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THE RELATIVE IMPACT OF TRADE LIBERALIZATION ON DEVELOPING COUNTRIES

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INTRODUCTION

It has become a standard refrain in policy circles that expanded trade holds the key to prosperity for developing countries. According to this view, if the industrialized countries would eliminate their trade barriers, especially in apparel and agriculture, this would provide a basis for growth in developing countries, pulling hundreds of millions of people out of poverty. As the World Bank wrote in its latest Global Economic Prospects: "A reduction in world barriers to trade could accelerate growth, provide stimulus to new forms of productivity-enhancing specialization, and lead to a more rapid pace of job creation and poverty reduction around the world" (World Bank, 2002, p. xi).

The evidence for this view is considerably less compelling than its proponents imply. While there are certainly reasons for believing that expanded trade can help to promote growth in developing countries, it is unlikely that trade liberalization, by itself, will qualitatively improve the

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plight of people in the developing world. In fact, there are plausible scenarios in which trade liberalization can actually lead to worse outcomes for developing countries.

Moreover, it is not clear that trade liberalization is the key to rapid growth and development. It is worth noting that the major success stories in the developing world —most notably South Korea and Taiwan, which now have income levels comparable to the poorer industrialized countries— but also countries that have more recently experienced accelerated growth rates, such as China and India, have not followed a simple path of trade liberalization. In all of these countries the government has played an important role in guiding the economy. This guidance has included subsidies and protection for favored industries and restrictions on capital flows, policies generally opposed by the leading proponents of trade liberalization. In many respects, the path of trade liberalization currently promoted by the World Bank and others can be seen as directly opposed to the development strategies that have proven most successful in the postwar period.

This paper has three parts. The first part examines the assumptions and projections of the computable general equilibrium (CGE) models that provide the basis for the claims about the beneficial impact of trade liberalization. One of the main conclusions from these models is that most of the projected gains from trade liberalization do not come from the removal of trade barriers in the industrialized countries —rather the biggest source of gains to developing countries is the removal of their own barriers to trade. In principle, these gains would be available whether or not the industrialized countries also followed a path of trade liberalization.

The second section will briefly discuss some of the reasons why developing countries may not choose to liberalize, in spite of the potential gains implied by the CGE models. The two most obvious considerations are the loss of revenue due to tariff reductions, and the economic and social disruptions caused by rapid displacement of workers from agriculture.

The third section details two possible sources of large economic losses to developing countries, if they follow the sort of liberalization

licensing fees— which would result from the application of US-style patent and copyright laws. It also notes the potential costs of increased reserve holdings. In recent years, developing countries have felt the need to maintain very large reserves of foreign exchange —money that gets very low returns— in order to maintain the stability of their currencies. This imposes a substantial drain on their economies. These potential sources of losses to developing countries have been largely ignored by advocates of greater trade liberalization.[1] In many cases, these losses could plausibly exceed the gains from trade liberalization.

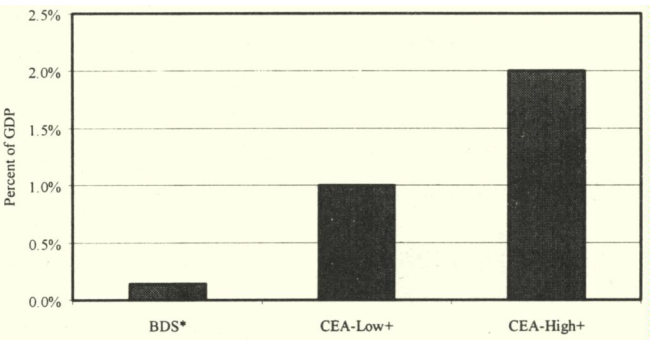
GAINS FROM TRADE-WHAT THE MODELS SHOW

The most striking feature of trade models is their ability to project wildly different outcomes when modeling an identical policy. For example, in 1994 the President's Council of Economic Advisors projected that the Uruguay Round of the GATT, which created the WTO, would add $100-200 billion annually to GDP in the United States (1.0 percent to 2.0 percent) when fully phased in (*Economic Report of the President*, 1994, p. 234).[2] By contrast, a model developed by Drusilla Brown, Alan Deardorff, and Robert Stern (BDS), all prominent supporters of recent trade pacts, shows that the Uruguay Round would add just $12.9 billion to GDP, less than one eighth as much (BDS, 2001, table 1). Figure 1 shows the differences in these projections.

[1] It is actually inaccurate to characterize the imposition of US type patent and copyright laws as trade "liberalization". Patents and copyrights are forms of protectionism —effectively a government-enforced monopoly.

[2] It is not clear that the Council of Economic Advisors actually derived this projection from an economic model.

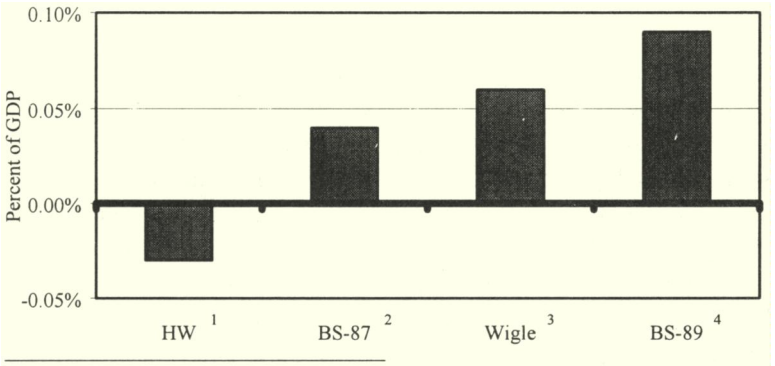
FIGURE 1.
Projected gains to the United States from Uruguay Round
Percent of annual GDP



Source: †Council of Economic Advisers, Economic Report of the President 1994, p. 234.
*Brown, Deardorff, and Stern (2001), table 1.

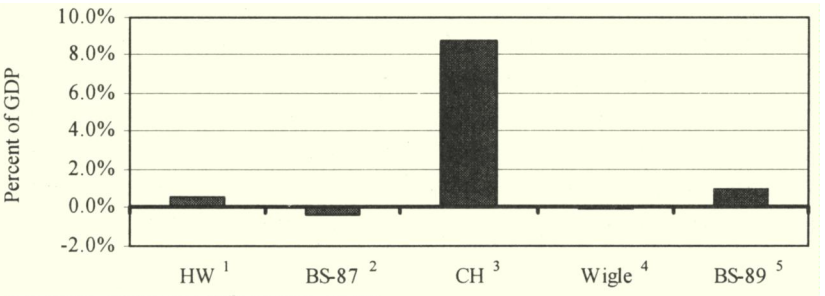
Large divergences between model projections are commonplace in the trade literature. Figures 2a and 2b show projections of the gains to the United States and Canada, respectively, from the US-Canada Free Trade Agreement. The models show widely differing numbers and in fact do not even agree on the net welfare effects. One of the models projects that the United States would incur a small welfare loss as a result of the agreement, while the other three show it gaining. In the case of Canada, two of the five models project welfare losses. Among the three models showing gains, the largest projected gain was more than sixteen times the size of the smallest. (It is worth noting that this largest projection was the one most widely cited in public debates over the trade agreement in Canada [Grinspun, 1993]). Other simulations of trade policies, such as the modeling of a new WTO round of trade liberalization, have produced similarly divergent projections.

FIGURE 2a.
US gains from US-Canada Trade Agreement



Source: Couglin, 1990.
1. B. Hamilton and J. Whalley, 1985.
2. D. Borwn and R. Stern, 1987.
3. R. Wigle, 1988.
4. D. Borwn and R. Stern, 1987.

FIGURE 2b.
Canada's gains from US-Canada Trade Agreement



Source: Coughlin, 1990.
1. B. Hamilton and J. Whalley, 1987.
2. D. Borwn and R. Stern, 1987.
3. D. Cox and R. Harris, 1986.
4. R. Wigle, 1988.
5. Hamilton and J. Whalley, 1989.

There are two main reasons for the large differences in projections between models. The first reason is that there will always be some differences in the structure and estimates used in different models. There is no fixed, unambiguous way to model trade policy. Any model is necessarily incomplete, and decisions must be made as to which countries and industries to include. In addition, it is necessary to estimate various effects —for example the extent to which the demand for sugar increases as a result of a fall in the price. These estimates will differ depending on the time and place for which the estimate is made. For these reasons, it should be expected that no two trade models will produce identical projections of the impact of a particular trade policy.

But this source of differences across models is comparatively small. The more important reason for the differences across models is that there are many different effects of trade that economists have sought to model. Some of these effects are fairly well understood. For example, the standard view of gains from trade is that the reduction of trade barriers will increase economic efficiency, by allowing consumers and producers to buy items from the lowest cost source. The logic and mechanics of this argument are well understood by economists. However, in recent years economists have sought to model other possible effects of trade that are much less well understood. These include the possibility that many industries have increasing returns to scale, which will magnify the effects of any trade-induced growth; that increased trade will lead to more rapid capital accumulation, and that expanded trade can increase productivity throughout the affected industries. These secondary effects are poorly understood and lead to widely divergent estimates of the gains from expanded trade.[3] As the World Bank commented on the impact of expanded trade on productivity, "much more work needs to be done in this area" (World Bank, 2002, p. 167). Given the limited theoretical and empirical basis for these secondary effects of trade, it is difficult to argue

[3] One implication of the assumption that has been incorporated into these models, that expanded trade increases productivity throughout the traded sector, is that countries would often benefit by subsidizing exports of certain products. This view would imply that trade liberalization may not maximize efficiency and growth.

that projections of gains from trade that are largely speculative in nature should provide the basis for public policy.

There is a similar problem with the treatment of liberalization of services. In recent work, the World Bank estimated that the gains from liberalizing trade in services was more than four times as large as the gains from removing barriers in merchandise trade (World Bank, 2002, pp. 168-173). Similarly, BDS estimated that the gains from liberalization in the trade of services were nearly 80 percent higher than the gains from the liberalization of trade in agriculture and manufactured goods (BDS, 2001, table 5). A major problem with these estimates is that it is very difficult to measure the size of government-imposed barriers to trade in services. These barriers do not take the form of tariffs or quotas, but rather appear in the form of government regulations and restrictions that prevent foreign corporations from entering the domestic market. As a result, it is necessary to use indirect measures of the resulting inefficiencies. In the case of BDS, the measure of relative inefficiency used in the model is the gross profit margin —the gap between price and variable costs for industries providing services in each nation. BDS view the gross profit margin as evidence of inefficiency.

Closer examination suggests that this method may not provide an accurate measure of the extent of protection and the relative efficiency of services in various countries. For example, as Dorman (2001) notes, this measure implies that the service sector in the United States is considerably less efficient, and therefore more protected, than the service sector of most other countries, since gross profit margins are reported as being above average in the United States for most categories of services (BDS, 2001, table 4). It is also worth noting that even within countries, there are very large differences in gross profit margins for the same type of service. For example, The Gap, a major clothing retailer was reported as having a gross profit margin of 42 percent in 1999, which had dipped to 31 percent just two years later ("Frugal Shoppers Worry Retailers", *New York Times*,12/17/01; C8). By contrast, Wal-Mart reportedly had a gross profit margin of just over 21 percent. The fact that such large differences in gross profit margins can exist between retail stores suggests that factors other than trade restrictions are responsible. There

are real differences in the quality and convenience of the service provided in different stores, which consumers apparently value. Other features of stores are also likely to matter to consumers, for example whether it is located in a suburban strip mall or in the middle of the city. Assuming that differences in gross profit margins are attributable to protectionism implies that such issues as service quality and convenience do not matter to consumers.

Clearly, many countries have substantial barriers to the entry of foreign corporations seeking to provide services to the domestic market. In many cases, these barriers undoubtedly do lead to serious inefficiencies. In some cases the impact of barriers may be difficult to assess. For example, restrictions on Wall-Mart type discount stores may protect central city shopping districts. These districts may be viewed by the people in a specific country or region as having valuable externalities. They may also help to make an area attractive as a tourist destination for people outside the area. For example, it is unlikely that Paris would be as popular a tourist destination if Wal-Mart had dominated the French retail market to the same extent as it dominates the US retail market. Economist's ability to accurately assess the benefits of removing barriers in services is very limited, as the World Bank notes: "the quantification of services sector's trade barriers and other forms of protection is still more art than science" (World Bank, 2002, p. 170). At this point, the projections of gains from the liberalization of services must be viewed as highly speculative. It would be foolhardy for any nation to conduct policy based on theory and evidence that is so poorly developed.

There is one other set of issues that should be noted about these trade models. It is a standard assumption in all of these models that resources are fully employed. Concretely, this means that workers in declining sectors who lose their jobs due to trade liberalization find themselves re-employed in sectors that expand. Obviously, this does not reflect economic reality, in which many displaced workers experience a significant period of unemployment. However, at some point, the displaced workers will presumably have been re-employed or have left the labor market due to old age. In this sense, these models must be viewed as long-run models that project the effects of trade liberalization, after some adjustment period.

These models also include an unrealistic assumption about the replacement of lost tariff revenues. They assume that the tariff revenue lost as a result of trade liberalization will be offset by increasing lump sum taxes. Lump sum taxes are an artificial construct. They effectively imply that tax revenues are just sucked out of the economy —they are not taxes on specific items like capital or labor income. From the standpoint of these projections, the modeling of an artificial lump sum tax, rather than real world taxes, leads to an overstatement of the gains from trade. Any real world tax will lead to economic distortions, reducing the projected gains from trade liberalization.

In most industrialized countries, tariff revenues are relatively unimportant —accounting for only 1-2 percent of total government revenue. However, in developing countries tariff revenues generally comprise a much larger share of national revenue, generally more than 10 percent and in some cases more than 30 percent. The replacement of lost tariff revenue will be a far more important economic and political issue in developing countries. This issue will be discussed at somewhat greater length in the next section.

With these qualifications, it is worth examining more closely what these models imply about gains from the reduction of trade barriers. First, it is important to realize that countries do not necessarily benefit from trade liberalization, even in the most basic models. There are three reasons for this. The first is the "terms of trade effect". This means that trade liberalization affects the relative prices of various goods. For example, trade liberalization could lead to a large decline in the price of computer chips relative to most other goods. If a nation like South Korea relies a great deal on computer chips for its export earnings, and the goods it imports do not experience any comparable decline in price, then South Korea could end up losing from world-wide trade liberalization.

A second reason that countries could lose by trade liberalization is that many countries can directly benefit from protection in their export markets. Specifically, if a nation's exports to another country are restricted by import quotas, it implies that they are able to sell their exports at an above- market price. For example, if Pakistan's exports of shirts to the United States are restricted by an import quota, then the

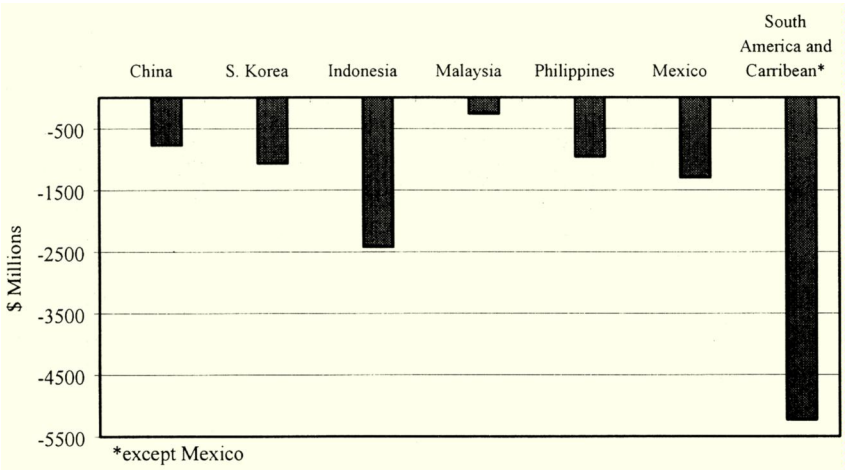
standard theory implies that Pakistan will be able to charge an above market price for each shirt it sells in the United States. If the United States drops all quotas and tariffs on imported shirts, then the price of shirts in the United States will fall to the world market price. Pakistan would no longer be able to collect a premium (or "quota rent") on each of the shirts it sells. It may be able to sell more shirts in the United States after the trade barriers are removed, but it is entirely possible that the gains from selling more shirts will not offset the lost quota rents. In this case, Pakistan would lose from trade liberalization by the United States.

A third way that countries could be losers as a result of trade liberalization is that they may be large consumers of subsidized exports. If a country eliminated its subsidies on these exports, then in standard models it could lead to a loss to the importing nation. For example, if a country is a major consumer of subsidized wheat exports from the United States, and the United States then removes these subsidies, it would be in a situation where it now has to pay more for the wheat it purchases. Obviously developing countries would benefit more from lump sum payments than subsidies attached to specific exports. Also, as a practical matter, subsidized exports could retard the development of domestic agriculture and industry in developing countries. But in standard trade models, the loss of export subsidies could be detrimental to at least some developing countries.

The fact that trade liberalization can be detrimental to developing countries is shown by estimates that BDS made of the impact of the Uruguay round. Figure 3 shows the BDS estimates of the losses accruing to a series of developing countries as a result of the agricultural liberalization required in the Uruguay Round. The losses shown are the projected decline in annual GDP for each nation after the agreement has been fully implemented.[4] In some cases the projected losses are substantial. For example, the projected losses for the Philippines and Indonesia are equal to 1.1 percent and 1.0 percent of GDP, respectively. This would be equivalent to losses of $110 billion and $100 billion a year in the United States, respectively.

[4] More precisely, BDS estimate welfare losses, which are not identical to GDP losses. Effectively, these measures are the amount of money that each nation would need to make it as well off as if the trade liberalization had not taken place.

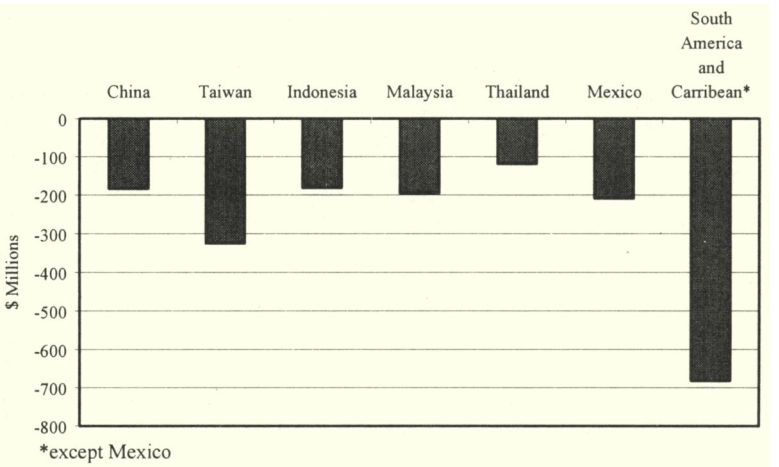
FIGURE 3.
Annual Losses Due to Uruguay Round Trade Liberalization in Agriculture



Source: Brown, Deardorff, & Stern (2001), table 1.

Figure 4 shows the losses that BDS projected for several countries from the phase out of the multi-fiber agreement, which was another part of the Uruguay Round agreement. These projected losses are not as large as the losses that some countries are projected to incur from agricultural liberalization but they are not completely inconsequential. For example, the loss shown for Malaysia is equal to 0.16 percent of GDP. This is larger than the gain of 0.14 percent of GDP that BDS projected for the United States from the combined effect of all the aspects of the Uruguay Round.

FIGURE 4.
Annual Losses Due to Uruguay Round Trade Liberalization in Textiles and Apparel

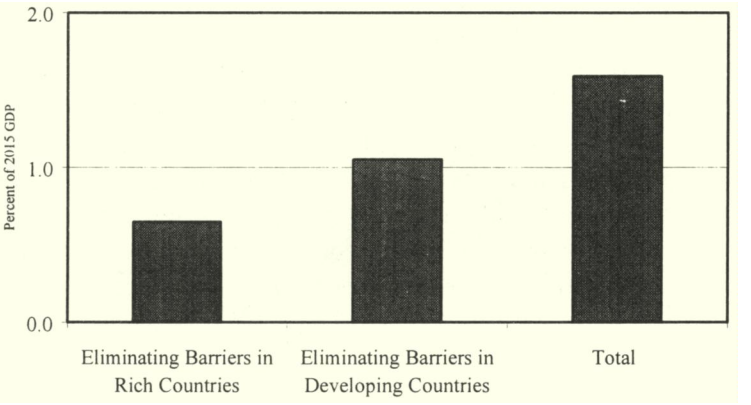


Source: Brown, Deardorff, & Stern (1999).

Of course, these projections are for just part of the Uruguay Round agreement. Some of these countries were projected to be net gainers from the agreement taken as a whole, although BDS projected that Indonesia, Mexico, and its groupings of Central and South American and Middle Eastern countries would be net losers from the entire agreement. But the exact estimates of this particular simulation are not important. The more important point is that trade liberalization does not necessarily lead to gains for developing countries. As the BDS model indicates, the loss of quota rents, the worsening of terms of trade, and the elimination of export subsidies from the industrialized countries can cause developing countries to lose from trade liberalization. The fact that the projected losses in this model mostly result from the liberalization of trade in textiles and agriculture contradicts the simplistic view that greater market access in these areas will always be beneficial to developing countries. While they may benefit in most circumstances, as the BDS model shows, developing countries can also lose from the removal of developed-country trade barriers in these sectors.

The World Bank's analysis of trade liberalization is useful because it provides a breakdown of the projected benefits between the industrialized and developing countries from each type of trade liberalization. Figure 5 compares the gains to developing countries that are projected from the removal of merchandise trade barriers in the industrialized countries with the gains that they are projected to receive from removing their own barriers. The total gains to developing countries from reducing their own barriers are substantially larger than the gains they are projected to receive from the reduction of barriers in the industrialized countries. This Gap is attributable to the large difference in the benefits to developing countries from liberalization in agriculture. The benefits from liberalization in the industrialized countries are projected to be just 0.3 percent of developing countrie's GDP in 2015, while the benefits to developing countries from their own liberalization in agriculture are projected to be more than three times as large at 1.1 percent of GDP. Overall, the gains to the developing countries from liberalizing their own merchandise trade barriers are projected to be 1.2 percent of GDP, compared to 0.7 percent of GDP from liberalization in the industrialized countries.

FIGURE 5.
Gains to Developing Countries from Reduction of Trade Barriers



Source: World Bank, 2002, table 6.1.

The fact that developing countries stand to gain much more from their own liberalization than from the removal of trade barriers by the industrialized countries is a predictable result of these sorts of models. In most sectors, trade barriers in the industrialized countries are already low. By contrast, most developing countries maintain much higher tariff and quota barriers. This means, that in these models, the elimination of the developing countries own import barriers will have much more impact on their economies than the elimination of the barriers to their exports by the industrialized countries.

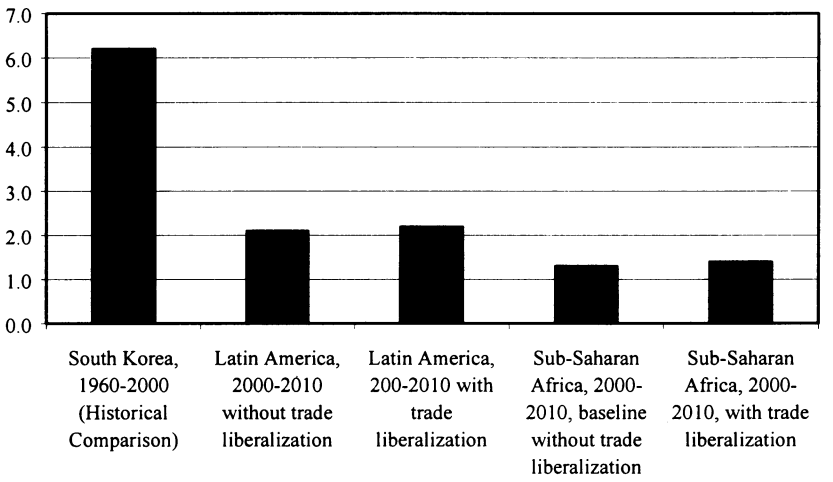
The next section will examine factors that may discourage developing countries from engaging in the sort of liberalization advocated by the World Bank, in spite of the projected gains. But first it is worth putting these gains in some context. The cumulative gain projected to accrue to developing countries from merchandise trade liberalization in the industrialized countries is 0.6 percentage points of GDP, after it is phased in between 2005-2015. This translates into an increase in the growth rate of approximately 0.05 percentage points annually. The 1.2 percentage point gain projected to result from their own liberalization would translate into an increase in the annual growth rate of approximately 0.09 percentage points annually. The combined projected impact of liberalization in all regions is 1.7 percentage points, which would add approximately 0.12 percentage points to the annual growth rate.

Figure 6 compares the projected gains to the annual growth rate that would result from the trade liberalization modeled by the World Bank, with the average annual rate of per capita GDP growth in South Korea over the four decades from 1960 to 2000. It also includes the average per capita growth rate projected by the World Bank for the countries of Latin America and Sub-Saharan Africa over the next ten years.[5] The gap between the growth rate in South Korea over this four decade long period and the growth rate projected for Latin America is 4.1 percentage points. The gap with Sub-Saharan Africa is 4.9 percentage points. If all

[5] It is appropriate to compare per capita GDP growth rates to the incremental increases in growth projected to occur as a result of trade liberalization, since there is no reason to expect that trade liberalization will have any direct effect on population growth. Therefore any gains in growth will be translated directly into per capita GDP growth.

developing countries benefit equally from the trade liberalization modeled by the World Bank, then the projected gains would close 2.9 *percent* (not percentage points) of the gap in the growth rate between South Korea and Latin America and 2.4 percent of the gap in the growth rate between South Korea and Sub-Saharan Africa.

FIGURE 6.
Real Growth of Per Capita GDP, with and without Trade Liberalization



Source: World Bank, 2002, table A3.2 and author's calculations.

In other words, the World Bank's projections imply that trade liberalization would only move developing countries a small fraction of the way towards the sort of rapid growth experienced by South Korea or other successful developing countries. While higher growth should be viewed as beneficial —other things being equal— the increments to growth that are implied by the World Bank's projections would have very little impact on the living standards for people in most developing

countries.[6] The first column in table 1 shows the current per capita GDP for several developing countries. The second column shows the projected per capita GDP for 2015, assuming no trade liberalization. The third column shows projected per capita GDP for 2015 including the gains from trade liberalization described above.[7] While these countries will clearly be better off if the World Bank's projections prove to be correct, and they were able to achieve additional growth as a result of trade liberalization, this gain would probably not make a qualitative difference in their well-being in 2015. It is worth noting that the gains that the World Bank projects that these countries will experience, after 15 years of trade liberalization, will have roughly the same impact on living standards as would the difference between the growth rate in South Korea and that of most other developing countries, after a three month period.

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[6] One issue that is very important in the trade debate is the impact of trade on inequality. There is considerable evidence that increased opening to trade has increased inequality, at least in the industrialized countries. The standard trade theory implies that capital and skilled labor in industrialized countries (the relatively scare factors) will benefit disproportionately from trade liberalization, and that unskilled workers would fare relatively worse. (The opposite is implied for the developing countries.) The World Bank's model has the unusual result that unskilled workers, and skilled workers, seem to do better than capital just about everywhere. This issue is examined in more detail in the Appendix.

[7] These projections assume that the growth rates projected by the World Bank for the period 2001-2010 continue through 2015 (World Bank, 2001, table A3.2).

TABLE 1.
The relative impact of Trade Liberalization on GDP growth
Per Capita GDP
(in 2000 dollars)

	2000	In 2015, without trade liberalization	In 2015, with trade liberalization	In 2015, with S. Korean Growth Rate
Algeria	$5 040	$6 209	$6 312	$12 081
Argentina	12 050	16 458	16 732	28 884
Bangladesh	1 590	2 782	2 828	3 811
Bolivia	2 360	3 223	3 277	5 657
Brazil	7 300	9 970	10 136	17 498
Chile	9 100	12 429	12 635	21 813
China	3 920	8 267	8 399	9 396
Colombia	6 060	8 277	8 414	14 526
Egypt	3 670	4 521	4 596	8 797
Ethiopia	660	801	814	1 582
India	2 340	4 094	4 162	5 609
Indonesia	2 830	5 968	6 063	6 784
Kenya	1 010	1 226	1 246	2 421
Mexico	8 790	12 005	12 205	21 070
Mozambique	800	971	987	1 918
Pakistan	1 860	3 254	3 309	4 458
Peru	4 660	6 365	6 470	11 170
Sierra Leone	480	583	592	1 151
South Africa	9 160	11 119	11 296	21 957
Turkey	7 030	11 441	11 624	16 851
Venezuela	5 740	7 840	7 970	13 759
Vietnam	2 000	4 218	4 285	4 794

Source: World Bank 2001, and author's calculations.
http://www.worldbank.org/data/databytopic/GNPPC.pdf
World Development Indicators, 2001; Human Development Indicators 2001.
* data for 1990.

WHY DEVELOPING NATIONS MAY NOT CARE ABOUT THE ECONOMIC MODELS

The discussion in the prior section noted that most of the gains from trade that developing countries are projected to receive result from their own liberalization, not the removal of trade barriers by the industrialized countries. Yet, developing countries (like industrialized countries) are generally reluctant to engage in unilateral trade liberalization. This reluctance would appear to be foolish —even if the gains from trade liberalization are relatively modest, countries should still prefer policies that will make them better off. However, there are good reasons that developing countries may opt not to follow an ambitious route of trade liberalization, even if the positive gains predicted in the models proved accurate.

Any economic model requires a large number of simplifying assumptions in order to make it tractable. The models used to project the impact of trade are no exception. This is not necessarily a problem, unless the simplifying assumptions exclude issues that are important to understanding the impact of trade liberalization. The prior section noted two simplifying assumptions that may distort the evaluation of trade liberalization in fundamental ways:

1) Tariff revenues are assumed to be replaced by non-distortionary lump sum taxes, and
2) the adjustment process from declining industries to growing ones is assumed to be quick and painless, and has no impact on the net gain or loss to the country from trade liberalization.

Both of these assumptions are very much at odds with reality in ways that are likely to be especially important for developing countries.

The first issue, the replacement of lost tariff revenue, reflects both a technical flaw in the models, and a major gap between the models and the reality that they purport to describe. The technical flaw stems from the fact that in standard economic models, all real world taxes (*e.g.* income taxes, payroll taxes, sales taxes, excise taxes, etc.) lead to economic distortions,

which means that they will reduce output. Tariffs can also be thought of as one type of tax, which happens to be applied to goods that are imported into the country. The proper way to model the impact of tariff reductions on the economy, would be to project the gains from eliminating one type of distortionary tax (*i.e.* tariffs) and replacing it with another type(s) of distortionary tax. The size of the benefits to the economy would depend on the extent to which the taxes that were raised to replace lost tariff revenue were less distortionary than the tariffs that were reduced. There is no guarantee that this tax shift will necessarily provide gains —it is possible that the taxes that are raised to offset the lost tariff revenue are more distortionary than the tariffs, in which case the country would lose by cutting its tariffs.

This issue is evaded in both the BDS and World Bank models, because they assume that the lost tariff revenue is replaced by a lump sum tax, which creates no economic distortions.[8] This assumption inevitably leads to an overstatement of the gains from trade, even if everything else in the model exactly reflected reality. While there are different assumptions which can be made about the taxes used to replace the lost tariff revenue (*e.g.* a proportionate increase in all taxes or an increase in specific taxes, which would arguably be the ones that are most likely to be raised to offset lost tariff revenue), a proper modeling exercise should show the impact of replacing one real world tax with an alternative real world tax, not an imaginary tax which only exists in economic models.

This point is especially important for developing countries because they depend on tariffs for a large percentage of their tax revenue. Table 2 shows the percentage of government revenue that comes from tariff revenue for a selected group of countries. For the industrialized countries in the table, the percentage is very low. In the case of the United States it is just 0.9 percent. By contrast, developing countries are far more dependent on tariff revenue. Many developing countries, such as Egypt, Venezuela, and Pakistan rely on tariffs for more than 10 percent of their

[8] The model used by the United States International Trade Commission to analyze the economic impacts of trade policy also makes the same assumption about replacing tariff revenue with lump sum taxes (Baker and Weisbrot, 2001, and United States International Trade Commission, 1999).

central government revenue. India relies on tariffs for more than 20 percent of its revenue. Sierra Leone gets nearly half of its revenue from tariffs.

TABLE 2.
Tariffs as a percent of government revenue

Countries	%	Countries	%
Algeria	16	Peru	10
Argentina	7	Rusia	7
Bolivia	7	Sierra Leone	46
Brazil	2	South Africa	3
Chile	8	Turkey	2
China	6	Venezuela	11
Colombia	10	Vietnam	25
Egypt	13	France	0
India	21	Germany	0
Indonesia	4	Japan*	1
Kenya	15	United Kingdom	0
Mexico	4	United States	1
Pakistan	17	* data for 1990	

Source: World Development Indicators, 2001; Human Development Indicators, 2001.

There is a simple explanation for the fact that developing countries, and especially poorer developing countries, tend to be heavily dependent on tariff revenues to support their governments. It is relatively easy to tax goods that are brought into the country at a border crossing, port, or airport. By comparison, most other types of taxes —income taxes, payroll taxes, or sales taxes— require an extensive tax collection system, including administration and enforcement, that can collect taxes from a large number of businesses, or an even larger number of individuals, scattered throughout the country. While industrialized countries generally have such systems in place, most developing countries do not. In countries that have poor transportation and communications systems, as well as serious problems with corruption, it can be even more difficult

to devise an alternative to tariffs that can be as effective in raising revenue. In many cases, a tariff may actually be the most efficient form of tax, since an alternative form of taxation would be very expensive to administer and enforce. In these countries, switching from tariffs to other revenue sources would likely result in large economic losses.

By modeling a situation in which tariff revenue can be readily replaced with other sources of tax revenue that do not produce economic distortions, these modeling exercises seriously distort the reality faced by governments in developing countries. Reductions in tariff barriers will either force substantial cutbacks in public services, or the creation of new or expanded taxing agencies. Both scenarios imply large costs that are ignored in these models.

The second issue, the adjustment process to a liberalized trading regime, raises issues that are at least as important as the problem of replacing lost tariff revenue. The economic projections from trade models often imply large shifts between industries. For example, in general these models will imply a large movement of workers out of agriculture in developing countries. They also will imply a loss of jobs in many domestic industries that will not be able to compete internationally in the absence of protection. In the models, these workers find new employment in the sectors that expand as a result of trade liberalization.

This may be an accurate description of a long-run process that happens over decades, but it does not fit neatly with the way economies work over relatively short periods, such as an individual's working lifetime. Major economic transformations —such as the transition from an agricultural economy to an industrialized economy— are usually enormously painful processes, in which large parts of the population are subjected to long periods of unemployment and financial insecurity. People do not generally leap at the opportunity to leave communities that have provided homes for their families for generations. While often the shift to cities is voluntary, in many cases it is an act of desperation, undertaken when it is no longer possible to support a family in the countryside.

In 1870, in the United States 53 percent of the labor force worked in agriculture, a percentage comparable to what would be found in many developing countries today. By 1970, a hundred years later, the share of

the labor force working in agriculture had fallen to 4.6 percent, a level comparable to most industrialized countries at present.[9] Despite the fact that this transition took place over 100 years, it nevertheless led to severe social disruptions, prompting the growth of radical populist movements in both the 1890s and the 1930s.

In many countries, the implications of these modeling exercises is that comparable transitions are accomplished in the span of one or two decades. The implicit economic logic in these models is that the reduction of agricultural prices to world levels will make it impossible for large portions of the rural population to remain employed in agriculture. These workers will then move to the cities in search of employment. Since the models assume that labor is fully employed, the possibility that workers displaced from agriculture could remain unemployed for long periods of time is ruled out by assumption.

Table 3 shows the percentage of the population living in rural areas, for several representative developing countries. Economic models, such as the ones constructed by the World Bank or BDS, don't allow for precise projections of the extent to which the rural population will be displaced as a result of trade liberalization. But countries, such as China and Indonesia, that currently have a very high percentage of their population living in rural areas, and protect their farmers with high tariff barriers, are likely to experience a very rapid pace of displacement if trade liberalization advances as quickly as is assumed in the simulations modeled by the World Bank or BDS.

[9] This data can be found at http://www.usda.gov/history2/text3.htm.

TABLE 3.
Agricultural labor force

Countries	Percent of Women Employed in Agriculture	Percent of Men Employed in Agriculture
Bangladesh	78	54
Bolivia	2	2
Brazil	22	28
Chile	4	19
China*	47	47
Egypt	42	32
Indonesia	42	41
Malaysia	14	19
Mexico	13	30
Pakistan	67	44
Peru	5	10
Turkey	65	30
Venezuela	2	19
Vietnam	71	70

Source: World Development Indicators 2001; Human Development Indicators 2001.

* Percentage refers to share of the entire labor force employed in agriculture, it is not divided by gender.

It is worth noting that it is not just the agricultural sector in developing countries that is likely to experience displacement. In many cases, domestic businesses are likely to fail, once they no longer can rely on tariff barriers to protect them from international competition. In principle, this can be desirable, because it is exactly this movement of labor and capital, from less efficient to more efficient businesses, that is the basis of the projected gains from trade.

However, a key assumption in this scenario, as noted earlier, is that the displaced workers become re-employed. If the transition moves too rapidly, it is likely that many workers will experience substantial spells of unemployment. And, if unemployment becomes too widespread, from displacement in both agriculture and domestic industry, then it could

lead to social instability, which may undermine the conditions necessary for renewed economic growth. As the World Bank noted in its discussion of Haiti's liberalization of the trade in rice, "severe governance problems" eroded macroeconomic stability and discouraged investment (World Bank, 2002, p 43). While it may not be fair to attribute Haiti's governance problems to the displacement caused by liberalization of the rice trade, there is little doubt that social instability creates a poor environment for investment. If liberalization policies cause enough displacement to generate serious social instability, then the displaced workers may have to wait a very long time to be re-employed elsewhere, since the necessary investment will not be forthcoming. In this scenario, liberalization will have shifted workers from being employed in inefficient industries, to being altogether unemployed —creating an obvious loss for these workers, and for the economy as a whole.

It is important to recognize that large-scale and enduring unemployment is the rule, rather than the exception in the developing world. Table 4 below gives estimates from the International Labor Organization of the unemployment rate for several developing countries at the end of the nineties. As long as there is widespread unemployment in a country, an emphasis on shutting down inefficient industries may be misplaced. Implicitly (and often explicitly), the assumption of advocates of liberalization is that foreign direct investment will naturally move in to take advantage of large pools of unemployed labor. In fact, there is no guarantee that such flows will occur, or that the flows will be large enough to prevent whole generations of workers from being unemployed or underemployed for most of their working lifetime.

TABLE 4.
Unemployment in developing countries

	% Unemployment (1999)
Algeria	
Argentina	14.1
Bolivia	7.2
Brazil	9.6
Chile	8.9
China	3.1
Colombia	20.1
Egypt	8.1
India*	58.7
Indonesia	6.4
Malaysia	3.4
Mexico	1.7
Peru	8.0
Russia	13.4
Turkey	7.3
Venezuela	14.9

Source: World Development Indicators 2001; Human Development Indicators 2001; ILO Online Database.

*This data for 1998.

LOSSES FROM TRADE AGREEMENTS

It is important to recognize that some aspects of the trade liberalization being promoted by the World Bank and others will necessarily lead to significant losses for developing countries. Specifically, developing countries will incur sizable costs from licensing fees and royalties that result from having to adopt US-style rules on patents and copyrights. They are also likely to incur significant costs from holding reserve currencies —assets that provide very low returns— in order to maintain the stability of their currencies in a volatile international financial system. Economists have not devoted much energy to quantifying these costs, but the existing evidence indicates that they are likely to be

substantial. This section will briefly describe the nature of these costs and examine evidence as to their size.

Recent trade agreements, most notably the Trade Related Aspects of Intellectual Property (TRIPS) provisions of the Uruguay Round WTO agreement, require developing countries to adopt US-style patent and copyright laws.[10] This will allow foreign corporations to get patents and copyrights that apply to the sale of items such as prescription drugs, computer software, recorded music and videos, and many other items. As a result of this protection, consumers and businesses in developing countries will pay far more for these items than they would cost without such protection. The higher prices constitute costs both because they will directly transfer money from developing countries to the industrialized countries, and also because they will lead to large distortions in the market as a result of raising the price of protected goods far above the cost of production (the latter are referred to as "deadweight losses" in the economics literature).

It is important to recognize the order of magnitude of the distortions created by these forms of protection. It is unusual for trade barriers to add more than 20 percent to the price of a product in the industrialized countries, or more than 40 percent in developing countries. In contrast patents, at least in the case of prescription drugs, typically add 300-400 percent or more to the price of the product.[11] In the case of software or recorded music and video material, items that could otherwise be transferred at almost zero cost over the Internet, the protected products can instead be sold at a significant price —sometimes hundreds of dollars for software, or $10-$30 for recorded music and videos.

Obviously, there is a rationale for the protection provided by patents and copyrights. The profits earned by holders of patents and copyrights provide an incentive to undertake research and/or creative activity. But apart from the issue of whether patents and copyrights are the best way to provide this incentive —there is a separate issue faced by developing countries. The amount of technology and creative work that is produced is not likely to be

[10] This requirement is phased in, with the least developed countries not required to have these laws on their books until 2005, a date which was further delayed in the agreements reached in Doha last year.

[11] Pharma memo on mark-up.

significantly affected in the foreseeable future by the decision by developing countries to introduce and enforce patent and copyright laws. Yet the enforcement of these laws will drastically raise the prices of what they consume.[12] While it might be argued that in the long-run the developing countries will benefit from having strong patent and copyright laws, it is not even possible to make this assessment without first knowing what their cost is likely to be. At present, the evidence on the size of these costs is extremely limited.

The World Bank recently attempted to quantify some of the costs of TRIPS. The first column in Table 5 shows its estimates of the net change in patent rents that several developed and developing countries would pay as a result of TRIPS.[13] In several cases, the net outflow of funds is quite large, most notably in South Korea, where the World Bank estimated the size of the net outflow at 3.4 percent of GDP. While the estimates for the other countries are considerably smaller, this projection for South Korea is worth noting. Presumably, the main reason that the projected costs would be so large in the case of South Korea is that it is a comparatively wealthy developing nation.[14] The other countries shown in the table are all

[12] In effect, without copyright and patent laws, developing countries will be benefiting from the innovations and creative work of industrialized countries without being forced to pay for it, in the same way that United States and most other currently industrialized countries benefited from the innovations and creative work of the countries that had preceded them in the industrialization process. Insofar as the fruits of knowledge cannot be contained, it is inevitable that individuals and countries will eventually be able to benefit from the work of others, without having to pay for it directly.

[13] It is worth noting that a portion of this projected increase is attributable to a projection that there will be more foreign direct investment, which will result in larger patent rents. The case that stronger enforcement of patents and copyrights will lead to more foreign direct investment is extremely dubious on logical grounds. If a country opts not to honor patents and copyrights, then any person from anywhere in the world would be able to evade foreign patents and copyrights on that country's territory. A firm could not prevent such challenges to its property claims simply by opting not to invest in such countries. Unless it is assumed that firms use cartel like behavior to punish countries that lack strong patent and copyright enforcement, there is no logical reason for believing that the volume of foreign direct investment would be related to patent and copyright enforcement.

[14] It is possible that the figure for South Korea is inflated due to problems with the methodology used. This methodology seeks to estimate the transfers due to enhanced patent and copyright protection, based on the fees that firms pay to get and renew

considerably poorer. An implication of this pattern is that TRIPS will become considerably more costly to developing countries as they grow richer. Therefore, while patent fees may present only a limited burden to these countries at present, they will become a much greater drain on countrie's resources and pose more of an obstacle to development as they get wealthier.

TABLE 5.
The cost of trips

	Millions of 2000 Dollars			Percent of GDP		
	Net Patent Rents	Deadweight Loss	Total Cost	Net Patent Rents	Deadweight Loss	Total Cost
Brazil	530	1 060	1 590	0.1%	0.2%	0.3%
China	5 121	10 242	15 363	0.5%	0.9%	1.4%
Greece	7 746	15 492	23 238	6.9%	13.7%	20.6%
India	903	1 806	2 709	0.2%	0.4%	0.6%
Korea	15 333	30 666	45 999	3.4%	6.7%	10.1%
Mexico	2 550	5 100	7 650	0.4%	0.9%	1.3%
Portugal	282	564	846	0.3%	0.5%	0.8%
South Africa	11	22	33	0.0%	0.0%	0.0%
Spain	4 716	9 432	14 148	0.8%	1.7%	2.5%

Source: World Bank 2002, table 5.1 and author's calculations.

It is also worth noting that these projections are a significant understatement of the actual costs of patents and copyrights to developing countries. These projections only count the direct outflow of patent rents from developing countries to other countries. This is only a portion of the total cost. In addition to the money directly transferred out of the country, there will also be substantial economic distortions due to the fact this protection causes goods to sell at prices far above their marginal costs. The size of these losses will depend on the percentage increase in price that it is

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patents. This methodology would at best give very inexact estimates. It would completely miss payments borne by consumers that cover the cost of patent-associated rent-seeking behavior, such as advertising. In many cases these costs will be quite large. For example, in the case of prescription drugs in the United States, sales and promotion costs are probably larger than industry profits. This would mean that in general the methodology would understate the cost of TRIPS to developing countries.

assumed results from patent or copyright protection, and also the elasticity of the demand for the products in question. Since the percentage increase in price is likely to be very large (often more than several hundred percent), the efficiency losses are likely to be quite large as well. A recent study found that these deadweight losses were on average twice the size of the estimated patent rents (McCallum, 1999, tables 6 and 8). Column 2 shows the total cost under the assumption that efficiency losses from patent protection are twice the size of the direct outflow of patent rents.[15]

Column 3 of table 5 combines the losses directly attributable to patent rents with the deadweight losses. These total losses are quite large relative to gains that the World Bank estimated to developing countries from trade liberalization. In the case of South Korea, the estimated loss of 10.1 percent of GDP is several times larger than what the country could reasonably hope to gain from trade liberalization. In China the estimated losses are equal to 1.4 percent of GDP and in Brazil 2.4 percent of GDP, respectively.

Even this estimate ignores many of the costs associated with the enforcement of patents and copyrights. The table shows only the losses that result from the higher prices charged to consumers for patented and copyrighted materials; it does not include either the costs associated with rent seeking behavior or the enforcement costs incurred by the government. The former costs would include copycat research efforts induced by monopoly profits for patent holders, as well as bribes and legal fees associated with the preservation and enforcement of copyrights. Insofar as these fees are paid by foreign corporations, they are not a loss to economies of developing countries, but to some extent domestic corporations are likely to be brought into this process as well. The enforcement costs to

[15] To give an example, an unauthorized version of a videotape or videocassette may sell for $1-$2. With copyright protection, the same product may sell for $20-$30 with the distributor perhaps collecting as much as $10 in royalties. If the elasticity of demand is 1, then the reduction in quantity demanded resulting from imposition of protection would be between 90 and 97 percent. This would imply that the lost consumer surplus would be between 8.1 and 48 times as large as the royalty payment. The static efficiency loss from patent protection may be larger in the case of consumer goods than in producer goods, but this example should demonstrate that the assumption that these losses are equal to the size of the direct transfer of income, excluding the deadweight loss, is very conservative, and likely a large underestimate of the actual costs.

governments include the creation of agencies that can evaluate and approve copyright and patent applications (with some patent applications taking up hundreds of thousands of pages, this is not a trivial task), and also preventing the distribution of unauthorized copies of copyrighted or patented material. Since technology has made the spread of unauthorized versions of some items (especially digital material) very easy, and the savings from using them are very large, economic theory would suggest that government enforcement efforts will be very expensive.

It is also important to note that these estimates refer only to static losses. There are likely to be significant dynamic costs associated with enforcing patent and copyright protection in developing countries. The transfers of patent rents and inefficiencies resulting from patent and copyright enforcement will reduce GDP and therefore savings and growth in developing countries. This effect will be amplified by the fact that patent and copyright enforcement is likely to have an especially large effect on the price of investment goods, such as computers. A large percentage of the cost of a computer is attributable to the licensing fees that companies such as Microsoft charge for the software and technology in the computer. Therefore the cost to developing countries of buying computers and other high tech items will be far higher if they are forced to pay these fees, as opposed to a free market scenario in which there are no applicable patents or copyrights. These protections would therefore be expected to reduce investment and growth. In addition, insofar as there are economies of scale in certain industries, losses to developing countries will be multiplied as output is reduced. For these reasons, the estimates in table 5 are likely to understate the actual costs of TRIPS to developing countries.

The second largely neglected source of costs to developing countries from the recent path of globalization is the increase in foreign reserve holdings. Throughout the developing world countries have felt the need to vastly increase the size of their holdings of foreign reserves relative to GDP, over the last four decades. These increases are easy to document. Table 6 shows the increase in the ratio of reserve holdings to GDP in the major regions of the developing world.

TABLE 6.
Reserve Holdings as a Share of GDP, by decade and region

Region	1960's	1970's	1980's	1990's	'97-99
East Asia and Pacific	12.2%	16.2%	19.4%	22.5%	24.6%
South Asia[16]	4.1%	6.3%	8.1%	8.4%	8.5%
Latin America and Caribbean	5.0%	9.1%	8.9%	11.8%	13.2%
Sub-Saharan Africa	5.7%	7.6%	7.4%	11.7%	13.6%
Middle East and North Africa	10.9%	14.0%	24.2%	21.4%	20.1%

Source: Baker and Walentin, 2001.

There is no widely accepted explanation for this increase. Clearly, the fact that the ratio of trade to GDP has significantly increased over this period explains a portion of this increase. However, the magnitudes are too large for this to be the main explanation. The breakdown of the Bretton Woods system and the increase in financial instability in recent years have clearly played a role. It is worth noting that there has also been a large increase in the ratio of reserve holdings to GDP in the years since the East Asian financial crisis.

Whatever the exact cause, the increase in reserve holdings imposes a large burden on developing countries. Reserves are typically held in the form of gold, short-term debt of the United States and other major industrialized countries, or in bank deposits denominated in major international currencies and held in major money center banks. In general, these holdings provide very little real return, generally less than 2.0 percent above the rate of inflation. But there is a very large opportunity cost to these reserves. Developing countries accumulate reserves by having an excess of domestic savings over domestic investment. If they did not have to hold this money as reserves, it could be invested domestically in physical or human capital. The real return on such investment in the industrialized countries is generally estimated at approximately 10 percent a year. In developing countries, the return is to capital is generally believed to be far higher —20 percent a year or more. Therefore the cost to the developing countries of holding reserves is the difference between the returns this

[16] The data for South Asia excludes Bhutan and Maldives. Both were outliers with ratios of reserve holdings to GDP which are far above the average for the region.

money would earn if invested domestically in physical or human capital and the 0-2 percent real return it earns when held as reserves.

Table 7 shows the cost to the major regions of the developing world as a result of having to maintain their current ratio of reserves to GDP, as opposed to the ratios that they held in the sixties

TABLE 7.
Cost of Increased Reserve Holdings, 1960's to 1990's
Percent of GDP

	Annual Cost		Cumulative Cost – 10 years	
Region	Low Cost	High Cost	Low Cost	High Cost
East Asia and Pacific	1.0%	2.1%	11.8%	23.6%
South Asia[17]	0.4%	0.9%	4.9%	9.9%
Latin America and Caribbean	0.7%	1.4%	7.8%	15.6%
Sub-Saharan Africa	0.7%	1.4%	4.6%	9.2%
Middle East and North Africa	1.1%	2.1%	12.0%	24.1%

Source: Baker and Walentin, 2001.

It assumes alternatively that the gap between the return on capital and the return from reserve holdings is 10 percentage points in the low cost scenario and 20 percentage points in the high cost scenario. The cost in each region is substantial, with East Asia experiencing the greatest costs, between 1.0 and 2.1 percent of annual GDP. This is a substantial cost, associated with the path that globalization has taken in the last three decades, which has been largely overlooked by economists. This cost also is comparable in size to the potential gains from trade liberalization that the World Bank estimates for the developing countries.

CONCLUSION-WILL DEVELOPING COUNTRIES GET RICH FROM TRADE LIBERALIZATION?

This paper has examined some of the evidence for claims that trade liberalization will significantly improve the plight of people in developing countries. As noted above, many of the claims frequently made about trade liberalization are not supported by the evidence: for

[17] Data for South Asia excludes Bhutan and Maldives.

example, one of the most respected trade models showed that most developing countries were actually harmed by the recent liberalization of trade barriers in agriculture and textiles. Furthermore, it pointed out that the World Bank's own trade model showed that developing countries would gain far more from their own liberalization of trade barriers than liberalization by the industrialized countries. Therefore, assertions that developing countries are likely to experience large gains as a result of the removal of trade barriers by the industrialized countries —especially in agriculture and textiles— are not supported by evidence.

The paper also called into question the general usefulness of these trade models in policy debates. It noted that the modeling of past policy changes has produced widely varying projections, as does the modeling of current proposals for trade liberalization. As is noted by the World Bank and others, efforts to incorporate less well-understood effects of trade liberalization, such as economies of scale, increased competition, and the liberalization of trade in services, are speculative, and not well grounded in evidence. As a result, the larger projections of gains from trade are highly speculative in nature.

The second section explored two of the important assumptions of standard trade models. First, these models assume that the tariff revenues lost as a result of trade liberalization are replaced by a fictitious revenue source —a non-distortionary lump-sum tax. Since in the real world, all taxes lead to some economic distortions, these projections overstate the actual gains from trade liberalization. This overstatement is especially serious in developing countries where tariff revenue often accounts for more than 10 percent of government revenue, and sometimes more than 30 percent. The loss of this revenue would require the creation of alternative tax collection systems, which may prove far less effective at raising revenue (and lead to more economic distortions) than collecting tariffs on items crossing the border.

The second seriously problematic assumption in these trade models is that they assume that the resources displaced by the removal of trade barriers (*e.g.* the unemployed workers) can simply move to sectors that are expanding. In reality, this process can involve very long periods of adjustment. It can also lead to considerable social upheaval if it proceeds

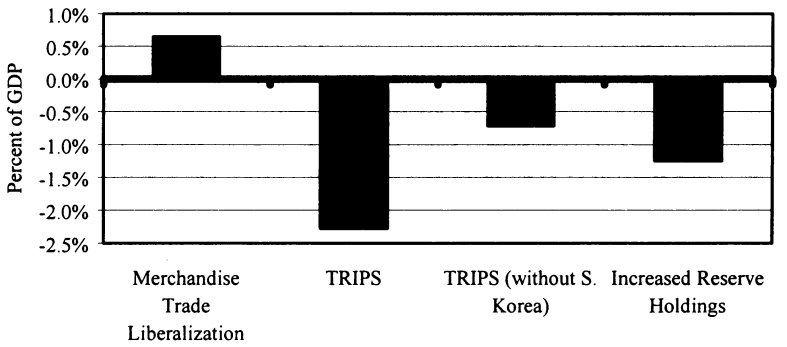
too quickly. In the United States, the movement from a rural to an urban society was a lengthy process that at several points sparked serious social unrest. It is unlikely that developing countries can avoid the same problems. Therefore, it is reasonable for them to opt to limit the pace at which workers are displaced from agriculture and other traditional sectors, in spite of the economic gains that trade models indicate will result from this displacement.

The third section noted two serious costs associated with the recent path of trade liberalization that have been largely overlooked in discussions of trade liberalization. The first set of costs results from the higher prices that developing countries will have to pay for many items, as a result of enforcing US-type patents and copyrights. (As noted earlier, this is actually the result of increased protectionism, since these measures interfere with a free market, but recent trade agreements, such as NAFTA or the Uruguay Round on the WTO, have generally included provisions requiring increased enforcement of patents and copyrights.) Since these patents and copyrights can raise the price of protected items by several hundred percent —or more— over the free market price, they can impose large economic burdens on developing countries and lead to large transfers from poor countries to rich ones.

The second source of costs to developing countries from the recent path of trade and capital account liberalization is the rise in foreign reserve holdings. Countries in every region of the developing world have substantially increased the ratio of their reserve holdings to GDP over the last three decades. Apparently they have viewed this as necessary to maintain the stability of their currencies in international financial markets. The costs from higher reserve holdings stem from the opportunity cost —reserve holdings offer real returns that are typically less than 2.0 percent annually. By contrast, if this money were invested in physical or human capital, the real return would typically be in the double-digits, and in some cases would exceed 20 percent annually. By forcing developing countries to forego this higher return, the need for large reserve holdings places a substantial burden on developing countries.

Figure 7 compares the gains to developing countries from trade liberalization by rich countries as projected by the World Bank and discussed in the first section, with estimates of the costs associated with patent and copyright protection, and the losses associated with increased reserve holdings. These projections can only give a general sense of the orders of magnitude involved. Not only do the projections cover different countries, they also apply to different time periods. For example, the costs attributed to increased reserve holdings reflect changes over the last three decades —not a projection for the future. Nonetheless the chart can be viewed as providing a useful guide as to the best policy prospects for improving the economies of developing countries.

FIGURE 7.
Change in GDP, Developing Countries, 2015 as a result of various policies



Source: World Bank 2002, and author's calculations.

As the chart shows, the magnitude of the losses that developing countries have incurred as a result of the need to increase their holdings of foreign reserves, and the projected losses due to the implementation of the TRIPS agreement are each comparable to the gains projected from future trade liberalization. A clear implication of this comparison is that the benefits to developing countries from addressing each of these two major causes of

economic losses can be as large or larger than the gains from liberalizing trade. In other words, increasing the stability of the international financial system —so that large reserve holdings are no longer necessary, or reversing the patent and copyright rules imposed in the TRIPS agreement, may benefit developing countries as much or more than achieving progress in liberalizing trade.

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APPENDIX 1.

Table 1

Column 1 in table 1 shows the World Bank's purchasing power parity estimates of per capita GDP for the countries listed. Column 2 projects the 2015 per capita GDP applying the baseline growth projections for 2001-2010 that appear in World Bank 2002, table A3.2. The growth projections for a region (*e.g.* Sub-Saharan Africa) were applied to each individual country in the region. The third column shows the projected per capita GDP assuming that the trade liberalization modeled in World Bank 2002, table 6.1 (with exogenous productivity growth) occurs. This adds 0.11 percentage point to the annual growth rate. The fourth column projects 2015 GDP if the countries were able to maintain the 6.0 percent annual rate of per capita GDP growth achieved by South Korea between 1960 and 2000.

Figure 7

The gains from trade liberalization shown in figure 7 is the estimate of the gain to developing countries from liberalization in the high income countries which appears in World Bank 2002, table 6.1 (with exogenous productivity growth). The loss to developing countries due to TRIPS is the average share of GDP loss among the developing countries that are included in table 5. The figure is the total loss, combining the estimated rent transfer from World Bank 2002, table 5.1, with the imputed deadweight loss shown in the second column of table 5. The loss due to increased reserve holdings averages the high and low cost estimates in table 7 (implying a net opportunity cost of 15 percent on money held as reserves), weighting the regions by GDP.

APPENDIX 2.

Trade and inequality-The World Bank vs. Standard Theory

One of the basic theoretical results of trade theory is that the factor of production (capital, skilled labor, or unskilled labor) that is relatively more abundant in a country opening up to trade than in the rest of the world, will gain disproportionately from trade liberalization. This would imply that in a wealthy nation where capital is relatively abundant, like the United States, corporations should be proportionately the largest beneficiaries of trade liberalization. This is because their capital is in relatively scarce supply elsewhere in the world, and therefore can command a high return. By contrast, less skilled workers in the United States would be expected to do relatively poorly. They will be placed in competition with large numbers of workers in developing countries (primarily through the shifting of factories), which would be expected to drive down their wages.

In the last two decades, there has been a significant increase in inequality in the United States, as the rate of return on capital has increased, and the wages of more skilled workers has risen at the expense of less-skilled workers. Most economists attribute part of the increase in inequality to the impact of increased trade (*e.g.* Cline 1997, Krugman, 1995, Schmitt and Mishel, 1996). The range of estimates of the contribution of trade to inequality imply that large segments of the US workforce were net losers from the increased trade of the last two decades.

While there are significant differences in estimates of the size of the impact of trade, virtually all trade and labor economists accept that increased trade has played some role in increasing inequality between skilled and less skilled workers, as well as contributing to a redistribution of income from labor to capital. Remarkably, the World Bank's model does not show this effect. In every region of the world, labor does comparatively better than capital as a result of trade liberalization. Appendix table 1 shows the ratio of the gains projected for labor relative to the gains projected to capital, as a result of trade liberalization. The table includes

the projections from BDS, and also the United States International Trade Commission. While these modeling exercises do not simulate the exact same polices, it is worth noting that only the World Bank finds that labor will, in general, achieve larger gains than capital in the industrialized countries.

APPENDIX TABLE 1.

	Ratio of gains to labor to gains to capital		
	All Labor	Unskilled Labor	Skilled Labor
BDS, 2001 - Uruguay Round			
Japan	0.7		
United States	0.9		
EU and EFTA	0.8		
BDS, Millenium Round			
Japan	0.8		
United States	0.9		
EU and EFTA	0.9		
USITC 1999, Textile and Apparel			
United States	0.5		
World Bank, 2001, Millenium Round			
Japan		1.3	4.0
United States		5.0	4
Western Europe		7.0	2.6

Source: BDS, 2001; USITC, 1999, and World Bank 2001, table 6.4.