensity assumption) and that they show constant returns to scale, that the number of countries, factors of production and products is such that the model generates clear results, and that perfect competition among firms prevails. Let us consider the most important of these issues in turn.

First, the theorem requires the rather strong assumption that factor endowments in countries are adequately similar. If they are not, then countries will be likely to specialize completely in the production of a particular good, in which case the Stolper-Samuelson theorem does not apply. The theorem requires the condition that countries specialize incompletely – i.e. all goods are produced in all countries. However, this assumption is observably false.

Davis (1995) has reexamined the effects of trade liberalization upon the distribution of income among factors under departures from the assumption that world factor endowments are sufficiently similar for countries to engage in a diversified (incompletely specialized) pattern of production. In this case, the predictions of the Stolper-Samuelson Theorem that trade liberalization will shift the income distribution in favor of labor if a country is labor abundant relative to the world as a whole no longer hold. If world factor endowments are sufficiently disparate, some countries will cease to produce some goods altogether. However, factor prices *will* equalize across the countries that possess sufficiently similar factor endowments that they produce the same goods.

[47] See for instance the influential work of Ann Krueger on the effects of trade liberalization on LDCs.

Patterns of endowments that cause countries to produce the same set of goods are referred to as "cones of diversification." Davis shows that if all countries do not have sufficiently similar factor endowments, then the Stolper-Samuelson result will only hold for countries *within their cone of diversification*. That is, when countries liberalize trade, the effect of this liberalization on the distribution of income to factors depends upon whether the country possesses a given factor in relative abundance not with respect to the world as a whole but with respect to the other countries within its cone of diversification. Thus, even if an LDC is labor abundant relative to the rest of the world, and (considering the scenario in which there are two factors of production – labor and capital) it is capital abundant relative to other countries with similar factor endowments producing the same goods, wages may fall as a result of trade liberalization. In the words of Davis (1996), "countries which are labor abundant in a global sense may see wages decline if they are capital abundant in a local sense". This powerful qualification of the well-known result of the Stolper-Samuelson theorem takes place if the standard assumptions are to better accord with reality. Factor endowments of countries *are* dissimilar rather than similar.

The technological assumptions of the Stolper-Samuelson model are that countries possess identical technologies, that there are no 'factor intensity reversals', and that there are constant returns to scale. Each of these assumptions is subject to contestation. The assumption that countries possess the same technologies does not seem to accord with reality. The assumption that there are no factor intensity reversals (in other words that regardless of factor prices, it is consistently profitable to produce one of the goods in a more capital intensive manner than the other) seems also to meet with some empirical repudiation. The case of agriculture is discussed in this regard in the next section.[48]

Finally, the theorem is not fully robust to being extended to more realistic environments of multiple factors, goods and countries. Although under certain conditions, analogues to

[48] If increasing returns to scale exist, then the Stolper-Samuelson result can be overturned, as lowered tariffs can in principle diminish the extent to which economies of scale in the production of goods are realized and thereby raise the costs of goods consumed by workers to a sufficient degree that it lowers their real wages. However, this result holds only for 'large' economies in which world prices are influenced by the economy's level and form of activity, and so this result may be of limited consequence for most countries. On this see Bhagwati, Panagariya and Srinivasan (1998).

the basic Stolper-Samuelson result can be proved (in which movements in the price of specific goods are associated with movements in the rate of return to particular factors) these have no natural interpretation. Moreover, in certain cases (in particular the case of more factors than goods) even this conclusion cannot be extended to every factor of production.[49]

The possible dangers in generalizing from the Stolper-Samuelson results from the most simplified model to empirical cases, especially in the context of multi-lateral trade liberalization, are demonstrated by the complex income distribution dynamics recently observed in many lower-middle income countries beset simultaneously by adjustment pressures from low income labor abundant countries and from high income capital abundant countries. Recent careful empirical work suggests that in many such countries (such as Mexico) the wages of unskilled workers have fallen relative to those of skilled workers, in seeming contradiction to the predictions of the simplified Stolper-Samuelson theorem that the rate of return to the abundant factor in a country should increase.[50] This phenomenon is better rationalized by the view that there exists a world ladder of production in which competitive pressures are exerted among adjoining countries than that under multilateral trade liberalization workers in all low and middle income countries can expect to benefit from the aggregate relative abundance of their labor on a world scale. Two multi-country studies done by the NBER and the World Bank confirm the view that the Stolper-Samuelson results in their simplest form are not greatly consistent with empirical observations.[51]

Further, the Stolper-Samuelson theorem is based on the assumption that perfect competition among firms prevails. However, if there is imperfect competition among

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[49] See Ethier (1984).

[50] See for instance Feenstra and Hanson (1995), Feliciano (1996), Hanson and Harrison (1995), Harrison and Revenga (1995), Harrison (1994, 1999), Harrison and Leamer (1997), Harrison and Hanson (1999), and Robbins (1996).

[51] Davis (1996) quotes Bhagwati (1978) on the NBER study as follows: "The functional distribution of income, while it can be strongly related to foreign trade regimes in theoretical analysis (e.g. the familiar Stolper-Samuelson Theorem) does not appear to show anything like a strong and reliable relationship in the Project studies". He quotes similarly the authors of the World Bank study as saying: "What does the evidence show?..in most cases it is hard to be sure".

firms, and as a result 'rents' (or profits above the competitive level) exist, then wages will generally incorporate an element of rent sharing as well as reflect the marginal product of workers. In this case, trade liberalization will potentially affect wages through its influence on firms' total rents and on the rent-sharing process, as well as on wages. As shown in Reddy (2000) this can lead wages to fall rapidly, potentially undermining the Stolper-Samuelson result that wages of workers in labor abundant countries will rise. It may be objected that rant-sharing is likely to be of limited significance to wage determination in the least developed countries. However, it is likely to be of some importance in middle income countries, and in the organized sector even of poor countries. This may be of indirect consequence for poverty reduction, as demand spillovers and intra-community or intra-family transfers may provide a 'transmission belt' through which the lowering of wages for non-poor workers causes the lowering of the incomes of the poor.

Further, it is necessary to note that the labor markets of many developing countries may have a form rather distant from that implicit in the Hecksher-Ohlin model. In particular, if LDCs are better described by the (infinitely?) elastic labor supply assumption famously introduced by W. Arthur Lewis (incorporating the idea that a vast pool of labor is ever available from rural hinterlands and other sources), then the benefits of increased trade exporting labor-intensive commodities will be realized in the form of higher employment rather than of higher wages. The impact of trade on poverty reduction may be accordingly limited. Whether poverty is reduced will depend on how much superior the new employment opportunities are to those otherwise available.

A final issue of potentially great importance in LDCs is the presence of a significant sector of the economy devoted to non-tradable commodities. The factors of production used intensively in the production of non-tradable items may not experience an increase in return as a result of aggregate gains from trade, if there is not a substantial increase in demand for these factors elsewhere in the economy or if they are not greatly mobile, and if the increase in demand for non-tradable commodities is small (due to a low income elasticity of demand for such items). Under such conditions, workers producing non-

tradable commodities can be harmed by trade-liberalization induced increases in the price of the exportable commodities that they consume (although of course they can also be benefited by decreases in the price of imported commodities).

5. The Effect of Aggregate Incomes and Factor Distribution on Poverty

It is not enough to understand the effects of the liberalization of trade policy on national income per capita and its distribution among factors in order to understand its impact on poverty. Aggregate income gains will not translate into reductions in poverty unless the poor share adequately in these income gains. Under specific circumstances, rising aggregate income can be consistent with worsening poverty.

It has long been standard practice in development economics to recognize the possible presence of structural differences between less developed and more developed economies. Problems of poor physical infrastructure, low skill acquisition, and segmented labor markets are some of the more prominent structural features that continue to occupy development economists. As we argue below, the presence of these structural specificities provides reason to expect that that growth in aggregate income as occasioned by trade liberalization may fail to reach the poor, and in some cases may be accompanied by decreases in their real incomes. The policy implication of recognizing these structural specificities is that trade liberalization requires context-specific application and the implementation of complementary domestic policies if it is to be efficacious in the reduction of poverty.

5.1 Factors, Fractiles, and the Structure of Labor Markets in LDCs

As discussed above, a standard result of international trade theory in a simplified context, the Stolper-Samuelson theorem, predicts that under restrictive conditions, trade liberalization will lead to an increase in the price of labor (or the wage) in countries in

which labor is relatively abundant. This result has been seen as a reason to expect that trade liberalization will lead to a reduction of poverty in developing countries, as trade will not only increase aggregate income but will disproportionately increase the incomes of the poor, insofar as their main asset is their labor.[52]

However, conclusion on the basis of the Stolper-Samuelson theorem that trade liberalization will benefit the poor in LDCs requires a rather quick and unexamined leap. The theorem concerns how trade may be expected raise the return to a factor of production (labor). However, the poor in an LDC may or may not be the owners of the factor used intensively in the production of the most competitive exports of the country. It has been widely recognized at least since Arthur Lewis wrote his canonical works on the subject[53] that developing countries may tend to be characterized by a relatively small urban formal sector producing, *inter alia*, manufactures (and thus likely the majority of non-agricultural exports), and a large informal sector, encompassing traditional agriculture (often of a subsistence variety) in the countryside and an urban informal sector (mainly producing petty services) in the cities.[54] Under these circumstances, it is often the poorest and least skilled workers who are engaged in traditional agriculture or the urban informal sector, while those employed in the urban formal sector are often relatively more skilled (for instance, factory work is sometimes rationed according to minimal educational requirements such as literacy[55], a qualification that the poorest in LDCs often do not possess[56]) and tend to be less destitute.

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[52] As discussed above, the result that liberalization will disproportionately increase returns to labor in countries that are abundant in labor relative to the rest of the world no longer holds in less restrictive settings (for instance, settings in which world factor endowments are not sufficiently similar for factor price equalization to take place). However, to the extent that the Stolper-Samuelson dynamics will still take place among countries with reasonably similar factor endowments (i.e. within a common 'cone of diversification'), it is possible to construct an analogous argument that if a country is labor abundant relative to its cone of diversification and liberalizes trade with the other members of the cone, then there will be an increase in the return to labor, causing in turn a reduction in poverty in that country.

[53] Lewis (1954), (1957).

[54] While the term "informal sector" is often used primarily to refer to non-formal urban economic activities, we use the word in this paper to denote both this kind of activity as well as non-formal sector rural activity, such as small scale ("traditional") agriculture.

[55] See Mazumdar (1989).

[56] Many studies of poverty incidence find that educational attainment is much lower among more rural and isolated groups, and that education is a significant determinant of the extent to which a household or an individual is able to escape poverty. See, e.g., Paternostro, Razafindravonona and Stifel (2001) and Chuyen, Haughton, and Haughton (2001).

The poor often engage disproportionately in the production of non-tradables (such as subsistence farming and petty services). They may be shut out of opportunities to engage in the production of many tradable goods, for reasons of 'barriers to entry' linked to skills, location, or lack of social connections. As a result, they may face limitations in their ability to realize the gains from trade. The removal of these barriers may not always be straightforward, in which case the identification of foci for poverty reduction strategies other than (or at least in addition to) trade liberalization would be appropriate.

5.2 Agriculture: Production Methods, Competition, and Displacement

The sector with linkages to the international market in which the greatest numbers of the poor participate is often agriculture. Poor farmers in developing countries may fail to realize gains from trade because of structural barriers that prevent their ready access to international markets. This form of market segmentation has arguably been an important factor in the low impact of trade liberalization on agricultural incomes in many less developed countries. More seriously still, there are plausible theoretical and empirical arguments as to why farmers' conditions in LDCs may be worsened by trade liberalization when agricultural markets are sufficiently integrated. If capital intensive agriculture in the developed world is more productive than is the labor intensive agriculture of poor farmers in LDCs (which seems to be supported by comparisons such as that between the yields of large agribusiness firms in the Midwestern U.S. and those of small peasant plots in Mexico) farmers in LDCs may see their incomes deteriorate as a result of liberalization as they face competition from the relatively more productive exporters in the developed world.[57] In this case, while in the very long run it may be

[57] This result clearly runs contrary to the prediction many people draw from the Stolper-Samuelson result that trade liberalization will lead to increased returns to the owners of a country's abundant factor. Because farming is relatively labor intensive in LDCs (compared, e.g. to clothing manufacture), it is often assumed that farming is always labor intensive and it will therefore be efficient for labor-abundant LDCs to specialize in its production and export agricultural goods to the developed world. However, in developed countries agriculture is relatively capital intensive (compared again to clothing manufacture, for example); that is, the relative factor intensity of industries is not the same in both countries. The Heckscher-Ohlin model assumes away such a possibility by making what is called the "factor-intensity assumption" that the

efficient for agricultural goods to be produced by means of more productive, capital intensive methods in the developed world, and for farmers in the developing world to cease farming and to produce other commodities, this transition may take a very long period of time during which displaced farmers may suffer lowered incomes. Moreover, if some of the labor market imperfections discussed below obtain, unemployment for the displaced may be compatible with long run equilibrium, and their destitution may be more than transitory.

5.3 The Distribution of Skills and Participation in Growth

If the distribution of skills and employment among the population of a developing country is as described in our discussion of LDC labor markets above, increases in aggregate income due to trade liberalization in an LDC may bear certain analogies to the phenomenon of increases in aggregate income as a result of skill-biased technological change, which has often been used to explain why less skilled (and often poorer) workers may share less than proportionately in expansions of aggregate income in developed countries. The demand for a given type of worker depends upon her ability to contribute to increases in output, and upon the price of the output she produces. Skill biased technological change, or advances in technology that improve the productivity of the more skilled workers in an economy, will thus increase the demand for skilled workers, and in turn will lead to increases in the wages of skilled workers, while leaving the

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relative factor intensity of the production of a good does not change as factor prices change. However, this it is quite plausible that this assumption may be often untrue in practice. For instance, factor prices prevailing in the U.S. may make it efficient to employ a capital intensive technique in agriculture (relative, e.g., to clothing manufacture) while in parts of rural Mexico it may be more efficient to employ a labor intensive technique (again relative, e.g., to clothing manufacture). The conventional theorems of the Heckscher-Ohlin model (including the Stolper-Samuelson theorem) will not help us straightforwardly to understand the consequences of trade liberalization between the U.S. and Mexico on income distribution, if the factor intensity assumption is here violated. (see, e.g., Larudee (1998)). See also "In Corn's Cradle, U.S. Imports Bury Family Farms', *The New York Times*, February 26th, 2002.

demand for less skilled workers relatively unchanged[58]. Similarly, if trade liberalization leads to increases in output prices in sectors in which there are (even minimal) skill-based barriers to entry, a small group of workers may see an increase in the price of the output produced by its members while the price of the output of a mass of less skilled workers in traditional agriculture or in the urban informal sector may increase little as a direct consequence of trade. If there exist skill-linked barriers to entry to the labor markets for the production of exportable goods the demand for the labor of those belonging to a relatively "privileged"[59] segment of the labor market will increase[60], while the demand for the mass of unskilled workers may remain relatively static. Trade liberalization can raise the demand for some types of workers (in particular those with higher skills) disproportionately.

Of course, unskilled workers may experience benefits indirectly from the increase in demand for skilled workers as a result of either skill biased technological change or trade liberalization. Even if growth initially occurs in a privileged sector of the economy and predominantly affects the incomes of workers in this sector, those workers may in turn increase their expenditures on the services of others, whose incomes may also increase as a result.

5.4 Infrastructure, Isolation, and Unemployment

The efficacy of the form of "trickle down" theory described at the end of the last sub-section depends crucially upon the extent to which the workers who are directly benefited by freer trade will actually engage in increased purchases of the services of those workers who are employed in industries with weaker linkages to international markets. If, for

[58] Of course, depending upon the nature of the technological change, there could even be a decrease in the demand for less skilled workers.
[59] By "privileged" here and elsewhere we mean to refer to the segment of workforce with access to employment in industries with the strongest linkages to international markets (i.e. workers who are employed or are employable in these industries, due to their geographical location, possession of certain skills, links to social networks or other factors).
[60] Here due to an increase in the price of the output of skilled workers rather than their physical productivity.

example, some groups of workers are geographically isolated from the majority of those employed in industries that are benefited by increased trade, transaction costs may be sufficiently high as to inhibit *intra*-national trade between these groups and consequently to limit the increase in the demand for the services experienced by more isolated workers. This may very well be the case for workers engaged in traditional farming in rural areas where rural infrastructure (such as roads, bridges, etc.) is poor. Indeed, there is considerable evidence that poverty is often worse in rural and more isolated areas, and that such areas share the least in aggregate growth[61].

While geographic isolation and high transaction costs could inhibit the transmission of increases in income to workers in some rural areas, it cannot explain why workers in areas relatively contiguous to those in which some workers experience increases in income (such as, e.g. the urban informal sector) would not share in the expansion of aggregate income. To understand why aggregate income might not "trickle down" to relatively unskilled workers in closer geographical proximity to the beneficiaries of trade, it is necessary to consider the structure of urban labor markets in greater detail.

The high transaction costs of intra-national trade with rural areas and the consequent concentration of wealth in urban areas may encourage workers to migrate from the countryside to the city. The Harris-Todaro model of rural-urban migration predicts just such a migration from rural to urban areas as a result of wage differentials, with urban unemployment as the result[62]. The unemployed are unlikely to benefit from general increases in income except insofar as this causes increases in demand for the type of labor services they offer. Similarly, job seekers who crowd into the urban informal sector are unlikely to benefit except insofar as there are increases in demand for their services occasioned by general economic expansion. If the pattern of demand is such that demand for the services of informal sector workers is relatively insensitive to increases in income on the part of more privileged workers directly benefited by growth, workers in the informal sector may see few gains from the expansion. Taylor and Bacha (1976) suggest

[61] See e.g. Paternostro, Razafindravonona and Stifel (2001) and Chuyen, Haughton, and Haughton (2001).
[62] Harris, J.R., and Todaro, M.P. (1970), 126-142.

that this may be exactly what happens, as expanding incomes in the formal sector are spent on "newly appearing luxuries" produced by the formal sector itself.[63] The possibility of involuntary unemployment in the urban setting is thus very important for understanding both why some workers may be locked out of the benefits of aggregate expansion, as well as why they may fail to gain from the indirect effects of increased expenditure by those who do share directly in the expansion.

5.5 Labor Market Segmentation

The idea that employment in a range of sectors may often require workers who are relatively more skilled relative to the labor pool of a developing country (or at any rate require a higher level of skills than the poorest possess, such as literacy) can help explain why the poor are sometimes locked out of employment that would enable them to share in an aggregate expansion, but it cannot by itself explain involuntary unemployment, or why wages remain sufficiently high that more people are actively seeking jobs in certain sectors than can get them. In a standard model of a competitive labor market, if there is an excess supply of workers at a given wage, they will bid the wage down until the supply of labor on the part of workers equals the demand for labor on the part of employers. The class of efficiency wage models, or models in which the productivity of a worker depends upon the wage she is paid, presents a possible explanation of the phenomenon of involuntary unemployment. The key intuition of these models is that if workers are more productive at higher wages, cutting wages in response to an increased supply of labor will not necessarily maximize profits. If productivity does not depend on the wage, cutting the wage in response to an increased supply of labor will leave output unchanged and decrease costs, thus increasing profits. However, if a lower wage means less productive workers, while lowering the wage decreases costs, it also decreases output per worker, and hence the effect on profits will be ambiguous. The dependence of worker productivity on the level of the wage will thus result in an equilibrium wage above the market-clearing wage at which supply equals demand, and consequently there

[63] Taylor and Bacha (1976), 198.

will be more workers willing to work at this wage than will be hired, creating involuntary unemployment. Although there is an excess supply of workers, the wage will not be bid down, as lowering the wage would mean lowering output per worker to the extent that profits would decrease. An increase in the demand for the good or service produced by a firm paying workers an efficiency wage will mean that while the wages of the employed may increase, and while it may even be the case that more workers will be hired, there will *still* be a group of unemployed workers that *do not* share from the increase in the demand for the product. Moreover, if these workers are completely unemployed, they may not also greatly benefit from the "trickle down" effects of an aggregate expansion (arising from the increased expenditure of those whose incomes are increased). Thus, the presence of efficiency wages implies that there will be groups of unemployed workers who do not benefit from aggregate expansions.

Interestingly enough, the first efficiency wage models were pioneered in the context of developing economies. Leibenstein (1957) and Mazumdar (1959) formulated some of the first models of efficiency wages, based on the idea that productivity depended upon wages due to a nutrition-productivity link. At too low a wage, workers could not afford adequate nutrition, would become under-nourished, and consequently would be less productive than they would be at a wage at which they could afford adequate nutrition. Other influential papers include Dasgupta and Ray (1986), which examines the way in which differential access to assets may segment a pool of otherwise identical workers into a group that owns assets and is thus better nourished and more productive at any wage who are employed, and the asset poor who are more poorly nourished and less productive at any wage and hence are unemployed. Besides a link between nutrition and productivity, high worker turnover may decrease the productivity of a firm, and if higher wages lead to less worker turnover (by making it more "expensive" for a worker to quit the job in terms of foregone wages), the relationship between worker turnover and productivity may be another source of efficiency wages. This approach was first pursued by Stiglitz (1974), again in the context of a developing economy, and has consequently been extended to the study of developed economies as well. While the nutrition – productivity relationship may hold only at relatively low wages (in the neighborhood of

wages so low that the ability of workers to command commodities sufficient to ensure their adequate nourishment is questionable), a relationship between labor turnover and productivity may hold for a much wider range of wages. This said, the issue of labor turnover may be especially relevant to the formal sector in a developing economy in which there is a high premium on transforming new recruits from the countryside and urban informal sector into a stable industrial workforce. While linkages between nutrition and productivity and between labor turnover and productivity may be some of the most relevant in the developing country context, other possible explanations for a positive relationship between wages and productivity include incentives not to shirk (as the cost of getting caught and fired is higher the greater the wage) and the possibility that higher wages may lead to increased worker morale and norms of mutual gift-giving between workers and employers (wages higher than the market clearing level may be seen as "gifts" from employers, and workers may be inclined to work harder out of gratitude)[64].

Besides skill requirements and efficiency wages, there may be other reasons why some workers are locked out of jobs in the sectors with the closest linkages to the international market. Lindbeck and Snower (1988) discuss the way in which the high premium on a dependable workforce leads employers to use recruitment networks (often utilizing current employees as recruiters and holding them responsible for the quality of recruits) that give rise to an "insider-outsider" pattern of employment, in which some are locked out due to a lack of access to certain social networks. Osmani (1991) and Solow (1990) have also explored the possibility that unemployed workers themselves may choose not to try to under-cut the wages of the employed out of fear that this will reduce wages for everyone in the future, preferring instead to keep looking for a job at the going high wage.

It is also possible that wages in the urban formal sector may remain above market clearing levels as a result of public policy or collective bargaining. For instance, legislated minimum wages (which may either only apply to or only be enforceable in the

[64] See Akerlof and Yellen (1987).

urban formal sector) and union organization in the urban formal sector may keep wages above the level at which the number of workers looking for employment in the sector would equal the number of workers firms would be willing to hire[65]. A frequent resulting conclusion is that the elimination of minimum wages and the reduction of union strength would help to increase employment and (because there is reason to think that the poor are disproportionately represented among the unemployed) therefore to reduce poverty. This conclusion may in certain circumstances be too hasty, however. While it is possible that minimum wages and unionization decrease formal sector employment, they will on the other hand cause the employed to receive higher wages. Given that workers employed in the urban formal sector may still be rather poor themselves, these transfers may do a great deal to alleviate poverty. Thus, it is plausible that minimum wages and unionization will have conflicting effects that on the one hand tend to alleviate poverty (income transfers from the owners of firms' other assets to workers employed in the urban formal sector) and exacerbate poverty (reduced employment of workers in the urban formal sector). We do not have much empirical evidence concerning relative magnitude of these effects, such as the extent to which employment in the urban formal sector in LDCs decreases in response to the imposition of minimum wages and unionization[66], as well as the existence of intra-family and intra-community transfers from the employed to the unemployed in LDCs. The overall effects of minimum wages and unions in the formal sector in LDCs on poverty alleviation are thus far from clear. While the removal of these features might enable some of the excluded poor to share in the gains from aggregate expansions, it would also decrease the share of the gains enjoyed by each employed worker.

An issue that is likely to be of special significance in lower middle-income countries is that trade liberalization may cause 'threat effects' through which the bargained component of wages falls. Workers in industries in which there exists some degree of

[65] See, e.g., Harris and Todaro (1970) and Quibria (1988). Harris and Todaro posit the existence of a "politically determined minimum wage" as the factor that keeps wages in the formal sector above the market clearing level, while Quibra (following Calvo (1978)) posits instead the existence of trade unions in the formal sector as the cause of segmentation.

[66] I.e. we do not possess much evidence on the wage elasticity of the demand for labor in the urban formal sector.

imperfect competition are those most likely to be affected. In such industries, increases in bargained wages will come at a higher 'employment cost' due to increased inter-firm competition from trade. This can lead workers who value employment to accept lower wages than previously [see Reddy 2000]. The impact of such effects will depend on the relation (income profile, family and community ties, etc.) between workers in the industries with rent-sharing and the poor.

5.6 Consumer Prices and the Excluded Poor

Our discussion of the place of the poor in developing country labor markets has focused on ways in which structural barriers may cause the poor to be unable to take advantage of opportunities available to others. As described above, workers can be excluded from the benefits of trade liberalization due to the existence of barriers to entry to the more remunerative segments of the labor market. Such barriers to entry may arise from the uneven distribution of skills, geographic isolation, the dependence of employment upon participation in social networks that exclude non-members from access to labor market opportunities, and other factors. As a result of these kinds of barriers, an expansion of aggregate income may not give rise to a decrease in poverty.

When rapid economic growth occurs in which the poor do not participate, they may be hurt in absolute terms due to the combination of the stagnation of their incomes and rising prices for consumption goods. Price rises can arise as a *direct* result of trade liberalization, or *indirectly* as a result of demand increases caused by rising incomes in parts of the economy. The latter mechanism is understudied, although it may be of considerable practical interest. The real incomes of the poor may diminish absolutely as a result of the bidding up of the prices of commodities by the non-poor. Sen (1981) identifies the possibility that there may occur "Boom Famines" in which food is bid away from the poor due to the rising incomes of other groups (the Bengal Famine of 1943, in which growth in incomes in urban Calcutta had an adverse impact on the rural poor, is an important example). There is reason to think that this phenomenon takes place more

generally in instances in which goods markets are better integrated than are labor markets.

5.7 Effect of Liberalization on Public Finances, and Social Consequences

There are other ways in which trade liberalization policies (as opposed to increased trade *per se*) may lead to a deterioration in the incomes of the poor and an increase in absolute poverty. As mentioned section 3 above, tariffs on internationally traded goods are one of the primary and most reliable sources of tax revenue for governments of developing countries (see, e.g. Burgess and Stern (1993)). As a result, the lowering of tariffs may inhibit the ability of some developing country governments to engage in social, health, or redistributive programs such as the construction of public hospitals, the vaccination of children, the provision of clean water and sanitation, and public education; activities for which some of the primary beneficiaries would be the poor. Trade policy analysis must not neglect the impact of trade policy decisions on the general government revenue. In conditions of severe financial constraint, this neglect may have serious adverse consequences for the ability of governments to pursue anti-poverty policies

5.8 Evidence of the Impact of Structural Barriers on Poverty Reduction

The above discussion would suggest that economic theory gives reason to expect that if the structural specificities of low participation by the poor in trade related industries, poor infrastructure and intra-national trade linkages, and segmented labor markets obtain, there may very well be populations of poor people (perhaps the very poorest) that are to a large degree locked out of gains in aggregate income. Indeed, as we have mentioned, several studies of poverty have come to just such a conclusion. In their discussion of the dispersion and alleviation of poverty in Vietnam during an expansion of aggregate income in the 1990s, Chuyen, Haughton, and Haughton (2001) find that while some groups have witnessed alleviations of poverty, the Central Highland Minorities and

Hmong ethnic minority, which tend to be the most geographically remote as well as undereducated, has essentially been "left behind by the growth process."[67] Stefan Dercon, in a study of poverty in rural Ethiopia from 1989 to 1995, finds that while this period of policy reforms and aggregate expansion saw dramatic poverty alleviation for the poor who had better land endowments, it saw virtually none for a the poor with inferior endowments (which roughly corresponded to the poorest households in the initial sample). Dercorn attributes some of this inability to participate in the expansion to poor infrastructure. He says of the households who did not participate in growth: "They did not manage to grow as much due to their land endowment, either small or of poor potential, while typically these poor live in remote areas or with poor road connections." Similarly, Paternostro, Razafindravonona, and Stifel (2001) find results for Madagascar that a measure of the "remoteness" of households is a significant influence on the incidence of household poverty. Discussing their results, the authors echo some of the main themes we have discussed:

> Given the lack of response in rural areas to the fiscal reforms that have established a more open and more competitive market since 1996, it is evident that liberalizing[68] the market, while necessary, is not sufficient to address the issue [of] rural poverty. There exist severe structural constraints that hinder the abilities of the rural poor to escape poverty. This is captured in part by the strong correlation found in this study between "remoteness" (as measured by various proxies) and high levels of poverty.[69]

These case studies compliment the result Foster and Szekely obtain in examining a collection of 144 household surveys from 20 countries, which we mentioned above in our critique of Dollar and Kraay. After replicating the Dollar and Kraay result that the share of the income of the bottom quintile does not change on average with changes in the average income per capita, the authors examine measures of "general means," or aggregations of income that give a person more weight the less income the person has. Foster and Szekely found that the more weight was given to the poorest, the weaker the correlation between the general mean measure and average incomes became. This suggests that there are indeed groups of the poor who will be locked out of macro-

[67] Chuyen, Haughton, and Haughton (2001).
[68] Here the authors are concerned with polices affecting domestic markets as well, and not only trade policies.

economic expansions, and that they are the very poorest. The authors also find that the correlation between the general mean and aggregate income tended to be lower for less developed countries (especially for very high weightings, which took most account of the poorest). This evidence suggests the explanation that structural barriers, which are likely more prevalent in developing countries, are a primary source of the inability of the poorest to participate in the benefits of growth. Further support for this view is offered by the finding of Easterly (2001) that growth associated with structural adjustment in LDCs has a lesser impact on poverty reduction than does growth in general. He interprets this as suggesting that "the poor may be ill-placed to take advantage of new opportunities created by structural reforms", and cites the idea that "The poor may be geographically isolated from the formal sector economy..[and this may be]...exacerbated by poor infrastructure". The presence of barriers to the participation of the poor in aggregate expansions is a serious issue that must be addressed in assessing the impact of trade on poverty.

6. Conclusion: Making Trade Policy Work for the Poor

In this paper we have surveyed the existing economic theory and empirical evidence relevant to understanding the connections between trade liberalization and poverty reduction. We have concluded that this theory and evidence supports the view that the effects of trade liberalization on poverty reduction is ambiguous, and will in practice be highly dependent upon relevant features of the domestic economy, and other domestic policy choices.

Because all changes in the income dimension of poverty can be decomposed into the effects of a change in the level of the aggregate income of a society and the impact of this aggregate change on the real income of the poor, trade liberalization can influence poverty both by influencing the level of aggregate income and by influencing the distribution of income among persons. If trade liberalization leads to increases in

[69] Paternostro, Razafindravonona and Stifel (2001), 36.

aggregate income, so long as there are no countervailing distributional effects of sufficient strength that accompany increases in aggregate income, poverty may be reduced. However, while economic theory predicts that under certain circumstances trade liberalization may be accompanied by increased levels of aggregate income and even sustained improvements in the growth of aggregate income over time, it also predicts that the opposite may be the case under alternative conditions. In particular, it predicts that in the presence of certain conditions (such as the presence of market power on the part of firms or countries, externalities associated with technological learning and public finance, and other factors), trade liberalization may not always lead to sustained increases in aggregate income. Because economic theory predicts that the relationship between trade liberalization and the level and growth rate of aggregate income is context dependent, it is not surprising that the empirical evidence concerning the relationship between trade liberalization and aggregate growth is inconclusive.

Trade liberalization may affect the distribution of aggregate income among the forms of income (e.g. wages and profits) accruing to different factors of production (e.g. labor or capital), as well as its level and growth rate. The Stolper-Samuelson theorem predicts that under specific conditions trade liberalization will raise the real rate of return to a factor of production that is relatively abundant in a country and the real rate of return to a factor that is relatively scarce in that country. To the extent that LDCs possess unskilled labor (as opposed to capital or highly skilled labor) in relative abundance, this result has been seen as a reason to expect that trade liberalization will lead to a reduction of poverty in developing countries, as trade may not only increase aggregate income but will disproportionately increase the incomes of the poor, as their main asset is their labor. However, the predictions of the Stolper-Samueson theorem rely on rather strong assumptions that may well be untrue. Further, the effect of changes in the factor distribution of aggregate income on the distribution of income among *persons* must be considered. If the poor are locked out of participation in industries producing labor intensive exports (due to geographical isolation, their insufficient possession of skills, or the segmentation of the labor market), then they will not see an increased return as a result of trade liberalization, and their incomes will not be improved.

The presence of structural features of developing country economies that may prevent the poor from participating in domestic industries that benefit from trade liberalization may pose serious barriers to the ability of the poor to share in the gains from trade, and give reasons to doubt that expansions in aggregate income as occasioned by trade will necessarily alleviate certain forms of poverty. Developing countries labor markets are often characterized by an urban formal sector producing the majority of non-agricultural exports, and employing workers with relatively higher skills and better access to social networks, in contrast with a large informal sector, encompassing traditional agriculture (often producing subsistence items) in the countryside and an urban informal activities (such as petty production and service provision) in the cities. The poor are likely disproportionately to be employed in this second economy (due, *inter alia*, to their lack of skills and access to networks). When labor markets are structured in this way, the majority of the initial benefits of trade liberalization may accrue to a relatively skilled and well-connected minority that does not to include the poorest. It is possible that benefits from growth induced by trade liberalization may "trickle-down" to the poor due to the increased demand on the part of those workers who are directly benefited by freer trade for the services of those workers who are employed in industries with weaker linkages to international markets. However, if the poor are geographically isolated (due for instance to their location in the countryside and to poor rural infrastructure) or if the demand on the part of workers who benefit directly from liberalization for the services for those who do not is relatively inelastic, there may be serious barriers to the alleviation of poverty due to such "trickle-down" effects.

There are further structural features of LDCs that may cause poverty to be undiminished by aggregate growth occasioned by trade liberalization. The sector with the strongest linkages to the international market and in which the greatest numbers of the poor participate is often agriculture. However, if capital intensive agriculture in the developed world is more productive than the labor intensive agriculture of poor farmers in LDCs, farmers in LDCs may see their incomes deteriorate under liberalization as they face

competition from the relatively more productive exporters in the developed world.[70] In cities, employers may pay efficiency (or higher than market clearing) wages, due, for example, to a premium on adequately nourished workers, a stable workforce, or more accountable workers. This may lead to involuntary unemployment in export processing industries, and it may provide another reason, apart from the lack of skills or connections, as to why the poor may be locked out of market opportunities in more lucrative industries, and fail to share in the gains from aggregate expansion. Finally, the poor may even see their real incomes decline in absolute terms if the prices of the goods they consume are bid up due to rising incomes and levels of consumption of the non-poor.

Because of its potential to increase the incomes of the poor and other resources available for expenditure on anti-poverty initiatives, trade liberalization can be an important part of a successful strategy of poverty reduction, but it can only play this role under suitable conditions. In order to be a successful tool of poverty reduction, it must be accompanied by complementary policies that enable the poor to share in the gains from trade. Our discussion of the relationship between the level and factor distribution of aggregate income and the real incomes of the poor in section 5 suggests what some of the most important policies that enable the poor to share in trade-induced aggregate expansions might be. To the extent that the poor may lack access to market opportunities due to their geographical isolation, investment in rural infrastructure may be very important in insuring that expansions due to trade liberalization translate into poverty alleviation. If the poor have a lack of skills or knowledge (such as literacy) that keeps them from participating in industries that benefit from trade liberalization, or if they lack sufficient productivity to participate in such industries due to under-nourishment or ill health, then the provision of basic social services such as education, sanitation, and medical services may be very important for improving the ability of the poor to gain from aggregate expansions. The possession of productive assets may affect the ability of the poor to participate in episodes of growth, due not only to the increased returns these assets may see in such episodes, but also to the effect the possession of assets may have upon the

[70] This prediction, contrary to the Stolper-Samuleson result, is possible due to the presence of factor-intensity reversal.

labor market opportunities of the poor (owing, for instance, to a nutrition-productivity link of the kind suggested most recently by Dasgupta and Ray (1986)). Policies aimed at improving the asset ownership position of the poor may be very important. Finally, because some groups of the poor may see their real incomes decline as a consequence of trade liberalization, as the incomes of the poor may not keep pace with rising prices during episodes of aggregate expansion, appropriate redistributive policies are essential.

Trade liberalization must not be viewed as a panacea, but rather as a measure that is suited to specific economic and social circumstances. We have argued in the preceding that neither empirical evidence nor economic theory offer support for the view that trade liberalization is either a universally necessary or sufficient condition for poverty reduction.

In most circumstances, a menu of trade and non-trade policy alternatives to foster poverty reduction will be available, and the order of effectiveness of these alternatives will be determined significantly by contextual conditions. Proponents of rapid poverty reduction should therefore, in our view, favor an international trading system that reconciles the advantages of a well-ordered and rule-based regime with the imperative of providing sufficient degrees of freedom to countries for them to choose the comprehensive approach that best suits their circumstances and needs.

Trade liberalization is in any event ultimately a matter for *political* as well as policy choice. The appropriate location for such choice is in the public domain. Better general understanding of the limits and possibilities of economic reasoning in this area is a necessary prerequisite for the quality of debate to be raised, and for informed and beneficial choices to be made.

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Table 1

Performance of "Golobalizers" vs. "Non-Globalizers" According to the Various Selection Criteria Employed by Dollar and Kraay

Criterion 1:

Top One-Third of Developing Countries With Greatest Increases in the Ratio of Trade Volumes Relative to GDP Between the 1975-79 Period and the 1995-97 Period

Average Trade Volumes

		1970s	1980s	1990s	Change, 1970s-1990s	Change, 1980s-1990s
Globalizers	Simple Average	37.9%	47.7%	72.4%	34.5%	24.7%
Globalizers	Weighted Average	16.0%	24.7%	32.6%	16.6%	7.9%
Non-Globalizers	Simple Average	71.7%	68.2%	63.9%	-7.8%	-4.3%
Non-Globalizers	Weighted Average	59.9%	51.8%	49.1%	-10.8%	-2.7%

Average Growth in GDP per Capita

		1970s	1980s	1990s	Change, 1970s-1990s	Change, 1980s-1990s
Globalizers	Simple Average	3.1%	0.5%	2.0%	-1.1%	1.5%
Globalizers	Weighted Average	2.9%	3.5%	5.0%	2.1%	1.5%
Non-Globalizers	Simple Average	2.4%	0.1%	0.6%	-1.8%	0.5%
Non-Globalizers	Weighted Average	3.3%	0.8%	1.4%	-1.9%	0.6%

DID THE 'GLOBALIZERS' GROW FASTER? YES YES

Criterion 2:

Top Third of Developing Countries With the Greatest Declines in Average Tariffs Between the 1985-89 Period and the 1995-97 Period

Average Tariffs

		1970s	1980s	1990s	Change, 1970s-1990s	Change, 1980s-1990s
Globalizers	Simple Average	NA	44.3%	23.4%	NA	-20.9%
Globalizers	Weighted Average	NA	57.6%	34.7%	NA	-22.9%
Non-Globalizers	Simple Average	NA	21.0%	16.5%	NA	-4.5%
Non-Globalizers	Weighted Average	NA	21.0%	17.3%	NA	-3.7%

Average Growth in GDP per Capita

		1970s	1980s	1990s	Change, 1970s-1990s	Change, 1980s-1990s
Globalizers	Simple Average	1.8%	1.0%	2.1%	0.3%	1.1%
Globalizers	Weighted Average	2.8%	3.6%	4.9%	2.1%	1.3%
Non-Globalizers	Simple Average	3.1%	-0.4%	0.9%	-2.2%	1.3%
Non-Globalizers	Weighted Average	4.2%	-0.6%	1.1%	-3.1%	1.7%

DID THE 'GLOBALIZERS' GROW FASTER? CANNOT COMPARE NO

Criterion 3:

Top Third of Developing Countries With both the Greatest Increases in the Ratio of Trade Volumes Relative to GDP Between the 1975-79 Period and the 1995-97 Period *and* the Greatest Declines in Average Tariffs Between the 1985-89 Period and the 1995-97 Period

Average Trade Volumes

		1970s	1980s	1990s	Change, 1970s-1990s	Change, 1980s-1990s
Globalizers	Simple Average	25.6%	31.0%	45.8%	20.2%	14.8%
Globalizers	Weighted Average	14.2%	22.5%	27.8%	13.6%	5.3%
Non-Globalizers	Simple Average	63.8%	60.8%	71.0%	7.2%	10.2%
Non-Globalizers	Weighted Average	56.6%	52.8%	58.5%	1.9%	5.7%

Average Tariffs

		1970s	1980s	1990s	Change, 1970s-1990s	Change, 1980s-1990s
Globalizers	Simple Average	NA	51.4%	24.4%	NA	-27.0%
Globalizers	Weighted Average	NA	61.3%	36.6%	NA	-24.7%
Non-Globalizers	Simple Average	NA	27.3%	19.6%	NA	-7.7%
Non-Globalizers	Weighted Average	NA	32.6%	22.6%	NA	-10.0%

Average Growth in GDP per Capita

		1970s	1980s	1990s	Change, 1970s-1990s	Change, 1980s-1990s
Globalizers	Simple Average	2.3%	1.4%	3.8%	1.5%	2.4%
Globalizers	Weighted Average	2.8%	3.8%	5.4%	2.6%	1.6%
Non-Globalizers	Simple Average	2.8%	-0.1%	0.8%	-2.0%	0.9%
Non-Globalizers	Weighted Average	3.9%	0.8%	1.8%	-2.1%	1.0%

DID THE 'GLOBALIZERS' GROW FASTER? CANNOT COMPARE YES

*Drawn from Dollar and Kraay (2001), Table 3