
Envisioning Alternative Futures: Reshaping Global Trade Architecture for Development

Deepening global trade and investment integration holds the promise of more rapid increases in standards of living around the world, particularly in developing countries. Greater openness and expanded trade, partly attributable to the Uruguay Round, contributed to new opportunities for growth. Trade and incomes of developing countries grew during the 1990s at twice the rate of the previous decade, and those developing countries that deepened their integration with the global economy have seen their incomes rise at more than three times the pace of those that did not (Collier and Dollar forthcoming).

The challenge ahead is to expand those opportunities and ensure that the poorest countries and poorest people benefit. Today developing countries' exports confront higher levels of border protection than those of developed countries. The average poor person selling into globalized markets confronts barriers that are twice as high as the typical worker in developed countries (chapter 2). Said differently, products that the world's poor produce are more likely to be subject to high tariffs, quotas, disadvantageous subsidies, and antidumping claims than are those produced by the better-off. Although only partly because of disadvantageous external circumstances, the 49 least-developed countries have fared particularly badly during the last decade. Thirty percent of exports from least-developed countries face tariff peaks in at

least one of the Quad countries (United States, EU, Japan, and Canada). Besides merchandise trade barriers, restrictions on global trade in services also have impeded development. On the one hand, the lack of progress in the high-income countries to grant access on temporary movement of workers (mode 4 under General Agreement on Trade in Services—GATS) has foreclosed a potential source of earnings for developing countries. On the other, restrictions that developing countries place on foreign direct investment (FDI) in services industries have left unrealized their own full productivity potential. Moreover, costs of transporting developing-country exports are higher because of quasi-cartel restrictions, which, when added to the “behind the border” under-investments in ports, customs efficiency, and domestic infrastructure, drive up the landed price of exports and reduce volume.

Trade can only realize its potential if developed and developing countries alike take action to reshape the global trade architecture to promote development. This chapter discusses in summary form the key policy foundations of a new trade global architecture for development, and then shows how a phased program putting in place those policies might affect the long-term growth prospects of developing countries. Our conclusion: a reshaped global architecture can have dramatically positive effects on the lives of the world's poor.

Reshaping global trade architecture for development

While the global trade architecture is likely to evolve only slowly, the discussion among world leaders on a future trade round can forge the first underpinnings. This report has focused on four policy domains:

- Policies to ignite a successful *development round* in the World Trade Organization (WTO) that would produce tangible and durable benefits for developing countries
- Policies for *global cooperation outside the WTO* necessary to expand trade on a sustainable basis, and to promote development
- *Policies of high-income countries* to ensure continued global growth and to facilitate trade expansion through provision of access and aid
- *Domestic policies* that developing countries might undertake to promote trade-led development—with or without the help of the international community

This report has not addressed other aspects of global trade architecture that have been taken up in previous Bank reports and numerous other studies. These include issues such as standards and environment¹ as well as the workings of trade-related global institutions (such as the World Intellectual Property Organization, World Customs Organization, and International Air-Transport Association). Similarly, we have not dealt with another element of trade architecture—regional trading arrangements—which are particularly germane to the objectives of this report, hence the digression below.

A digression: regional arrangements

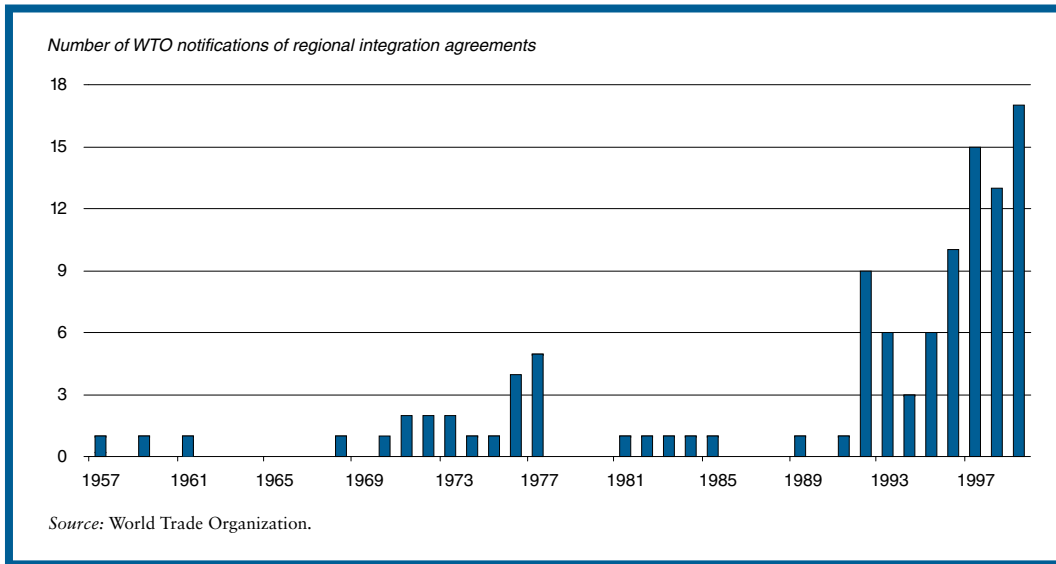
Regional arrangements to expand trade continue to proliferate. Governments, now more receptive to openness than in previous periods, have sought to expand existing trade by locking in increased market access with trading partners—most often neighbors. Moreover, regional arrangements are attractive because they can increase the credibility of reforms and may

be less cumbersome to negotiate than multilateral reforms. Smaller memberships may also make it easier to negotiate the increasingly important issues inherent in regulatory regimes, a sharp contrast with complicated multilateral negotiations involving more than 100 countries. Also, small countries can exercise greater influence in regional arrangements.

Regional arrangements, properly designed, have the potential to stimulate global trade through improving the efficiency, and hence the competitiveness, of regional producers and expanding demand for inputs from nonregional sources. But regional agreements behind trade barriers may artificially shift import supply from external countries to countries within the trade area, and this may lead to reduced efficiency for participants if displaced external suppliers would provide goods at lower cost. This trade diversion may disadvantage global export competitiveness in much the same way that national barriers do. “Rules of origin” arrangements in some regional agreements can raise costs and stifle local industry. This is also true of mutual recognition agreements that may shield regional partners behind discriminatory testing and certification protocols or regional standards. Smaller countries with less technical capacity to evaluate these schemes may find themselves at a net disadvantage, and be better off with first-best unilateral trade reform.

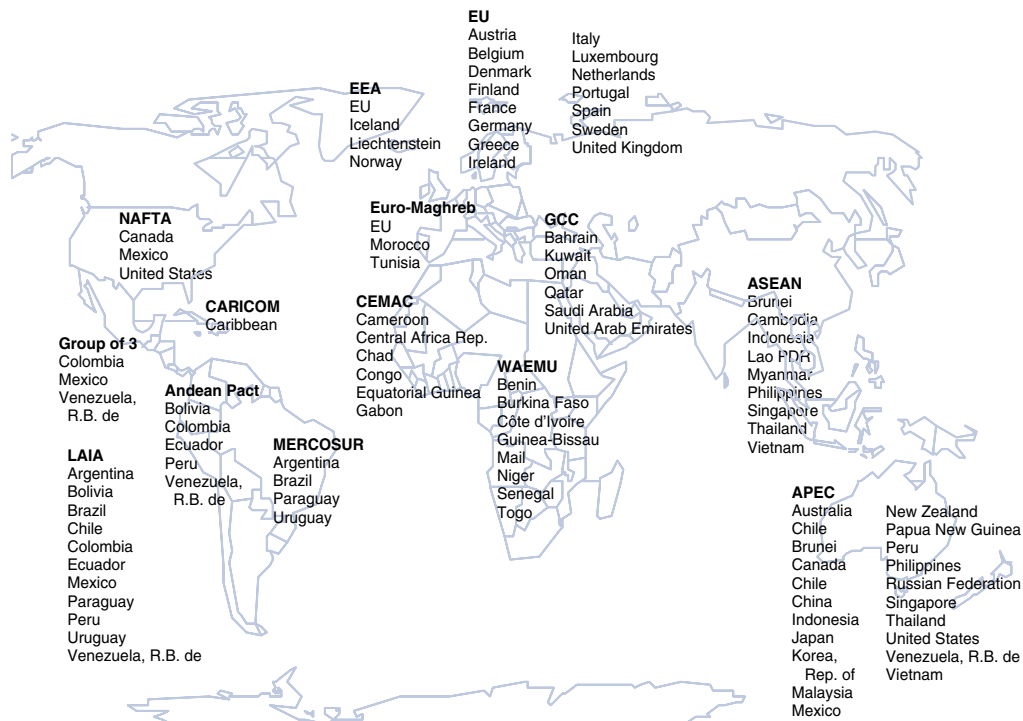
Whether a particular agreement improves national incomes depends on its design, and on the trading partners involved. Key design tests include whether regional arrangements involve lowering common external trade barriers, whether they stimulate increased competition, and whether they reduce transaction costs and extend to nondiscriminatory investment and services policies—all elements central to “open regionalism.” The World Bank Policy Research Report *Trade Blocs* (World Bank 2000a) concludes that North-South regional agreements are more likely to improve welfare than South-South agreements, simply because experience shows they usually result in lower trade barriers with less trade diver-

Figure 6.1 Regional integration agreements are proliferating



—and now span the globe.

Selected regional integration agreements



Source: World Bank staff.

sion, and because the greater structural differences in North-South economies usually produce greater potential gains from trade creation.² The EU arrangements under the 1992 Single Market Program are a clear case in which the analysis shows income-increasing effects. The North American Free Trade Agreement (NAFTA) also appears to have had a positive impact on its Members, particularly Mexico.

Regional arrangements are likely to remain an enduring feature of the trade panorama. To realize possible benefits of trade and investment expansion, arrangements have to be designed in a way that they become steppingstones to greater openness and development, rather than a vehicle for protection and unintended inefficiency. An important component of making them steppingstones rather than stumbling blocs to greater openness is for the countries involved to have low protection against non-Member countries. For example, Harrison, Rutherford, and Tarr (1997) estimate that Chile was able to gain from its free trade agreement with Mercosur due to the fact that it lowered its external uniform tariff from 11 to 6 percent. Regional agreements can facilitate the deep integration—reduction of border barriers, promotion of cross-investments, adoption of common regulations, and even cultural and political exchange—in ways that reinforce and enhance multilateral efforts.

Nonetheless, the world market is bigger than the market next door, so for all their coordination difficulties, multilateral efforts to expand market access can have greater impact on development. For these reasons this report has focused on a four-part agenda: a development round, global cooperation to expand trade, policies of high-income countries, and policies of developing countries (box 6.1).

A development round: policies in the WTO to expand trade opportunities for the world's poor

Market access. For the world's 2.8 billion poor, reducing barriers to agricultural products, textiles, clothing, apparel, and other labor-

intensive manufactures are critical. Both the high-income countries, and even the middle-income countries, will have to reduce their levels of protection in agriculture. In manufactures, political commitment is necessary to phase out the quotas of the Agreement on Textiles and Clothing (ATC) in 2004 and reduce the high levels of tariff protection that would otherwise impede access once the quotas are ended. These efforts should be accelerated. It also means a commitment from the high-income countries (HIC) to reduce tariff escalation and tariff peaks that now discourage the creation of new industrial activities in developing countries. Trade in services can be expanded—opening new vistas of productivity gains for developing and developed countries alike—if countries permitted more movement of temporary workers and reduced anticompetitive and discriminatory restrictions on foreign investment. Electronic commerce (e-commerce) deserves greater attention under GATS to provide maximum competition. Using GATS to eliminate anticompetitive aspects of the private carrier agreements in maritime transport and to engender new competition in air transport could lower the costs of delivering developing-country exports to foreign shores.

Antidumping, recourse to other forms of unilateral contingent protection, and overly stringent produce standards have dampened the access that developing countries have to the world's major markets. Whether it is shiitake mushrooms entering Japan, steel entering the United States, or products entering the EU, raising barriers to trade to protect domestic markets has too often hurt development. Applications of contingent protection are not limited to developed countries. Middle-income countries have increasingly sought refuge from the competitive pressures of their neighbors. One immediate measure would build confidence and show convincing movement on the ATC: an agreement to limit the use of antidumping on trade in textiles and clothing that will be liberalized as negotiated in the Uruguay Round. Over the longer term, the use of antidumping ought to be phased out (Finger

1998). Other “safeguard” instruments might be disciplined by giving standing to users of the goods concerned in the decision process.

Implementation issues. No less important than market access is tailoring implementation of existing and new agreements to the local capabilities of developing countries. Developing countries, given power asymmetries, have an interest in avoiding a two-track multilateral system that relegates them to a particular position; however, implementing global agreements can be better calibrated to domestic capacities. For example, the administrative costs of implementing Uruguay Round agreements on The Agreement on Trade-Related Intellectual Property Rights (TRIPS) and customs procedures can run into the tens of millions of dollars, and could easily swamp the investment budgets of many poor countries (see Finger and Schuler 2000). As developing countries have emphasized in several recent meetings (e.g., LDC3, Abuja and Zanzibar Trade Ministers’ conferences), these implementation concerns are paramount if a negotiation round is to promote development.

Moreover the benefits they would receive in terms of greater access to low-cost technology are, relative to the implementation costs, questionable. New trade rules recognizing these constraints would allow flexibility and provide for transition periods linked to development capacities. To be effective, implementation would have to be linked to a long promised financing facility that would provide technical assistance to implementation, and the high-income countries could convey their seriousness by agreeing to bind this commitment. Note that all of these issues could be decided during negotiations, and none need hold a new round hostage to prior action.

WTO transparency and participation. Beyond these elements, the convening of a round of talks is likely to promote development only if agreements enjoy full ownership among WTO Members. For agreements to realize their potential mutual benefits, major constituencies in both developing and developed

countries must understand them, participate fully in their formulation, and buy into them.

Two elements would serve that end. First, transparency is vital for ownership and implementation. Enhancing the transparency of WTO operations and improving access to and dissemination of WTO databases, reports, and information (for example, data underlying national trade policy reviews) would broaden the basis for participation of developing countries to engage in the policy formation process (Francois 2001).³

Second, a determinant of ownership of agreements is the ability of countries to participate in the WTO process. Many countries have inadequate representation in Geneva, impeding active engagement in negotiations. Although options have been identified to expand representation in Geneva at relatively low cost, expertise is still in short supply.⁴ Funding could be made available to allow low-income countries to finance the cost of hiring experts that can undertake the required analyses (Winters 2001). The annual cost of such an assistance program to least-developed countries could be in the \$10 million range.⁵

***Global actions outside the WTO
to expand trade: beyond negotiation
to cooperation***

Expanding trading opportunities for the world’s poor requires going beyond negotiations in the WTO to cooperation in other policy domains. Two sets of complementary policies are particularly important.

Increasing multilateral development assistance to expand trade can help countries take advantage of existing global markets, respond to global and domestic trade policy reforms, and link the poor to new opportunities. Multilateral cooperation among bilateral donors can provide “aid for trade.” One important example: The EU has taken the lead in providing generous assistance to the Integrated Framework (IF), a program designed to analyze obstacles to trade for least-developed countries and provide assistance in overcoming them (see box 6.2). A similar approach could usefully be applied to

Box 6.1 Reshaping global trade architecture for development: The four-part policy agenda

1. Convening a development round in the WTO

Market access

Agriculture

- Reduce applied tariffs, phase out tariff rate quotas, and bind tariffs at applied rates in both developed and developing countries
- Phase out export subsidies in high-income countries and commit to eliminate domestic support linked to production levels
- Reduce tariff escalation and cut off tariff peaks

Manufactures

- Reduce applied rates further, and bind tariffs to levels that equal or are close to applied rates
- Reduce tariff escalation and cut off tariff peaks
- Accelerate implementation of ATC quota eliminations and reduce tariffs in lines now covered by quotas
- Negotiate tighter disciplines on antidumping and other forms of contingent protection

Services

- Liberalize entry of foreign services suppliers through elimination of restrictions on entry and promoting increased competition, with wider use of GATS to bind nondiscriminatory access and lend credibility to domestic programs
- Enhance scope of services provision through the temporary movement of service providers (both skilled and unskilled)
- Secure openness of e-commerce in services, through wider and deeper GATS commitments on cross-border supply
- Strengthen multilateral rules to deal with anticompetitive practices in services
- Adopt a nondiscriminatory trading regime for air transport, including traffic rights, under GATS

Implementation procedures and phasing

- Adopt a phased implementation of TRIPS and other administrative-intensive agreements for low-income countries, based upon development capacity.
- Establish a consensus that the TRIPS Agreement allows developing countries with no domestic production capacity to grant compulsory licenses to foreign firms
- Convert “best endeavor” promises to binding commitments to provide low-income countries with financial and technical assistance to implement WTO accords

Improving WTO transparency and participation

- Require WTO disclosure of databases; reports and their full associated information; and analyses for particular decisions
- Provide assistance to strengthen capacity of all members to participate effectively in negotiations

2. Global cooperation to support trade outside the WTO

Provide “aid for trade” through stepped up development assistance

- Expand “Integrated Framework” assistance to all low-income countries
- Provide assistance to enhance the efficiency of the customs clearance process in developing countries, notably the good customs practices that are laid out in the revised Kyoto Convention (World Customs Organization)
- Expand multilateral assistance to overcome country-specific bottlenecks to improving competitiveness and trading potential (for example, in finance, transportation infrastructure, education for low income workers, and public sector trade-related institutions) and to promote trade

Box 6.1 (continued)

- Fund mechanisms to help developing countries use intellectual property protection to their benefit by protecting intangible assets such as traditional knowledge, designs, music, and ethnobotanicals, and patent protection for industrial goods as well as improve enforcement of IPRs
- Establish a global health fund to purchase licenses from developers of new medicines essential to treating debilitating diseases in poor countries

Expand global efforts beyond trade to improve the environment, raise labor standards, and adopt adequate product standards outside the WTO

- Expand global environmental cooperation with financing to improve environmental protection in developing countries, and create multilateral forum of environmental exchange
- Strengthen international actions on labor standards through the International Labour Organisation (ILO), with project collaboration from multilateral development banks
- Create a Standards Development Facility to introduce science and other professional evidence into standard setting for products, with adequate representation from developing countries; and provide assistance to developing countries' standard setting bodies

3. Policies for high-income countries

Market access

- Grant to all low-income countries duty-free and quota-free access to markets of all countries of OECD
- Reduce uncertainty of market access by harmonizing rules of origin, and by reducing threats of antidumping

Expand bilateral "aid for trade"

- Provide financial and technical assistance to developing countries for "behind the border" trade-related investments necessary to take advantage of market access
- Improve policy coherence by establishing coordinating mechanisms between development policies and trade policies to ensure effective development outcomes
- Assist developing countries to strengthen competition agencies and improve legislation, and require antitrust agencies to provide to developing countries information on third market effects of domestic mergers as well as pending cases of price-fixing and restrictive business practices; and review the anticompetitive consequences of antitrust exemptions in transport and other sectors that adversely affect development

Domestic policies that facilitate adjustment of labor to economic change

- Review domestic policies to ensure displaced workers have adequate social support to deal with rapid changes in labor market conditions, including unemployment insurance, social safety nets (particularly health and pensions), and access to training and education

4. Policies for developing countries

- Adopt program of trade reform, including phased lowering of border protection for goods and services as part of a poverty reduction strategy
- As part of the trade reform program, adopt companion policies to cushion any impact on the poor of adjustment to new trade incentives, and ensure investment responses; solicit foreign assistance when necessary to implement administrative requirements of programs
- Spur development of industries essential to trade, such as transport, telecommunications, financial sector, and business services, particularly through introduction of regulatory policies that, where feasible, harness competition
- Invest in upgrading public sector institutions related to trade, including customs, administration of drawback programs, and financial supervision agencies
- Encourage domestic intellectual property development through TRIPS-consistent standards appropriate to country needs, and pursue protection of domestic intellectual property abroad
- Ensure adequate macroeconomic policy framework to provide sound investment climate

Box 6.2. The recently renovated integrated framework

The Integrated Framework (IF) is a program set up by bilateral donors to increase the effectiveness of trade-related technical assistance to the least-developed countries. The IF was established in 1996; participating agencies include the WTO, the International Monetary Fund, the International Trade Center, United Nations Development Programme, United Nations Conference on Trade and Development, and the World Bank. Its purpose is to analyze options for trade-led integration, determine the relative payoff to trade-related reform, and work with local counterparts to design appropriate policy reform packages that both promote growth and protect the poor dur-

ing the reform transition as options the government might consider in preparing its poverty reduction strategy papers (PRSP). The process starts with analysis: how trade might fit into national development strategies, followed by assistance in the design and financing of projects (drawing on cross-country experience). An interagency task force was formed during 2000, and a trust fund has recently been established to fund the “integration studies” and technical assistance that can be built into the country assistance strategies as appropriate.

Source: World Bank staff.

other low-income countries, and this too will require resources. “Aid for trade” could also help speed adoption of best practices in customs administration as contained in the revised Kyoto Convention and administered by the World Customs Organization. It could help with financing of infrastructure related to trade (ports, transport, and related services), logistics, trade facilitation, and trade promotion; in many cases bottlenecks in one or another area impedes export expansion from a particular country. Over the medium term, development assistance devoted to education can help upgrade schools to increase the productivity of poor workers. Finally, if specific assistance were available it might be possible to help stakeholders in developing countries use intellectual property protection to their benefit by protecting intangible assets such as traditional knowledge, designs, music, and ethnobotanicals as well as patent protection for industrial goods.

A second set of policies outside the WTO is to expand global efforts to improve the environment, raise labor standards, and adopt adequate product standards. Environmental protection agencies from all over the world are already engaged in a broad range of bilateral collaborations—joint studies, exchanges, semi-

nars, and conferences—often in collaboration with global nongovernmental organizations (NGOs). However, the potential for collective action in the environment has barely been scratched. The phenomenal success of the Montreal Protocol in reducing ozone-depleting substances (ODS), with the felicitous reversal of trends toward an ever larger ozone hole over the Antarctic, is worthy of study and emulation. The Global Environmental Facility to reduce greenhouse gases has also had some success, if somewhat more limited. Besides administering bilateral trust funds to reduce ODS and greenhouse gases, the World Bank now finances environmental projects worth several billion dollars in developing countries, as do the regional multilateral development banks. Much more could be done. These positive efforts should replace efforts to use negative instruments such as trade sanctions and recourse under the WTO, which are likely to be ineffectual and even counterproductive (see box 6.3).

Finally, more has to be done to make patented drugs available in times of health crises, such as acquired immune deficiency syndrome (AIDS), in a way consistent with incentives to invest in research and development. One option: developed country governments, interna-

Box 6.3. Environmental standards and trade

Environmental standards are at the forefront of the public debate on trade. The WTO's Technical Barriers to Trade Agreement and the Agreement on Sanitary and Phytosanitary Standards both include some references to environmental protection and trade, although to date there have been few formal disputes brought before the WTO.

The links between trade and the environment are complex.⁶ One effect is that trade can raise scales of production. These effects will be positive because the amount of resources that used to produce the same level of output will decline. However, if trade induces a change in output composition, it is possible that dirty industries (even at larger scales) may increase, and clean industries contract, counteracting the effects of scale. Trade may also permit greater access to more advanced and cleaner technology. The net effect depends on the change in output mix and technology that occurs with trade-induced growth.

What are the trade consequences of environmental regulation? One hypothesis is that pollution-intensive industries take flight to countries with lax environmental standards. However, there is limited evidence to date to support this hypothesis. For example, Pearson (1987) and Leonard (1988).⁷

A second analytical approach considers the environment as a factor of production, such as capital and labor. The idea is that countries with lax environmental regulations (for example, environmental abundance) tend to specialize in pollution-intensive goods. Here, too, the evidence is ambiguous. For example, Tobey (1990), looking at five pollution-intensive industries in 23 countries, found that environmental regulations have caused trade patterns to deviate from the predictions of the model. Wilson, Sewadeh, and Otsuki (2001), in a study of 24 countries with five different pollution-intensive industries, found that stringency of environmental regulation reduces net exports of the five pollution-intensive industries. On the other hand, Grossman and Krueger (1993) investigate the environmental impact of

NAFTA, and conclude that lax environmental regulations do not create a comparative advantage in Mexico. Xu (1999), using a gravity model to investigate whether differences in environmental regulations have affected bilateral trade between a sample of developed and developing countries in pollution-intensive goods, found no evidence that countries with stricter environmental standards lower their total exports of pollution-intensive goods. In sum, the evidence on the specific linkages between environmental regulation and trade is mixed.

So what policy tools and institutions are best suited to promoting higher levels of environmental protection? Trade sanctions to support environmental protection can restrict developing-country market access. Indeed they may be counterproductive: since environmental regulations tend to improve as incomes rise, policies that restrict trade and restrict growth also undermine a driver of environmental improvement (see World Bank 2001). Second, sanctions penalize whole industries, the clean firms, as well as the polluters in an industry. Third, many polluters produce for the local market and are unaffected by sanctions. Finally, domestic pollution and environmental protection can be controlled most effectively they are targeted at the source—through taxes and other domestic policy instruments. A more productive approach is to establish policy coordination among countries. This would allow for joint regulation of common watershed and air basin controls in areas of transborder pollution, and for development assistance to transfer clean technology and environmental aid to strengthen environmental protection over time. Global environmental agreements (such as the Montreal Protocol that bans certain ozone-depleting chemicals) and others, if based on sound cost benefit analysis, can raise environmental quality over time. Voluntary ecolabeling programs also can provide incentives for environmental protection.

Source: Wilson 2001.

tional organizations, and foundations could establish a global health fund that could be used in part to purchase licenses from developers of new drugs and vaccines that are essential for the treatment of debilitating diseases in poor

countries. These licenses would contribute to an adequate return on research and development costs in order to promote new drug development and also permit distribution of drugs to patients at low cost.

Similarly, collective action to improve labor standards could also contribute to poverty reduction. Some actions are primarily developmental in scope, such as providing educational subsidies to ensure that children can attend school and do not have to enter the workplace (see Indonesia's highly successful "Stay in School Program"). Other actions have to do with the propagation of core labor standards. Leadership of these activities are—and should continue to be vested—in the ILO, with project collaboration from multilateral development banks (see box 6.4).

Product standards are becoming increasingly important in international trade to protect consumers. However, standard setting can quickly become a ruse for protecting domestic producers. One solution is to create a Standards Development Facility to introduce science and other professional evidence into standard setting for products, with adequate representation from developing countries. This Facility could also collaborate with governments to provide unbiased assistance to developing countries' standard setting bodies (see box 6.5).

Countries could also undertake a program of collective action on government procurement. The World Bank's Development Gateway may be a vehicle to help countries implement transparent and competitive processes in government procurement of goods and services, an area where the multilateral development banks have accumulated vast experience. Agreeing on key principles, procedures, and policies, supplemented with provision of technical and financial assistance to implement them could go far toward encouraging trade, engendering competition, and augmenting efficiency.

Policies of high-income countries

A major objective of a new round of trade talks whose rationale is to promote development must be to lower the barriers to trade in goods that the world's poor produce and to the services they can provide. An important first step would be to reduce barriers to trade with the low-income countries as an effort to pro-

mote their development. This could be done if all high-income countries were to emulate the EU's "Everything but Arms" preferential scheme. This would provide an impetus to LDC exports that could increase their revenues by more than 10 percent and the trade from Sub-Saharan Africa by some 14 percent. Broadening this access for the 49 least-developed countries to the 70 low-income countries would provide an important impetus to trade-led development in those countries that need it the most. The effects in trade diversion would be minimal, and the benefits important to the low-income countries. If high-income countries were to reduce antidumping threats, the effects would be even greater.

Resources are essential to creating a supply response to incentives created through market access. Much can be accomplished from debt-based multilateral flows, but some portion ultimately falls on bilateral developmental assistance, often as grants, that can fill in the gaps. If the high-income countries really wish to see developing countries become more vigorous participants in global trade, they must make additional efforts to augment extant programs with trade-related assistance. Bilateral grant aid can help with many aspects of trade facilitation—customs reform, disseminating technical standards, and trade law reform, to name a few areas.

Technical assistance can be as important as financial assistance. One area where high-income countries could help immeasurably is competition policy. Simply requiring antitrust authorities to present the structural effects of mergers and acquisitions in home markets on third country markets to be publicly available would aid authorities in developing countries to enforce competition policy in their own jurisdictions. Moreover as analyzed in chapter 4, conducting a regular review of antitrust exemptions and their adverse consequences for developing countries could be helpful, particularly in international transport.

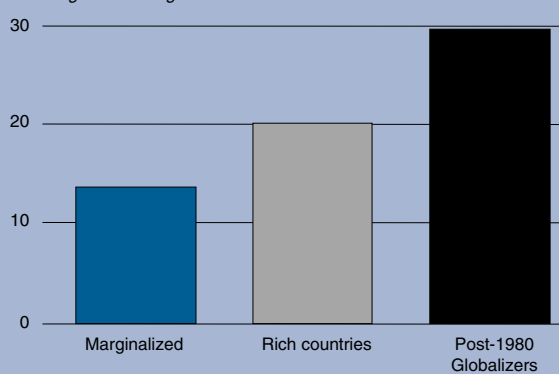
It would be a mistake to infer that policies in developed countries should be designed solely to promote trade in developing countries. No less

Box 6.4 Improving labor standards in a way that works

Improving labor standards is a fundamental aspect of development. However many developing nations have resisted efforts to include labor standards in world trade agreements. Proponents argue that trade sanctions should be used to enforce labor standards and to raise wages, while developing countries fear that international labor standards could become masks for protection. Their inclusion in the WTO threatens a main comparative advantage of developing countries.

Numerous studies have shown that low labor standards that affect working conditions do not grant a competitive edge to developing countries. According to a 1996 OECD study, countries with lower core labor standards (that is, the elimination of exploitative child labor, abolition of forced labor, nondiscrimination in employment, freedom of association, and the right to collective bargaining) do not have an improved export performance. The study finds no correlation between real wage growth and the degree of respect for freedom of association. On the contrary, it supports the view that higher national income levels and open-market reforms are both associated with improved labor standards.

Percent growth of wages between 1980s and 1990s



Source: Collier and Dollar 2001.

At the same time, trade sanctions to improve labor conditions are likely to be counterproductive. By limiting trade between nations, sanctions shackle

the growth in wages that expanded trade would otherwise bring. Historically, the growth rate of wages has been twice as rapid in the developing countries that increased their trade participation in the world economy as compared with those that did not (Collier and Dollar forthcoming). Moreover, their wage growth has been even faster than in the rich countries. Depriving poor nations of export opportunities in the name of raising wages is fatuous.

There are other problems with trade sanctions. Trade sanctions penalize whole countries and industries when violators are firms—and often they are firms that do not export. Firms serving the domestic market usually have worse labor standards than export industries (Aggarwal 1995). Wages and working conditions in export processing zones, for example, tend to be higher than the average for the domestic economy. Trade sanctions would in effect target the better performing export firms. Second, trade sanctions are an inherently unequal instrument: they are likely to be imposed only by developed countries against developing countries. Finally, trade sanctions can hurt the very people they are intended to help. For example, in Bangladesh, children displaced from garment factories due to the fear of sanctions found alternative employment in activities with even lower standards, such as street vending and prostitution (Panangariya 1999).

Fortunately, the international community has more effective instruments to promote better labor standards. A main purpose of the ILO is to promulgate good labor practices and legislations, and it, rather than the WTO, is far better positioned to lead international efforts. Governments should be encouraged to monitor and enforce their own legislation by, if necessary, imposing fines on enterprises that violate core labor standards (Elliot 2001). Revenues from these fines could be channeled back into enforcement programs and investments to upgrade labor conditions. This has several advantages over trade sanctions: violators are punished rather than all firms; revenues stay in the country and are used to improve standards rather than imposing income losses on countries; and improvements occur in a manner consistent with indigenous social values and mores rather

Box 6.4 (continued)

than according to the dictates of people in rich countries. If violations are pervasive and egregious and international sanctions are needed, withholding development assistance is potentially more effective (Torres 1996). The role of NGOs is important, too. The aggressive campaigns of NGOs have called attention to firm violations around the world, and these can help promulgate stricter codes of conduct, encourage en-

forcement, and call public and international attention to the most egregious violations (Gereffi and others 2001). The international community can help developing countries improve wages and working conditions, but can do so better through the ILO than through the WTO.

Source: World Bank staff.

important are policies at home to help domestic workers adjust to sudden changes in labor market conditions. Since it is impossible to separate out trade-related dislocation from technology-related or “other”-related dislocations, these policies should focus on providing support and flexibility to workers as they adjust to whatever forms of shocks to the labor market.

Domestic policies of developing countries

Governments in developing countries do not have to wait for international negotiations, other international collective actions, or policies in high-income countries to revamp trade policies in a way that promotes development. *Country policies still hold the potential for the greatest gains from trade for most countries.* For this reason, countries and economies as diverse as Chile, China, Hong Kong (China), and Singapore, as well as Costa Rica and Uganda have chosen to reduce tariffs unilaterally and to use multilateral agreement to legitimate and lock in the resulting more-efficient price incentives for investors.

Many developing countries still have high levels of protection that implicitly tax their export and growth potential. Border trade barriers continue to be high in three regions—Africa, the Middle East, and South Asia. Average (unweighted) tariffs in these regions are 20 percent or higher, nearly double the 10 percent average now found in East Asia, Latin America, and Europe and Central Asia. Moreover in many countries, tariff dispersion re-

mains large, and so nominal tariff averages may understate the resulting economic distortion. In the small number of countries where nontariff barriers continue to be used, elimination of such instruments should be a priority. Their conversion into tariffs will generally generate revenues. As South-South trade is becoming increasingly important, developing countries can help themselves through lowering barriers that impede access to their own markets.

However, to be effective, reduction in border barriers must be accompanied by other policies and institutional improvements in the investment climate, so that the potentially powerful instrument of trade reform results in improved productivity and growth. Weaving reforms that lower border protection together with reforms to elicit a supply response and promote propoor growth is more complicated than first-generation reforms. Openness, in combination with sound macroeconomic, financial, and governance policies, is one determinant of sustained rapid growth, which has a direct and positive relation to increases in the incomes of the poor (see World Bank 2000b; and Dollar and Kraay 2001).

Trade liberalization affects the poor differently depending on the country (see World Bank 2000b: 49 ff). The immediate effects of trade reform on the poor depend (among other things) on the initial nature of protection, the structure of production, the effects of reforms on relative prices, and whether reforms increase the demand for labor (the basic asset of the

Box 6.5 Standards development facility: coordinated action to bridge the standards gap

Product standards are a critical part of trade in the 21st century. These include product standards and sanitary and phytosanitary standards necessary for market access in agriculture. Standards are directly linked to poverty reduction and human welfare through health, safety, and other channels. The development challenge posed by standards and border barriers are particularly important to future trade prospects of the least developed nations (World Bank 2001).

The costs of barriers in standards are likely much higher than tariffs to global trade (Maskus and Wilson 2001). Moreover, testing, and certification requirements in global market remain a serious obstacle for developing countries seeking to expand exports. The OECD estimates that standards alone represent between 2 and 10% of final product costs (OECD 1999). Changes in product standards can have serious repercussions for developing country exporters. World Bank research and operational experience indicates that standards are today one of the fundamental “behind the border” barriers to poverty alleviation through trade (Wilson 2000).

Most developing countries do not have the resources to apply standards. In Guatemala, for example, the total budget for standards in 2000 totals \$119,000 (Hufbauer, Kotschwar, Wilson 2001). This represents a small fraction of the total government budget. The World Bank’s experience with standards in the 1990s shows that investments of \$ 3.5m (Vietnam) \$155 million (Turkey), and \$5 million in Morocco, for example, had to be undertaken to simply begin the process of modernization. The Bank along with other multilateral institutions and bilateral donors support standards-related projects in Africa and elsewhere. The international community needs, however, a coordinated and sustained effort to leverage work now done in an ad hoc fashion. A new commitment to action is needed that complements the WTO agenda and trade negotiations. In order to secure the benefits that market-driven standards offer

and integration of developing nations into the world trading system, a new commitment is needed. Action to bridge the rapidly widening divide between developed and developing countries. A two-part strategy to meet this challenge over a 10 year period.

First, the G-8 leaders in Genoa in July 2001 committed to better coordinate trade-related assistance to “provide bilateral assistance on technical standards” and stressed the “paramount importance of food safety.” A new Standards Development Facility (SDF) could be created to move these commitments forward. The program, to be coordinated in cooperation with the WTO, the Bank, and other multilateral institutions and bilateral donors, would develop the framework for a long-term assistance plan to (1) expand access to standards for developing countries, and (2) facilitate modernization of standards infrastructures. This work could start with the PRSP countries and build upon pilot programs in coordination with the G-8.

The second goal of the SDF would center on promoting trade expansion through regulatory reform and removal of technical barriers in discriminatory standards, testing, and certification regimes. This work is in the long-term economic benefit of both the developed and developing countries. A framework to promote the wider use of “supplier’s declaration of conformity” to regulatory requirements should be developed. A systematic review of products subject to mandatory government testing and certification that can be moved to declaration of conformity status should be undertaken. A multilateral “Global Conformity Agreement” (GCA) could then be developed based on this list for international negotiation and agreement (Wilson 2001). Funding to support standards modernization and capacity building in the least developed countries, as outlined above, must be part of this goal.

Source: World Bank staff.

poor). For example in cases where the poor primarily produce for export or rely on imports for consumption, lowering tariff barriers can improve their situation through changes in rel-

ative prices, but when the poor work mainly in import-competing sectors, trade liberalization can cause dislocation that adversely affects them. That trade reforms can produce increases

in income and, in the long term, offset negative effects offers little solace to those poor suffering transitional costs. For these reasons, trade reform programs have to identify the effects of reforms on the poor, design targeted compensation where possible, and build pro-poor social protection into Poverty Reduction Strategies of low-income countries and development programs of middle-income countries. For *least-developed countries*, because much analytical and capacity-building work remains to be undertaken, donors have agreed to adopt an Integrated Framework for the Least-Developed Countries (see box 6.2).

Envisioning alternative futures

Making these changes in global trade architecture requires political leadership around the globe and within countries. Policy-makers will ask: Are the benefits worth the political effort? How will it affect poverty and income distribution?

Answering these questions in a quantitative sense poses challenges. Trade is only one of many factors affecting the long-term prospects of developing countries. Chapter 1 presented a discussion of the long-term growth dynamics of developing countries in the world economy. This constitutes a baseline view about the likely evolution of developing countries, based upon best guesses about generally stable parameters—savings, investment, population growth, trade, and productivity growth. To distinguish the effects of changes in trade policies, we then simulate the removal of trade restrictions discussed in the foregoing chapters, and analyze their development consequences as measured against the baseline scenario. Although economists' ability to measure these changes is limited (for reasons discussed below), the effort is intended to give us some idea of relative magnitudes of effects.

Assessing the effects of trade openness: a fast-integration scenario

In chapter 1 recall that we had indicated that income growth in low- and middle-income countries under the baseline scenario will reach

around 3.6 percent on per capita terms, about 1.1 percentage points above the per capita growth rate of the high-income countries, with the highest growth rates anticipated in Asia. The countries of Eastern Europe and Central Asia were expected to grow quite rapidly in the next decade, while Africa and the Middle East would revert to modest growth rates. This performance over the 2000–15 period expands income by nearly 60 percent—some \$18 trillion (in 1997 dollars).

The baseline scenario establishes a path of growth against which to assess the effects of eliminating trade barriers. It is important to bear in mind that the baseline incorporates only those changes to the global trading regime up through 1997 carried forward to 2015. The key policy change to be simulated is the phased elimination of all import tariffs, export subsidies, and domestic production subsidies. These are modeled to begin in 2005 and last through 2010. Said differently, in each year between 2005 and 2010, restrictions are reduced by one-sixth from their initial levels. The structural transformation therefore starts in 2005, and it has five years to complete (2011–15) after full removal. In reality, of course, this type of policy change would not come about only through multilateral negotiations; but a development round, together with regional agreements⁸ and unilateral domestic policy reforms, could well advance policy toward this framework by 2010.

Two versions of the trade reform scenario are presented. In the first version it is assumed that trade reform has no impact on productivity. These are the *static* gains.⁹ For the most part, the source of these gains comes from reducing the economic inefficiencies linked to trade policy distortions. These may have some dynamic impacts as they change savings and investment outcomes. The gains are sometimes counteracted, partially or even completely, by changes in a nation's terms of trade.¹⁰ (Annex 1 below provides summary information on the design of the simulations and the underlying model.)

The second version entails *dynamic* gains. It assumes that productivity is a function of the degree of openness of the economy. While

much more work needs to be done in this area, the evidence available to date suggests a clear link between openness and productivity. This has been implemented in the model assuming a direct relation between productivity growth and a measure of openness. Productivity *growth* is linked to the export-output ratio using a constant elasticity function.¹¹ There are several potential channels through which this mechanism operates. As firms' exports grow and they increase their penetration of world markets, they learn new technologies (through comparison with their competitors' products); they improve production processes to match international standards (such as safety, health, packaging, style, and others); and they can benefit from scale economies as they produce for a larger market.¹² There are other channels through which openness could impact on productivity that are not incorporated here. The key channels are imports of technology-laden intermediate imports or capital goods, or both.

Impacts on real incomes. Measured in static terms, world income in 2015 would be \$355 billion more with trade liberalization than in the baseline (figure 6.2).^{13,14} Measured in dynamic terms, this would translate into cumulative additional income of \$1.5 trillion to developing countries over the 2005–15 period (valued at net present value in 2005).

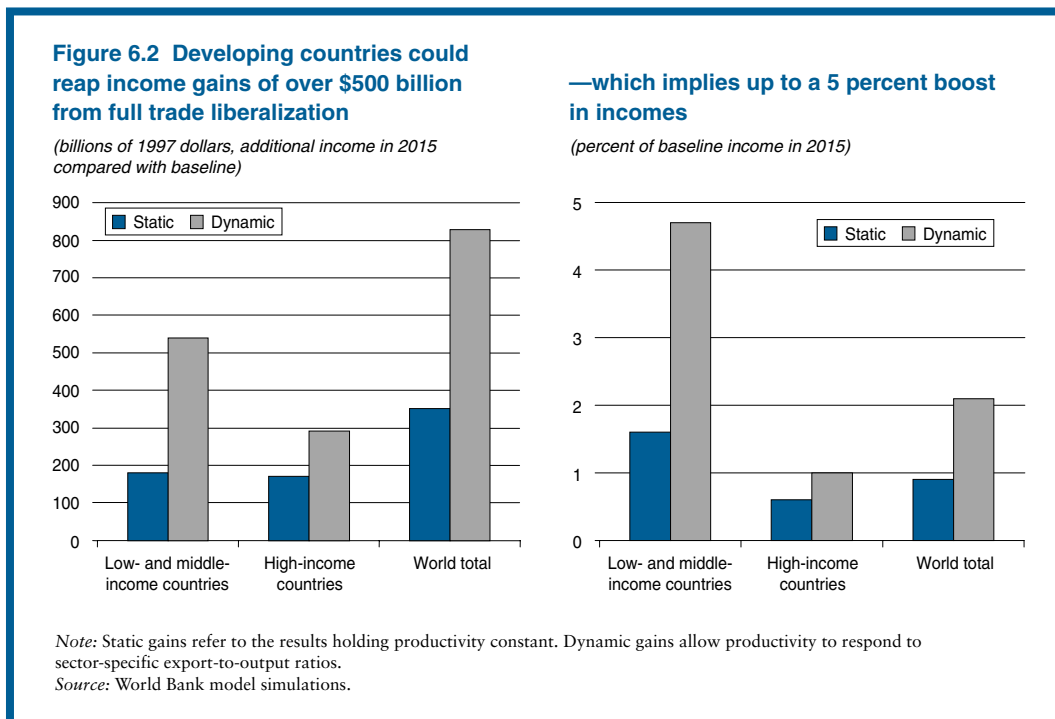
About 48 percent of total gains accrue to the high-income countries, with Western Europe garnering the highest static gains at \$83 billion. This largely reflects its highly distorted agricultural policies, which not only are costly for European consumers and taxpayers, but also place a burden on more competitive farmers outside the EU, who face lower world prices due to these distortions. Developing countries as a whole would benefit from a rise in real incomes of 1.6 percent in the final year 2015, compared to baseline income (figure 6.2). There are wide variations in the income gains across developing regions reflecting two opposing forces. On the one hand, removal of tariffs leads to greater economic efficiency and higher growth. By contrast, terms-of-trade losses can partially counteract the gains from efficiency improvements.

The introduction of a link between openness and productivity increases the static gains described above by a factor of over two, with the global gains jumping to over \$830 billion using our base-case parameters. As a percentage of the global gains in 2015, developing countries do much better, improving their share from 52 percent to 65 percent. The gains as a percent of initial income rises to almost 5 percent for developing countries, and represents significantly higher gains than observed in the static version. The relative gains will be highest in countries observing the greatest rise in their export-to-output levels. Typically, these will be countries with either high initial tariffs, inducing a large shift in both imports and exports; or countries facing large tariffs and able to increase market penetration; or both.¹⁵ These results are broadly comparable in similar studies (see box 6.6)

Agriculture provides the greatest opportunity

The gains from further opening of the global economy can be decomposed in a number of directions. Table 6.1 illustrates the sources of the income gains from two angles—regional and sectoral. Along the regional angle it shows that the greater source of income gain among developing countries is from their own reforms. Thus full trade reform by developing countries generates an income gain of \$121 billion (in the *static*) simulation, some two-thirds of their gains from global trade reform. Needless to say, full market access by the high-income countries leads to gains for developing countries of nearly \$125 billion if productivity gains are taken into account.

The sectoral decomposition is similarly illuminating. Reflecting the high distortions in agriculture, the largest gains from merchandise trade liberalization are to be realized from eliminating all forms of agricultural protection. In both the *static* and *dynamic* simulations, agricultural reform in itself accounts for 70 percent of the global gains. Free market access in the high-income countries could result in gains to developing countries of as much as \$100 billion. On a lesser scale, but nonetheless



far from trivial, elimination of existing protection on textiles, clothing, and footwear would generate global income gains ranging from \$40 billion, in the case of fixed productivity, to almost \$190 billion with endogenous productivity. Both of these sectors, as reflected in chapter 2, harbor the larger share of the working poor in developing countries.

Results are sensitive to assumptions

While there is little doubt regarding the productivity-enhancing impacts of greater openness, there has been relatively little econometric analysis at either the macro or micro level to determine more precisely the magnitude of the relation. In light of this uncertainty, table 6.2 illustrates some potential range of the global impacts of full trade liberalization with varying assumptions regarding the key parameters in the relation between openness and productivity.

Two parameters determine the relation. The first is the responsiveness of sectoral productivity to sectoral openness (as measured by the

—which implies up to a 5 percent boost in incomes

(percent of baseline income in 2015)

export-to-output ratio). The second is the share of total sectoral productivity affected by openness in the baseline simulation.²¹ The estimate of the gains in the baseline simulation corresponds to a productivity elasticity of one and a share of 40 percent, that is, \$832 billion. The first column represents the static gains—an elasticity of 0. As one would anticipate, the gains increase as both parameters rise. Since trade reform typically increases the export-to-output ratio, an increase in the responsiveness of productivity to this ratio will increase the openness-related productivity results. Similarly, the larger the share of productivity accounted for by the openness factor, the greater will be the impact on growth.²²

Service sector liberalization

The liberalization scenario described so far has concerned only the goods sectors. However, chapter 3 of this volume clearly illustrates the importance of liberalizing the service sectors. With details to follow below, we conservatively demonstrate that, for develop-

Box 6.6 The complexities of measuring openness and growth

Studies of the relation between openness and growth have followed two main lines. One line of research has been to estimate econometrically the relation between openness and growth using cross-country time series data and panel estimation techniques (see, for example, Sachs and Warner 1995, and Dollar and Kraay 2001). These studies conclude that there is indeed a strong link between openness and growth.¹⁶ A second line of research has been the development of increasingly sophisticated general equilibrium models. Model and data development have focused on the various channels through which

trade openness can affect growth. While the early models essentially estimated the static inefficiency losses from imposing tariffs and other trade barriers, more recent models have extended the analysis along four main research paths—dynamic accumulation of static gains, allowing for imperfect competition and scale economies, endogenous growth in which productivity is responsive to trade openness, and endogenous capital flows models in which capital is responsive to trade opening.¹⁷ All of these magnify the measured static efficiency gains by a factor of two to four, depending on the methodology.

Comparisons of the gains from full trade liberalization

(all gains are in billions of dollars)

Study	Nature of reform	Type of simulation	Base year	Gain for industrial countries	Gain for developing countries	World total
GKV ^a	Full pre-UR trade liberalization	Dynamic	1992	290	160	450
AFHHM ^b	Full pre-UR trade liberalization	Steady-state	1995	146	108	254
GEP ^c	Full trade liberalization (from 1997 base)	Dynamic	1997	171	184	355
		Dynamic w/productivity	1997	293	539	832
DFS ^d	Full trade liberalization (from 1995 base)	Dynamic w/productivity	1995	450	760	1210
DFAT ^e	Full trade liberalization (from 1995 base) including services	Static	1995			750
BDS ^f	Full post-UR trade liberalization including services	Static	1995	1490	370	1860

Notes: a. Goldin, Knudsen and van der Mensbrugghe (1993).
 b. Anderson, Francois, Hertel, Hoekman and Martin (2000).
 c. Global Economic Prospects (2002).
 d. Dessus, Fukasaku, and Safadi (1999).
 e. Department of Foreign Affairs and Trade, Australia (1999).
 f. Brown, Deardorff and Stern (2001).

(continued)

Box 6.6 (continued)

The box table summarizes several studies using applied general equilibrium models.¹⁸ The differences in results can be essentially explained by three factors: (a) the base from which the reform is simulated, together with its assumptions about initial levels of trade barriers (for example, pre- or post-Uruguay Round); (b) whether productivity is fixed or responsive to trade opening; and (c) whether service trade liberalization is included.

The first three studies—Goldin and others (GKV 1993), Anderson and others (AFHHM 2000), and *Global Economic Prospects 2002 (GEP)* (that is, the study you are reading), use similar model specifications and estimate the long-term *efficiency* gains from full merchandise trade liberalization. The aggregate gains from reform are roughly similar across these three studies, and the differences can largely be explained by the nature of the reform scenario. The first estimates the pre-Uruguay Round (UR) impacts of full trade reform, the second the post-UR impacts, and the third the impacts of trade reform before complete implementation of the UR.

Only two of the studies cited here have some form of *endogenous* growth—the GEP and Dessus and others (DFS 1999) studies. The DFS model assumes a relation between aggregate openness (as measured by the ratio of exports plus imports to gross domestic product—GDP). The GEP model assumes that the economic response to opening is sector-specific. As a result, in the *GEP* study, productivity increases are limited to the agriculture and manufacturing sectors, thereby capping to some extent the additional gains from introducing the openness productivity link.¹⁹

Finally, the table in this box shows the impacts of including service trade liberalization in the complete package.²⁰ The Department of Foreign Affairs and Trade (DFAT 1999) study shows a gain of \$750 billion, and a tripling of the gains of merchandise trade reform (compared with AFHHM); and the Brown and others (BDS—2001) study shows a massive gain of nearly \$1.9 trillion. The study incorporates scale economies and imperfect competition that could readily explain the differences in results.

ing countries, the income gain from service liberalization amounts to multiples of the gains from merchandise trade reform. There are several reasons for this. First, services play a growing role in all economies as they develop, both from the point of view of the consumer, as well as their importance as inputs into an efficient modern economy. Second, liberalization of services has lagged far behind liberalization of goods, where average tariffs are today generally low.

However quantification of services sectors' trade barriers and other forms of protection is still more art than science. Even the more straightforward accounting of bilateral flows and the value of sales of foreign affiliates in the services sectors is sketchy, at best. Several efforts have been undertaken to measure the barriers and assess the impacts of their removal. Two global studies are cited in box 6.6, and the Tunisian case is developed more thoroughly in box 3.3 in chapter 3. These

studies, not surprisingly, show the tremendous potential gains from liberalizing the services sectors, gains that are multiples of merchandise trade liberalization.

Rather than relying on imprecise estimates of the barriers to services delivery, results presented below provide a very conservative estimate of the potential gains using the same model used to assess merchandise trade liberalization, though in a simpler context. The framework is completely static using the 1997 base.²³ The services sectors were disaggregated into six categories:²⁴ (1) trade and transportation; (2) communications; (3) financial services (including banking and insurance); (4) other private services, including legal, accounting, accommodation, and restaurants; (5) public services; and (6) housing. The scenario assumes that reforms are undertaken in four of these sectors—excluding public services and housing.

The barriers in the services sectors, as implemented in this framework, take three

Table 6.1 Agriculture accounts for the bulk of the gains from merchandise trade liberalization
(billions of 1997 dollars, additional income in 2015 as compared with baseline income)

	Simulations with fixed productivity			
	Agriculture and food	Textile and clothing	All other sectors	Total
Liberalizing region:				
Benefiting region:				
High-income				
High-income	73	-3	-25	49
Low- and middle-income	31	19	26	75
Total	104	16	1	124
Low- and middle-income				
High-income	23	20	78	118
Low- and middle-income	114	7	-5	121
Total	136	27	73	239
All regions				
High-income	106	17	50	171
Low- and middle-income	142	24	20	184
Total	248	41	70	355
	Simulations with endogenous productivity			
High-income				
High-income	144	-10	12	149
Low- and middle-income	99	20	7	124
Total	243	10	20	273
Low- and middle-income				
High-income	53	78	22	151
Low- and middle-income	294	104	21	424
Total	346	182	43	575
All regions				
High-income	196	66	35	293
Low- and middle-income	390	123	27	539
Total	587	189	62	832

Source: World Bank model simulations.

Table 6.2 Global gains are sensitive to productivity—openness linkages
(billions of 1997 dollars)

(Share percent)	Elasticity			
	0.0	0.5	1.0	1.5
20	355	435	578	674
40	355	515	832	1,026
60	355	596	933	1,174
80	355	677	1,031	1,340

Note: Sectoral productivity is decomposed into two factors. The first is sensitive to an openness indicator represented by the sectoral ratio of exports to output. The second is a residual determined by other factors. In the baseline simulation, the trade-sensitive factor is calibrated so that its share in determining total sectoral productivity is fixed. The sensitivity analysis shows how the gains vary with respect to this share, respectively 20, 40, 60, and 80 percent. The table also shows the sensitivity of the aggregate gains with respect to the elasticity linking trade openness with productivity.

Source: World Bank model simulations.

forms.²⁵ The first is a cost penalty measuring the relative inefficiency of firms operating as monopolies or otherwise protected from competition. The second is a price markup over average cost, representing the ability of firms to price to market in the absence of competition (be it domestic or foreign). The third captures barriers to cross-border trade.²⁶ The barriers were set at conservative levels. Both the cost and trade penalties were set at 10 percent, and the markup was also fixed at 10 percent. (By comparison, in the Tunisian study cited in chapter 3 [Konan and Maskus 2000], barriers in these same sectors varied from 3 to 200 percent, with most ranging from 30 to 50 percent.) The results presented below are limited to services liberalization in developing coun-

tries only; that is, there is no assessment of the impact of high-income country reform on developing countries.

The results are telling. So-called joint reform, where all three instruments are relaxed simultaneously, yields an incremental income gain for developing countries of nearly \$900 billion, some 4.5 times greater than their gain from global merchandise trade liberalization alone, or \$190 billion (table 6.3).²⁷ In total, this represents a 9.4 percent income gain compared to base levels.²⁸

Table 6.3 also reveals the decomposition of the “joint reform” into its three components. It is clear that reducing the cost penalty has the greatest impact. It is equivalent to shifting the production possibilities frontier outwards (in the four service sectors). Though the markup allows for some decline in the producer price, it will be attenuated to some extent by higher

wages and returns to capital. In many ways the markup is similar to a producer tax.²⁹ In that sense, one would not anticipate that a reduction in the markup would lead to the same boost as an improvement in efficiency.³⁰ Moreover, similar to a tax, elimination of a markup can also produce perverse results if it leads to increasing losses due to other inefficiencies (so-called second-best effects). Finally, the impacts of the trade barrier instrument are also significantly smaller than the efficiency gains. In part this reflects the low level of penetration of cross-border trade in services. The long-run potential would be much larger.

Table 6.3 also reports the decomposition of the gains by category of service. The source of the largest impact is the trade and transportation sector, which accounts for roughly double of the aggregate gains. This largely corresponds to this sector’s share in demand (compared to

Table 6.3 Services liberalization generates substantial windfall gains for developing countries

	Goods trade alone	Cost penalty	Markup removal	Trade penalty	Joint reform	Total
Static income gain for developing countries (\$1997 billion)						
Reforming sector						
Merchandise trade	190.0					
All four service sectors		800.4	27.5	54.4	883.5	1073.4
Trade and transportation		443.0	7.9	26.0	477.7	667.6
Communications		39.0	1.1	1.3	41.4	231.3
Financial services		96.1	8.1	4.0	108.5	298.4
Other private services		209.0	6.4	23.1	235.6	425.5
Static income gain for developing countries (percent of base income)						
Merchandise trade	1.7					
All four service sectors		7.0	0.2	0.5	7.7	9.4
Trade and transportation		3.9	0.1	0.2	4.2	5.8
Communications		0.3	0.0	0.0	0.4	2.0
Financial services		0.8	0.1	0.0	0.9	2.6
Other private services		1.8	0.1	0.2	2.1	3.7

Note: Though the results come from a comparative static simulation with a 1997 base, in order to make them comparable with previous results, they have been scaled by the projected income of 2015. For example, the merchandise trade gain of \$190 billion is equivalent to \$84.2 billion when scaled to 1997 income. The results as a percent of base income are invariant to the choice of reporting year. The first column represents the gains from merchandise trade liberalization only (in the comparative static framework). The next four columns represent the incremental gains from services liberalization, that is, those gains on top of the gains from merchandise trade liberalization. The “Cost penalty” column reports the impacts of a 10 percent increase in efficiency in the four private services sectors. The “Markup removal” column reports the impacts of the removal of a 10 percent markup in the same four sectors. The “Trade penalty” column reports the impacts of reducing the trade penalty parameter by 10 percent. And the fifth column, “Joint reform,” represents the incremental impact of implementing all three reforms simultaneously. The final column represents the total gains: “Joint reform” added to merchandise trade liberalization. The instruments are only applied in developing countries.

Source: World Bank model simulations.

the other three service sectors). For example, on average in developing countries, input of trade and transport services accounts for 6.6 and 7.4 percent of output in the manufacturing and services sectors, respectively. And trade and transport accounts for nearly 22 percent of private consumption. Other private services, the next largest sector, has only 3.2 percent cost share in manufacturing and a 7 percent share in private consumption.³¹

Despite the somewhat tentative nature of these results, they clearly illustrate the importance of services liberalization for developing economies. They also illustrate the need for significantly more research in the area of services—both in fundamental data gathering, as well as in improving our knowledge of the economic mechanisms through which protection in the services sectors operate.

Consequences for inequality and poverty

While all too frequently the focus of trade reforms is on the aggregate economic impact, i.e.

the big number, policy makers, businesses and the general public are often concerned about the more direct impacts to specific segments of society—who is likely to benefit and who may be hurt. The next sections shed some light on the more detailed economic impacts of merchandise trade reform—leaving the effects of any service sector liberalization in abeyance.

Four headlines are noteworthy. First, trade reform tends to improve income distribution toward greater equality. Second, it leads to sharp reductions in poverty. Third, the majority of economic sectors tend to expand in the wake of reform. Finally, there is a significant expansion in trade, particularly in agriculture and textiles, two of the most protected sectors in the global economy.

Income distribution. The current framework, although aggregate in nature, can elucidate some of the underlying factors determining income distribution, notably factor returns and structural changes.³² Table 6.4 presents the final year—impacts on real factor returns

Table 6.4 Labor’s share of national income rises substantially

(percent change in real factor returns in 2015 as compared with baseline)

	With exogenous productivity			With endogenous productivity		
	Capital returns	Unskilled wages	Skilled wages	Capital returns	Unskilled wages	Skilled wages
High-income countries						
United States	0.1	0.5	0.4	0.4	0.5	1.0
Western Europe	0.1	0.7	2.6	0.7	0.7	3.1
Japan	1.2	1.5	2.7	2.2	1.9	3.4
Other high-income OECD countries	0.8	3.1	0.6	0.7	2.3	1.3
Newly industrialized economies	0.5	4.1	2.9	-0.4	4.1	3.8
Low- and middle-income countries						
Sub-Saharan Africa	0.8	6.9	4.5	3.4	5.4	6.8
East Asia and Pacific	4.6	6.2	7.8	9.3	11.2	15.0
South Asia	1.7	6.0	3.4	3.7	5.7	5.8
Eastern Europe and Central Asia	1.4	5.4	4.3	3.3	5.3	6.7
Middle East and North Africa	8.0	4.1	12.5	10.9	6.1	17.0
Latin America and the Caribbean	0.7	5.3	2.5	1.4	4.8	4.3
Rest of the world	0.8	3.3	2.2	3.2	2.7	4.2
Memorandum items						
High-income countries	0.2	1.0	1.6	0.7	1.1	2.2
Low- and middle-income countries	2.7	5.7	5.6	5.1	7.4	9.6
World total	1.0	2.3	2.5	2.1	2.8	3.8

Note: Nominal factor prices deflated by economywide CPI.

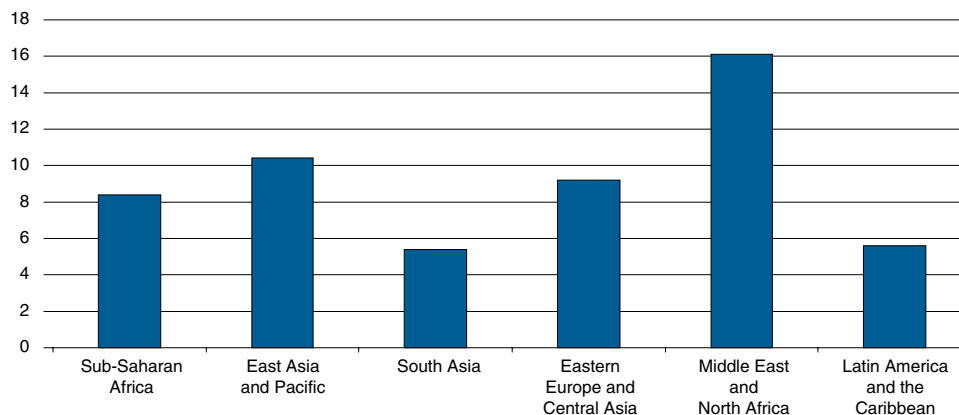
Source: World Bank model simulations.

(as percentage changes from the baseline). Unskilled wages improve more than skilled wages, and capital returns in all of the developing regions, except for East Asia and the Middle East and North Africa, and in some cases quite substantially, for example in South Asia and Latin America. This suggests quite strongly that protection has largely been detrimental to unskilled workers, including, of course, those working in agriculture.³³ With endogenous productivity the relative gains of unskilled workers is somewhat dampened. Since the additional productivity is only labor-augmenting, capital becomes relatively scarcer with endogenous productivity, thereby raising its relative return, and could potentially reverse the trend toward improved income distribution, although this will in part depend on the share of capital income in aggregate income.

Poverty. Rising unskilled wages, as presented above, are likely to lead to a decrease in poverty. When coupled with changes in the price of the poor people's consumption basket, the reduction in poverty could be quite substantial. Figure 6.3 presents the "food and clothing" wage for unskilled workers in developing countries.³⁴ The largest increase in real unskilled wages occurs in the Middle East and North Africa region, but all developing regions benefit from a substantial rise. The changes in the real wages of unskilled workers (deflated by the food and clothing index) can be applied to the forecasts of poverty headcounts for the year 2015. Assuming an elasticity of two, a standard assumption for these types of analyses, figure 6.3 shows the implication on poverty of the rise in unskilled real wages. Overall dire poverty (those living on less than \$1 per day) would fall by over [110] million under these assumptions, some [15] percent below the baseline forecast for 2015. Sub-Saharan Africa would account for over one-half of the improvement. Poverty would decline by over 320 million persons based on the \$2 per day criteria, with the largest absolute improvements in Sub-Saharan Africa and South Asia. This represents a 15 percent decline in poverty globally.

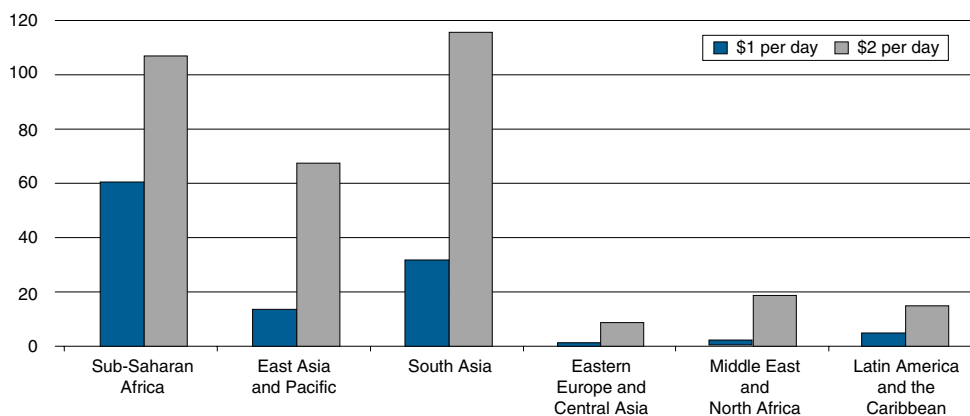
Structural transformation. Removal of trade barriers has multiple structural implications—changes in the composition of production, changes in trade-to-output ratios, and so on. While in aggregate these changes are highly positive, they could cause significant displacement, and potentially some losers. One of the reasons trade reforms are difficult to implement is that the potential losers are easy to identify (and quick to alert and influence policymakers) whereas the gains are more diffused, and devoid of organized partisanship. Even if the losses are small compared to the gains, the political weight of protected sectors can, in many cases, impede improvements in policies. Figure 6.4 reflects the aggregate losses in value added compared with the *net* aggregate gains. For most regions, the negative displacement is small relative to the aggregate gains. One of the exceptions is Western Europe, where the value added losses, particularly in agriculture and food processing, are much larger than the overall gains. Sub-Saharan Africa, South Asia, and the Middle East and North Africa regions also face relatively high negative displacement compared with the aggregate gains. These are the regions with the highest distortions, and therefore are subject to the greatest structural transformation. However, on average for developing countries, the displacement represents only 23 percent of the total gains.

Trade. In the baseline scenario and in the absence of any trade policy change, aggregate world trade of goods and services would rise above \$11.2 trillion (table 6.5). Market penetration of developing economies in high-income countries would rise to 32 percent, a rise of 5 percentage points from its level in 1997. Under the openness scenario, world trade would increase by an additional \$1.9 trillion in 2015, an increase of 17 percent from baseline levels. Developing-country market penetration would rise to 37 percent in the high-income countries, reflecting an increase of 26 percent in the value of exports from developing countries to the high-income countries. More impressively, South-South trade would jump 59 percent, an increase in value by over \$700 billion.

Figure 6.3 Unskilled wages rise substantially relative to cost of living—
Percent change from baseline in 2015


Note: Figure represents changes in unskilled wages deflated by the food and clothing CPI.

Source: World Bank model simulations.

—implying a substantial reduction in poverty
Number of persons (in millions) compared to baseline in 2015


Note: Figure represents potential reductions in number of persons living in poverty. A poverty elasticity of 2 with respect to the improvement in unskilled real wages is applied to the baseline poverty scenario for 2015.

Source: World Bank model simulations.

The sectoral composition of the change in trade is equally revealing (figure 6.5). Except for energy and the nontradable sectors (construction and services), developing-country exports in all sectors increase sharply, particularly in percentage terms from baseline levels. Agricultural exports expand by \$200 billion, and textile, clothing, and footwear exports by

nearly \$180 billion. Reflecting tariff escalation in the food-processing sector, developing-country exports jump 139 percent. Note that high-income exports of food processing also expand considerably.

This outcome reflects several factors. First, tariffs in this sector are high around the world, so industrial-country exporters are able to take

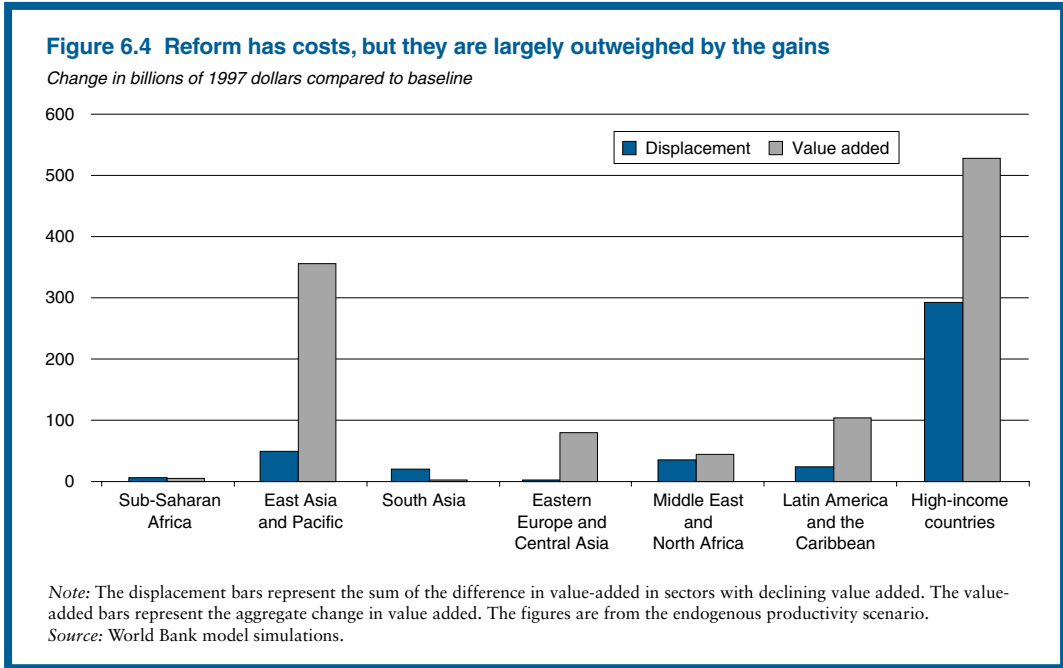


Table 6.5 Developing countries increase their market share

(trillions of 1997 dollars in 2015)

Importing region	High-income	Low- and middle-income	World
Trade flows in baseline scenario			
Exporting region			
High-income	5.1	2.4	7.6
Low- and middle-income	2.4	1.2	3.6
World total	7.6	3.6	11.2
Trade flows with endogenous productivity			
High-income	5.1	3.0	8.1
Low- and middle-income	3.0	1.9	5.0
World total	8.2	4.9	13.1

Source: World Bank model simulations.

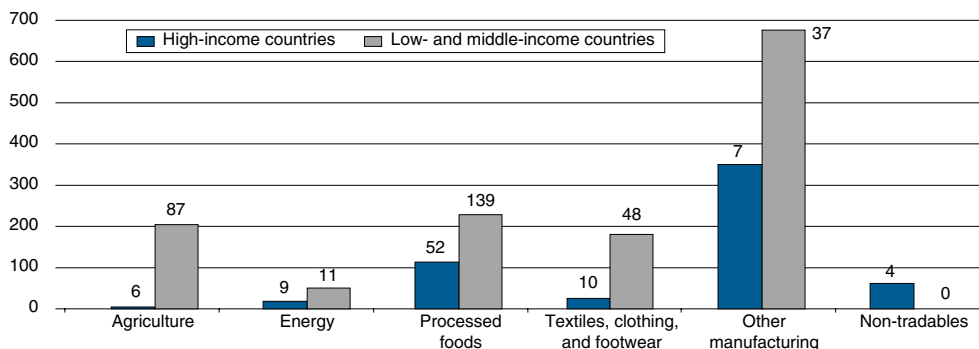
advantage of new opportunities. Second, with decline in protection in their own markets, producers shift toward producing for export markets. And third, the decline in agricultural protection in high-income countries reduces

the costs of inputs for food processors, making them more competitive internationally.

Exports of other manufactured products by developing countries represent the largest absolute increase. A significant portion of the increase represents an increase in South-South trade where barriers to manufactured imports are high in the baseline, compared with barriers to trade in the industrial countries for these same products.

Conclusions

Launching a development round, moving forward on the global cooperation agenda to expand trade, enacting policies in high-income countries to promote trade-led development, and enacting trade reforms within developing countries are all momentous tasks. But the long-term promise is tangible: \$2.8 trillion in *additional* global income, \$1.5 trillion of additional income for developing countries, reductions in global poverty by an *additional* 320 million people, and fewer infants dying before their fifth birthday. This, in turn, would

Figure 6.5 World trade booms, particularly in food and agriculture*(billions of 1997 dollars in 2015)*

Note: Number above columns represents percent increase in exports from baseline level. These represent the results of openness with endogenous productivity.

Source: World Bank model simulations.

Box 6.7 World Bank programs: activities to support trade-led pro-poor growth

The Bank, usually in partnership with other entities, is working to help developing countries create—and take advantage of—new trade opportunities. It is doing so in three policy domains: global, regional, and national.

At the global level, developing countries, more important in size and sophistication than ever before, are now pivotal to the success of the world trading system. Their interests have to be taken into account if any new multilateral trade negotiations are to be successful and if the multilateral system is to be strengthened. The Bank's objective is to help developing countries use the system of multilateral rules to expand their trade and development. In particular, the Bank is focusing intensively on the barriers facing least developed countries (LDCs) in using trade to promote development.

Regional arrangements are becoming increasingly important for trade policymakers in the developing world. The Bank is focusing on analyzing their effects, on helping governments to shape arrangements so that they expand trade and become steppingstones to more effective multilateral participation, and on advising prospective members about costs and benefits. Understanding the effects of the largest arrangements, such as the proposed Free Trade Arrangement of the Americas

and the European Union agreements, is especially important.

Finally, and most important, at the country level, work on traditional border barriers remains a priority, particularly for countries in South Asia, the Middle East, and Africa. At the same time, virtually all countries are paying increased attention to “behind the border” issues—for example, investment regulations, transportation infrastructure, trade facilitation, telecommunications, and business services—to ensure that producers can take full advantage of the opportunities globalization presents. This part of the new trade agenda may partially overlap with extant sectoral reform initiatives, and in these cases, a challenge is to ensure consistency between trade-related objectives and the other objectives of sectoral reforms. In all cases, the Bank's goal is to help governments design and implement pro-poor reform programs that can leverage trade into faster growth and poverty reduction. Of particular importance is the Integrated Framework effort, a multilateral initiative designed to help least developed countries respond to market opportunities and accelerate their integration into the multilateral system.

In 2000, the Bank presented 46 projects to its Board with trade components, and was undertaking 35 studies in addition to the IF work—to advise clients.

contribute to a more sustainable standard of living around the globe—and a more stable world community.

Annex 1

Applied general equilibrium (AGE) modeling, in some form, has been the tool of choice for trade economists to analyze the impacts of multilateral trade reforms for over two decades, starting with analyses of the Tokyo Round in the late 1970s and early 1980s (Cline and others 1978; Deardorff and Stern 1981; and Whalley 1985). Their development took off with the rising accessibility of computing power and improved software, and have become increasingly more sophisticated, integrating aspects such as dynamics, market structure (for example monopolistic competition), and financial flows. AGE models proved to be influential in the last round of multilateral negotiations, which culminated in the Uruguay Round Agreement signed in Marrakech in 1994 (see Martin and Winters 1996, for example).

AGE models capture the detailed interactions across the many agents of an economy—producers, consumers, public entities, investors, importers, and exporters. Despite their level of detail, they nonetheless represent a stylized representation of a true economy. For example, the version of the model used for this volume represents economic activity by only 20 goods and services. A detailed domestic model may have 100 to 200 sectors.

The results of the model depend on two key sets of parameters and the so-called closure rules. The first set is the dynamic parameters—population and labor force growth rates, education, savings behavior, and technological progress (or productivity). The second set of key parameters includes the behavioral and technological parameters of the economic agents. How do consumers respond to price changes? How do household budgets change as incomes rise? How flexible is production? Can labor substitute for capital, or vice versa? While many of these parameters are econometrically estimated, there is still a great deal of uncer-

tainty regarding their levels. Systematic sensitivity analysis is desirable to determine the extent to which the impact analysis is robust to changes in these parameters. This in itself is far from a trivial task, given the thousands of parameters these models typically employ.

The closure rules pertain to the actions of certain agents that are not modeled explicitly, or are exogenous to the model. There are three key closure rules in the simulations undertaken for this study.³⁵ First it is assumed that government expenditures are fixed in real terms. In the baseline scenario, they grow at the same rate as real GDP; in policy simulations they are unchanged from their baseline levels. Government revenues are raised to achieve a targeted level for the fiscal deficit. The latter is held fixed at its base level in order to avoid sustainability concerns.³⁶ The direct tax schedule adjusts to insure fiscal balance equilibrium. In the case of trade reform, this implies that the reduction in import tax revenues is replaced by direct taxes (to the extent that revenues from other sources of taxation are not significantly altered).

The second closure rule concerns investment. Investment is assumed to be savings-driven, for instance, there is no interest rate mechanism that equilibrates the savings supply and investment demand schedules. Foreign saving can add to or subtract from domestic saving. Trade reform may have little impact on overall domestic savings to the extent that it would do little to modify consumers' choice between current and future consumption. However to the extent that the price of investment goods decline (due to the removal of tariffs on capital goods), investment could rise substantially with positive long-term payoffs. In other words, the amount of investment per dollar saved has very positive dynamic impacts if tariffs impose a high cost on capital goods.

The final closure rule concerns foreign capital flows. In the absence of endogenous determination of foreign capital flows across countries, these are assumed to be exogenous in any given time period.³⁷ Thus policy shocks are transmitted to a fixed trade balance, the re-

verse side of a fixed capital account balance. The typical impact of this closure rule in a trade reform scenario is a real depreciation. The removal of tariffs generates an increase in import demand. Given the fixed trade balance, this must be met by a rise in exports, achieved through a real depreciation. The extent of the depreciation will depend on the levels of the trade elasticities (import and export). This simplification of foreign capital flows implies foreclosing an important channel for growth, for instance, the increase in foreign direct investment (FDI) in the aftermath of trade reform. Empirically, this channel has proven to be quite important as witnessed by Portugal and Spain with their entry into the EU, or by Mexico when it joined the North American Free Trade Agreement. China has also witnessed a boom in direct foreign investment in anticipation of its accession to the WTO. Some of the potential benefits of increased FDI are captured by the scenarios with endogenous productivity growth.

The version of the model used for this analysis decomposes the world economy into 15 regions and 20 economic activities. The model is calibrated to the latest release of the Global Trade Analysis Program (GTAP) dataset with a 1997 base year.³⁸ The model is solved forward as a series of linked sequential equilibria, where population and labor force growth rates are given, capital accumulation is based on the previous period's level of investment, and productivity is calibrated to a target GDP growth rate.

After a plausible baseline simulation is developed, policy shock scenarios are undertaken where parameters calibrated in the baseline simulation are taken as given (for example, productivity parameters) and GDP growth is an outcome. Thus, in the absence of any change in the exogenous environment, the policy shock scenario should reproduce the baseline.

Notes

1. See World Bank 2001, chapter 3.
2. This is not to say that South-South arrangements cannot be made to work. However, many South-South

regional integration agreements have been formed that have had negative or ambiguous effects on income. The *Trade Blocs* report (World Bank 2000a) found that South-South agreements between richer and poorer developing countries are likely to generate losses for the poorer ones when the poorer members import products from the richer members, whose firms are not internationally competitive. For example, in the 1960s, Kenya had a more developed manufacturing sector than Uganda and Tanzania, and when the three formed the East African Community (EAC), the latter two lost tariff revenue by importing from Kenya at the high protected price rather than at the lower world price, with transfers going from them to Kenya. This asymmetry proved unsustainable and resulted in the demise of the EAC.

3. Of particular importance is that the results of negotiations are made publicly available in user-friendly form. For example, data on tariff bindings are not made available in a database format, preventing analysts from undertaking cross-country research. This is important because it impedes efforts to estimate the magnitude and incidence of costs of protection. It is a truism that to reduce protection and resist protectionist pressures, those that lose (pay) need to be aware of the costs of such policies. The suppliers of, and the clients for, such analysis and information are not only governments, but also civil society (think tanks) and the constituencies in individual countries that are affected by policy. To do this, they need easy access to the relevant data.

4. For example, Blackhurst, Lyakurwa, and Oyejide (2000) propose that governments transfer national representatives from United Nations agencies in New York to the WTO to intensify cooperation by members of regional integration arrangements.

5. However, synergies could be realized through networking and collaboration between advisers. For example, the new Global Development Gateway that is being established by the World Bank in cooperation with numerous public and private sector partners could provide a powerful vehicle for building a trade community and sharing expertise. Such a portal could also be used to assist governments (and NGOs) seeking to identify experts and determine what has already been done in specific countries or on specific issues.

6. For example, Esty (1994) argues that if taxes or other measures compensate for environmental consequences, trade will result in more efficient use of resources, spur innovation, and lower costs of environmental protection everywhere. Ekins and others (1994) add that if commodities for export are produced with serious damage to the environment, then trade may aggravate environmental problems. DeBellevue (1994) and Røpke (1994) share the same view. Another channel of interaction between trade and the environment concerns transboundary problems where pollution

spills over from one country to another. Esty (1994) argues that when a country suffers transboundary harm due to exports of pollution-intensive product, the imposition of trade restrictions on the import of the culpable product can be justified.

7. Pearson (1987) asserts that there is no evidence to establish that lax environmental regulations would be captured by foreign investors as opposed to local firms. Leonard (1988) argues that environmental regulations do not alter plants' location decisions. He presents case studies of foreign direct investment in Ireland, Mexico, and Romania to examine trade data and investment statistics, and concludes that the data do not support an industry flight hypothesis. Smarzynska and Wei (2001) consider the corruption level of the host country and use firm level datasets for 25 transition economies to examine support for the industry flight hypothesis. They find limited evidence to support the assertion that firms move to countries with less strict environmental regulations.

Levinson (1996) uses industry abatement costs, business taxes, wages, energy costs, and roads to measure environmental performance and studies the effects of these factors on the probability that a new industry plant would open in a certain state. The results reveal little evidence that environmental regulations hinder establishment of new plants. In contrast, Lucas, Wheeler, and Hettige (1990); Mani, Pargal, and Huq (1997); and List and Co (1999) find some evidence to support the industry flight hypothesis. Lucas, Wheeler, and Hettige (1990) find that toxic intensity has increased more rapidly in developing countries than in industrial countries. They conclude that stringent environmental regulations in the OECD countries have caused relocation of pollution-intensive industries. According to Mani, Pargal, and Huq (1997), environmental spending in India has a positive impact on plant location. However, they conclude that environmental regulations are not a significant factor in determining plant location, because costs involved with environmental regulations are not large enough to exceed other costs of doing business. List and Co (1999) study the relationship between location decisions and environmental regulations. They use state-level data from 1986–93; their results show that a 10 percent increase in the median state's (West Virginia) regulatory expenditures per manufacturer decreases the probability of attracting a new firm by 3.9 percent for the median state. They conclude that environmental stringency and the location decision of a new firm are inversely related.

8. The proposed Free Trade Agreement for the Americas has a quick timeline for the elimination of most trade barriers in the Western Hemisphere. Asia-Pacific Economic Cooperation (APEC) has proposed a 2010 deadline for eliminating trade barriers among its

high-income members, and 2020 for developing-country members. Expansion of the European Union toward the east and south would also eliminate barriers across a broad number of partners. There are also numerous other proposed agreements, many of them bilateral.

9. There are some dynamic gains coming from changes in investment and structure.

10. Depending on the market power of a country's trading partners, and its own market power and the size of the shock, the terms-of-trade impact could be significant. A potentially critical situation is a country that only imports highly differentiated goods from a small set of importers and exports an homogeneous good on world markets. Other factors also influence changes in the terms of trade. For example, the removal of agricultural subsidies by high-income countries is likely to be beneficial for exporters of these commodities from developing countries, because they would profit from a rise in the world price of these commodities.

11. The following functional form is used:

$$\gamma_i^e = \chi_i^0 \left(\frac{E_i}{X_i} \right)^\eta$$

where γ_i^e is the growth in sectoral productivity due to the change in openness (added to an exogenous growth factor), χ_i^0 is a calibrated parameter, E and X represent respectively sectoral export and output, and η is the elasticity. The parameter χ_i^0 has been calibrated so that (on average) openness determines roughly 40 percent of productivity growth in the baseline simulation, and the elasticity has been set to 1.

12. Scale economies could, of course, be modeled explicitly.

13. Aggregate income gains or losses summarize the extent to which trade distortions are hindering growth prospects and the ability of economies to use the gains to help those whose income could decline. Figure 6.2 summarizes these impacts for the modeled economies. The figure presents the aggregate impacts in terms of the outcome in the final year of the simulation (2015). The results are presented in nominal value terms (expressed in 1997 prices), as well as relative to baseline income. Finally, it shows the results of both scenarios— with and without trade-sensitive productivity.

Real income is summarized by Hicksian equivalent variation (EV). This represents the income that consumers would be willing to forgo to achieve post-reform well-being (u^p) compared to baseline well-being (u^b) at baseline prices (p^b):

$$EV = E(p^b, u^p) - E(p^b, u^b)$$

where E represents the expenditure function to achieve utility level u given a vector of prices p (the b super-

script represents baseline levels, and p the post-reform levels). The model uses the extended linear expenditure system (ELES), which incorporates savings in the consumer's utility function. See Lluch (1973) and Howe (1975). The ELES expenditure function is easy to evaluate at each point in time. (Unlike the OECD treatment of EV , we use baseline prices in each year rather than base year prices. See Burniaux and others 1993). The discounted real income uses the following formula:

$$CEV = \frac{\sum_{t=2005}^{2015} \beta^{(t-2004)} EV_t^a}{\sum_{t=2005}^{2015} \beta^{(t-2004)} Y_t^d}$$

where CEV is the cumulative measure of real income (as a percent of baseline income), β is the discount factor (equal to $1/(1+r)$ where r is the subjective discount rate), Y_t^d is real disposable income, and EV_t^a is adjusted equivalent variation. The adjustment to EV extracts the component measuring the contribution of household saving, since this represents future consumption. Without the adjustment, the EV measure would be double counting. The saving component is included in the EV evaluation for the terminal year. Similar to the OECD, a subjective discount rate of 1.5 percent is assumed in the cumulative expressions.

14. All nominal dollar figures are in 1997 prices; the model does not incorporate nominal inflation. The price anchor of the model is an export price index of manufactures from the OECD high-income countries, similar in concept to the World Bank's Manufactured Export Unit Value index. It is set to one in the base and all subsequent years.

15. Most of the action occurs in the agricultural and manufacturing sectors because this version of the model does not incorporate significant barriers in services.

16. Rodriguez and Rodrik (1999), among others, have criticized these studies on methodological grounds; they have also criticized those who use them to advocate simplistic policy conclusions. Nonetheless, the preponderance of evidence points rather consistently to the fact that countries with more open trade and financial regimes, complemented with other appropriate macroeconomic and social policies, have improved growth performance.

17. These four ideas are described summarily:

Dynamics. The main channels are two-fold. First, higher incomes lead to higher savings and thus greater capital accumulation. The second channel is that tariffs are often imposed on investment goods. Their removal leads to a rise in real investment, because per dollar of saving a buyer can purchase more investment goods. Baldwin (1992) estimates that these dynamic gains could triple the static efficiency gains. See, for example Burniaux and van der Mensbrugghe 1994; Harrison, Rutherford, and Tarr 1996; Francois, McDonald, and

Nordström 1996; and Ianchovichina and McDougall 2000.

Imperfect competition and scale economies. Relaxing the assumption of constant returns to scale technology and allowing for imperfect competition can lead to additional sources of gain from trade openness. The ability to increase market size allows firms to spread fixed costs over greater output, thereby reducing average costs—and greater competition from other firms can reduce price markups. Both effects can significantly enhance the gains from openness. See for example Harris 1984, Delorme and van der Mensbrugghe 1990; Harrison, Rutherford, and Tarr 1996; Francois, McDonald, and Nordström 1996; and Brown, Deardorff, and Stern 1992.

Endogenous growth (or productivity). Openness does not occur in a vacuum. As countries open their borders to new products and capital goods, local firms can take advantage of new technologies, foreign research and development, and other innovations to significantly enhance their productivity. Greater market access of local exporters also can generate productivity externalities by gaining more knowledge of foreign markets and processes and improving production to match international norms and standards. See, for example, de Melo and Robinson 1990; Rutherford and Tarr 2001; Diao, Roe, and Yeldan 1999; and Dessus, Fukasaku, and Safadi 1999.

Endogenous capital flows. While many trade models typically abstract from incorporating endogenously determined capital flows, there is significant empirical evidence that the gains from international capital mobility are quantitatively important. There are two channels through which capital flows influence growth. The first is the direct channel leading to capital deepening (although this requires care in evaluating the long-term gains, since eventually this generates a stream of income repatriated back to the foreign owners). The second channel is through productivity since it is often the case that the incoming capital embodies new and improved technologies. See, for example, McKibbin and Sachs 1991; Collado, Roland-Holst, and van der Mensbrugghe 1995; McKibbin and Wilcoxon 1999; Hertel 1997; and Ianchovichina and McDougall 2000.

18. Comparisons of model results are notoriously difficult to make. Models can differ in numerous ways, dimensionality (for instance, regions, sectors), databases (notably policy instruments, such as tariff levels), closure rules, time horizon, functional specification, and elasticities (such as supply, income, trade, and so on), and market structure (both goods and primary factors). Moreover, studies do not necessarily report the same indicator as a measure of the gains from trade. The choices are various: real GDP, real income,

some measure of welfare such as equivalent variation, real absorption, and so on. And the units of measurement are not always identical. The indicators could be reported in different base year dollars, or as some cumulated discounted value, or as a percentage of some base year indicator. Some noteworthy attempts to compare model results include the Martin and Winters 1996 volume on the Uruguay Round simulations, and the OECD 1993 and 1998 and IPPC 2001 studies comparing model results of the potential economic consequences of mitigating climate change.

19. The sensitivity of these results to the openness or productivity relationship is discussed below.

20. Modeling of services trade liberalization is still in its infancy. First, simply assessing the trade (and investment) barriers quantitatively is a much more difficult task than developing tariff data on goods trade. Second, the nature of the barriers is harder to specify and implement in a model. It is currently a very active area of research.

21. For example, assume total sectoral productivity in the baseline is 2.5 percent. If the share affected by openness is 40 percent, total productivity is the sum of two components—1 percent determined by the openness factor (for instance, 40 percent of 2.5) and the residual 1.5 percent determined by other factors. In policy simulations, the trade openness indicator only affects the 1 percent in this example. Thus if openness increases by 10 percent, and the elasticity is 1, productivity will increase to 2.6 percent ($=1.5 + 1.1$).

22. These results are within the range found in the few comparable studies available. For example Dessus and others (1999) estimate a macro relationship between openness—as measured by the export plus import to GDP ratio—and per capita GDP growth using a panel dataset. Their preferred elasticity is 0.09—that is, an increase in the trade-to-GDP ratio of 10 percent leads to a rise in per capita GDP of 0.9 percent. As a rough approximation, the elasticity of 1 used above in the base simulation implies an elasticity of 0.4 for total sectoral productivity with respect to openness—some four times higher than the 0.09 used in the Dessus and others (1999) study. However, their endogenous productivity applies economywide, that is, including services. If the 0.4 elasticity is multiplied by the agriculture and manufacturing share of the economy, somewhere between 30 and 60 percent, the economywide impact falls to somewhere between 0.12 and 0.24. A second factor to consider is that productivity is only labor-augmenting. Correcting for the labor share in the economy, say, around 50 percent, the final impact on aggregate productivity falls between 0.06 and 0.12. This is roughly in the range of the elasticity of Dessus and others (1999) and explains in part the differences in the estimates of the two studies.

23. Thus, the results represent two different economic equilibria abstracting from any dynamic effects of changes in investment or saving, or both, and other structural transformation.

24. In the merchandise trade liberalization scenarios, the service sectors were aggregated into a single account.

25. See van der Mensbrugghe 2001 for further details.

26. The latter is implemented as a trade penalty, similar to an import tariff, but with no direct revenue implications. Formally, the model implements a version of the so-called iceberg model. For example, if the penalty parameter is set to 0.9, this implies that, of 100 units that are exported, only 90 units actually arrive at destination.

27. For the purposes of comparison, the income gains—as measured in dollar terms—were scaled to projected 2015 income levels. This has no impact on the relative gains.

28. The spillover effects of this scenario for high-income countries are marginal.

29. The difference being that the revenues generated by the markup typically accrue to firms and not the government.

30. In results not reported, the impact of the markup is highly nonlinear. Elimination of a 20 percent markup—i.e., a doubling of the initial markup—generated an incremental income gain of \$106 billion, some four times the impact of eliminating a 10 percent markup. The model results were generally linear with respect to the other two instruments.

31. The shares are based on GTAP data.

32. The World Bank has an active research program to improve analysis of the openness distribution linkages. It involves developing both data and methodologies to incorporate multiple representative households directly into AGE models (see, for example, Hertel, Preckel, and Cranfield 2000) as well as to inject the results of the AGE simulations into much more detailed microsimulation models based on country-specific household surveys, typically with thousands of households. More on this research program is available at: <http://www1.worldbank.org/wbiep/trade/povertyconf.html>.

33. Skilled and unskilled workers are assumed to be imperfect substitutes for one another. An alternative specification would be to have skilled workers as complements to capital and the two together an imperfect substitute for unskilled labor. The distributional outcomes would change, but presumably would favor even more unskilled labor in most developing regions. There is an active debate about the role of trade openness on relative wages. The standard theoretical argument suggests that returns to the relatively abundant factor, unskilled labor in the case of developing coun-

tries, should rise with trade openness. However, the reverse has been observed in some developing countries. Part of the explanation comes from an increase in FDI, which is assumed to require skilled labor. Another partial explanation is that openness frequently was undertaken simultaneously with other reforms, such as privatizations. The latter has often led to shedding of labor to rationalize operations.

34. The figure reflects the results of the scenario with endogenous productivity. It differs only slightly from the results of the scenario with exogenous productivity.

35. See van der Mensbrugge 2001 for complete model specification.

36. The GTAP dataset merges public savings with the household sector, and thus the public balance is zero in all countries in the base year. The balancing items are net transfers between the government and households.

37. Although exogenous in any given time period, the capital account could vary over time (subject to the constraint that it must sum to zero globally). To avoid sustainability issues, the capital account is assumed to be fixed at its base year level. Alternatively, it could converge toward zero over the time period.

38. GTAP, based at Purdue University, has developed the most widely used dataset for global trade analysis (See Hertel 1997 or GTAP's Web site: www.gtap.org). The latest release (version 5) incorporates data for 66 countries or regions, and 57 sectors.

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