Initiative for Policy Dialogue Working Paper Series

September 2005

Empirical Review of Market Access Issues
Andrew Charlton and Joseph E. Stiglitz

Trade

APPENDIX 1

Empirical review of market access issues

The 'Doha Development Agenda' of November 2001 puts poverty-reducing economic growth at the center of the WTO's considerations. If the development focus of the Doha Round is to be a meaningful operating principle, then the overriding task of the Round must be to ensure that the liberalization agreements promote development in poor countries. In practice this means giving priority to reforms which yield the largest benefits to developing countries; helping governments move towards good trade policies; and dealing effectively with the implementation constraints faced by poor members.

A key theme of this book is that the WTO's agenda should be driven by economic analysis rather than the momentum of powerful interest groups. This appendix supports the conclusions in the main part of the book by reviewing the empirical evidence on the potential benefits and costs of liberalization across various trade and factor flows. This type of analysis is a crucial step to ensuring that priority is given to those elements of the agenda that deliver the largest gains to developing countries.

This appendix is a brief survey of the effects of different liberalization programs on global welfare. The bulk of useful regional-level empirical studies use computable general equilibrium (CGE) models. Such studies are based on simple models of the entire economy that, as the name suggests, are developed in a computable form. These models enable us to observe the effects of various liberalization experiments on trade volumes, prices, and incomes. Simulations can separately determine the effects of reform on different sectors and on different countries and regions. CGE models have several limitations. They require a large amount of data (to estimate accurately all the demand and supply functions which underlie them) and rely on a few crude assumptions. Most importantly, they do not incorporate key features of developing countries, such as the high level of unemployment. Most assume away the problems posed by uncertainty; but the absence of

risk markets makes risk of central concern in developing countries. Most assume perfect competition, while markets in developing countries may be highly non-competitive. We present these models not because we believe that they provide accurate assessments of the costs and benefits of trade liberalization, but because they call attention to some of the key issues—and because they have become a point of reference.

Where possible, the specific effects of reform on Commonwealth developing countries has been included. However, the empirical evidence in this regard is thin and most global CGE studies do not disaggregate the effects on small countries beyond the regional level.

This appendix analyses the potential gains and costs from liberalization in four areas: agricultural trade; services; the temporary movement of natural persons; and trade in manufactured goods.

To some extent the results of the survey give cause for a re-evaluation of the current focus of negotiations. The estimated welfare gains from those negotiating areas which attract considerable attention are estimated to yield smaller benefits than other reforms on which there has been less focus, and less progress.

Three conclusions which we believe are relatively robust emerge from the empirical survey below:

- Liberalizationof labor markets—in particular, allowing an increased quota of workers from developing countries to work temporarily in developed countries—offers large welfare gains.
- There are significant gains to be realized from the reductions in tariff barriers to South–South trade. In both agriculture and manufacturing the gains to developing countries from liberalization of trade between themselves are estimated to be greater than those from liberalization of trade with the OECD. (This may be both because tariff barriers between developing countries are higher—implying greater benefits from reductions—and because of the extensive use of non-tariff barriers by developed countries.)
- There is considerable evidence that poorly implemented liberalization, especially in the service sector, can have negative effects on the poor. Carefully managed implementation, effective regulation, and substantial assistance will be a necessary part of any reform agenda.

The literature surveyed identifies ambiguous effects of agricultural and investment liberalization on developing countries. The reason for the ambiguity will be detailed in the discussion below.

A1.1 **Agriculture**

In the Doha Ministerial Declaration, WTO members committed themselves to reform of the main instruments of agricultural protection, including 'substantial improvements in market access; reductions of, with a view to phasing out, all forms of export subsidies; and substantial reductions in trade-distorting domestic support'. They also agreed that 'special and differential treatment of developing countries shall be an integral part of all elements of the negotiations'.

This vision combines wide-ranging reform of the distorted agricultural trade policies of developed countries, and gradual liberalization in developing countries.

This section surveys the (at times thin) empirical evidence on the potential costs and benefits associated with the kind of reform envisioned by the Doha Declaration. It focuses specifically on the welfare effects of liberalization for developing countries.

Developing countries face the benefits of increased market access and the (potential) costs of higher prices for domestic consumers. The fundamental point is that consumers benefit from lower prices which result from large agricultural subsidies, and producers lose. The net effect of wide-ranging agricultural reform varies across developing countries depending on the composition of their exports and imports of different commodities, and the price sensitivity of those commodities to liberalization. As a result, the conclusions of the empirical evidence give cause for caution.

A reform agenda which maximizes the welfare of developing countries must also recognize the specific effects of different protection instruments on different commodities.

Furthermore, developed countries have a large number of instruments by which they can redistribute income and alleviate poverty. In less developed countries, by contrast, the set of instruments is far more circumscribed. Since agriculture producers are among the poorest people in developing countries, increasing the prices they receive may be one of the few instruments for alleviating rural poverty. But such policies are, at the same time, likely to increase urban poverty. Tariffs on imports (especially when they countervail subsidies by more advanced industrial countries), with some of the proceeds used to provide targeted food subsidies, may accordingly increase welfare.

Reform should focus on maximizing market access benefits and identifying ways of offsetting the terms-of trade-impact on consumers. This requires

(1) a rapid elimination of the most damaging protection instruments: export and production subsidies on commodities that compete with developing countries and which are not consumed extensively by developing countries, or in which the effect of liberalization on prices paid by consumers in developing countries is likely to be small; (2) increased market access, particularly for the goods exported by developing countries; (3) a gradual reduction of production subsidies on sensitive commodities (those imported by developing countries with, say, substantial negative price effects on poverty); (4) assistance for the poorest countries.

While average manufacturing tariffs have fallen significantly in recent decades, agricultural protection has remained stubbornly high. The average level of agricultural producer support in OECD countries ranges from less than 5 per cent of gross farm receipts in Australia to 20 per cent in the US and 35 per cent in the EU (see Fig. A1.1) Developing countries face high tariff barriers on many of their agricultural exports—the average tariff on agricultural goods exported to developed countries was 15.1 per cent in 2000 (Hertel *et al* 2000).[1]
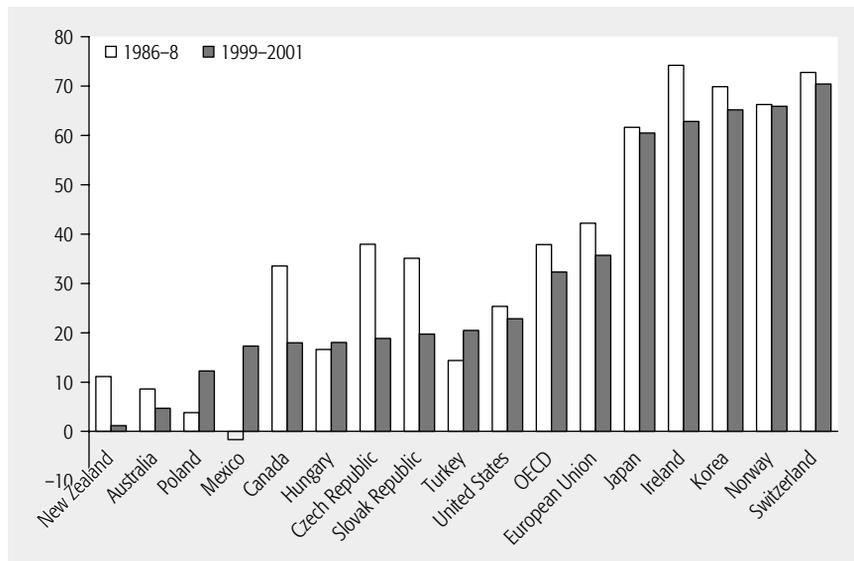

Figure A1.1 **Agricultural producer support, 1986–1988 and 1999–2001 (% of value of gross farm receipts)**

Source: Anderson (2003).

---

[1] There are also large non-tariff barriers for some commodities, e.g. sugar quotas.

APPENDIX 1: REVIEW OF MARKET ACCESS ISSUES 219

Table A1.1. **Average protection in agriculture and food, 2005**

This table shows the average protection (% *ad valorem*) for food and agriculture by sector. The figures are worldwide averages in 2005. Subsidy equivalents are aggregated across all regions and divided by exports at domestic market prices.

	Import tariff (1)	Export subsidy (2)	Production subsidy (3)
Food grains	23	1	6
Feed grains	97	4	11
Oilseeds	4	0	9
Meat and livestock	17	8	2
Dairy	23	27	2
Other agriculture	11	0	0
Other food	1	0	0
Beverages and tobacco	18	0	0

Source: Hertel, Anderson, Francois *et al*. (2000: 26).

Table A1.1 shows the (projected) levels of farm support in 2005 after the Uruguay Round agreements are fully implemented (Hertel, Anderson, Francois *et al*. 2000). Tariffs are particularly high in the feed grains, dairy, and food grains sectors. Column 2 shows that dairy products are the world's most subsidized exports, followed by meat and livestock. Producer payments are highest for grains and oilseed sectors and lowest for meat, livestock, and dairy (col. 3).

Average levels of subsidies (or protection) do not necessarily provide a good indicator of how distorted the market is. For instance, most cotton production may be totally unsubsidized, but America provides large subsidies, which has a substantial *marginal* effect. The price effect of large subsidies to even a limited group can be quite large, given the inelasticity of demand for agricultural goods.

Table A1.2 shows the average tariffs on agricultural goods by importing and exporting region. Developing countries face even higher tariffs on exports to other developing countries (18.3 per cent) than on exports to developed countries (15.1 per cent).

A second important determinant of the welfare effects of liberalization is the agricultural trade balance across countries. Table A1.3 reports the average trade specialization indices for several countries and regions over the course of three decades. These indices give a measure of the trend of agricultural trade balances through time. The value of the index ranges

Table A1.2. **Average agricultural tariff rates (%)**

This table reports the average tariff rates faced by high- and low-income countries on their own and each other's goods.

Exporting region	Importing region	
	High-income countries	Developing countries
High-income countries	15.9	21.5
Developing countries	15.1	18.3
World	15.6	20.1

Source: Hertel and Martin (2000).

from −1 for a country that imports and does not export a particular commodity, to +1 for a country which only exports it.

Table A1.3 shows a division between temperate products (program crops and livestock), where developing countries are largely net importers and developed countries are largely net exporters, and tropical products, for which developing countries are largely net exporters. Many of the most developed countries—the including the EU, the US, Australia, and New Zealand—have increased their food trade balance over the last thirty years. Most of the developing countries and regions—Sub-Saharan Africa, Latin America (excluding Argentina and Brazil), Indonesia, Mexico, the Middle East, and North Africa—have actually become more dependent on imports in program crops and meat/livestock.

Table A1.4 gives an indication of developing countries' trading relationship with the developed world. It shows developing countries' exports to, and imports from, OECD countries as a share of each country's total. As a group, the OECD countries are big exporters of commodities to countries like China, India, and the rest of South Asia (RSoAsia) and the Middle East and North Africa (MENA). These countries are likely to be affected by liberalization, which alters the price of OECD exports. Indonesia, Sub-Saharan Africa (SSA) and China also rely on the OECD countries as export markets for most of their products.

For countries like these, which are heavily integrated into OECD markets, liberalization brings risks and rewards. Producers gain from greater market access, while consumers may lose through higher prices. These effects are discussed in more detail in the next section. However, Table A1.3 gives us some indication of their relative importance across countries: many developing countries are net importers of most commodities.

Table A1.3. **Trade specialization indices, 1965–1998**

The trade specialization index is calculated as $(X - M) / (X + M)$, where X is exports and M is imports for each country. A country that only exports has an index value 1. A country that only imports has an index value -1. Program commodities are composed of paddy rice, wheat, cereal grains, oilseeds, raw sugar, processed rice, and refined sugar. 'Livestock and meat' includes livestock, wool, animal products, meat, and dairy. 'Other' agriculture and food includes vegetables and fruits, plant-based fibers, other crops, vegetable oils and fats, and other processed food.
n.a.: not available.

Years	Program commodities			Livestock and meat products			Other agriculture and food		
	1965–75	1976–85	1986–98	1965–75	1976–85	1986–98	1965–75	1976–85	1986–98
Aus/NZ	0.95	0.97	0.94	0.99	0.98	0.98	0.13	0.10	0.32
Japan	−0.94	−0.96	−1.00	−0.96	−0.96	−0.96	−0.60	−0.67	−0.82
Korea	−0.90	−0.82	−0.90	−0.14	−0.73	−0.85	−0.23	−0.23	−0.21
USA	0.59	0.78	0.81	−0.04	0.16	0.24	−0.08	−0.04	0.00
Canada	0.55	0.72	0.76	0.13	0.32	0.40	−0.18	−0.18	−0.09
Mexico	0.19	−0.87	−0.83	0.03	−0.41	−0.54	0.66	0.56	0.36
EU15	−0.74	−0.56	−0.27	−0.49	−0.05	0.13	−0.48	−0.37	−0.17
EFTA	−0.91	−0.89	−0.76	−0.08	−0.02	−0.04	−0.27	−0.27	−0.08
CEU	−0.51	−0.71	0.03	0.57	0.44	0.50	−0.20	−0.28	−0.15
Turkey	−0.54	0.25	−0.51	0.04	0.55	−0.32	0.86	0.79	0.43
China	−0.17	−0.55	−0.18	0.87	0.69	0.38	0.22	0.36	0.28
Indonesia	−0.57	−0.88	−0.88	0.13	−0.11	−0.30	0.74	0.71	0.52
Vietnam	n.a.	−0.37	0.85	n.a.	−0.65	−0.01	n.a.	−0.10	0.48
ASEAN4	0.58	0.49	0.20	−0.74	−0.30	−0.34	0.48	0.55	0.38
India	−0.58	−0.15	0.43	−0.40	−0.24	−0.10	0.43	0.24	0.44
RoSoAsia	−0.59	−0.16	−0.40	−0.43	−0.70	−0.67	0.45	0.13	−0.02
Argentina	0.97	0.99	0.96	0.99	0.92	0.75	0.64	0.71	0.78
Brazil	0.58	0.15	0.29	0.51	0.47	0.35	0.79	0.85	0.66
RLatAm	0.36	0.07	−0.08	−0.17	−0.23	−0.23	0.56	0.56	0.57
FSU	n.a.	n.a.	−0.63	n.a.	n.a.	-0.59	n.a.	n.a.	−0.31
MENA	−0.91	−0.97	−0.94	−0.80	−0.94	−0.87	−0.01	−0.54	−0.45
Tanzania	n.a.	n.a.	−0.40	n.a.	n.a.	0.18	n.a.	n.a.	0.69
Zambia	−0.35	−0.40	−0.40	−0.88	−0.78	−0.59	−0.38	−0.15	0.34
RoSSA	0.39	−0.13	−0.17	0.37	−0.05	−0.25	0.68	0.54	0.53
RoWorld	−0.10	−0.43	−0.66	−0.27	−0.50	−0.45	−0.16	−0.25	−0.43

Source: Dimaranan, Hertel, and Keeney (2003).

These results, however, have to be taken with some caution. They reflect the pattern of trade flows that result *given the highly distorted trade regime*. Many developing countries simply cannot compete against the huge subsidies, say, to dairy. If these subsidies were not there, these countries would become exporters rather than importers.

Table A1.4. **Share of developing country trade with OECD, 1997 (%)**
Commodity categories as for Table A1.3.

	Program commodities		Livestock and meat		Other Agriculture and food	
	Exports	Imports	Exports	Imports	Exports	Imports
China	52	76	60	85	55	44
Indonesia	78	58	69	95	27	44
Vietnam	13	56	74	82	24	40
ASEAN4	40	48	54	71	47	44
India	27	75	52	85	31	24
RSoAsia	23	66	61	81	62	18
Argentina	23	58	38	35	57	36
Brazil	48	21	71	33	50	36
RLatAm	47	63	77	69	47	51
FSU	37	23	50	80	48	63
MENA	43	66	73	80	66	60
Tanzania	89	31	54	60	54	25
Zambia	86	7	69	93	65	43
RoSSA	63	49	77	82	69	62
RoWorld	62	73	59	66	62	61

Source: Dimaranan, Hertel, and Keeney (2003: table 4).

Moreover, agricultural markets are global markets, and so even if developing country *A* imports wheat from developing country *B*, the price it pays is greatly affected by the subsidies provided by the developed world or by trade barriers that *A* might impose against the imports of the commodity.

The (national) real income effects of liberalization are dominated by two factors: (1) the change in allocative efficiency, and (2) the change in terms-of trade. Gains from allocative efficiency are realized when market distortions are removed, permitting the economy to reallocate its resources to the most productive use. These benefits accrue largely to the liberalizing region itself. They are partially reflected in the huge budgetary savings that accrue to the government of the liberalizing country.

The terms-of-trade effect comes from changes in a country's export prices relative to its import prices. The impact of global liberalization on national terms of trade is usefully decomposed by McDougall (1993) into three separate effects—the world price effect, the export price effect, and the import price effect.

Export and import restrictions mean that there is a wedge between the international price and the price that may be received by producers or paid

by consumers in each country. A country with an export subsidy faces a higher producer and consumer price than the world price. A country with a production subsidy faces a higher producer price (inclusive of the subsidy) but the consumer price is the world price. A country with an import quota or tariff faces both a higher consumer and higher producer price. Full liberalization entails eliminating all of these restrictions. Since there are huge subsidies at present for the production of temperate agriculture products, the world price of these crops would go up. The consumer price would go up less in the EU[2], which has an export subsidy, than in the United States. Developing countries that protect agriculture would see consumer and producer prices go down relative to the world price, but since the world price has gone up, the net effect is ambiguous.

Making matters more complicated are cross-commodity movements. Not all agricultural crops are equally subsidized. The elimination of subsidies would lead to a reallocation of resources within the agricultural sector. It is possible, for instance, that with the elimination of the dairy subsidy, the output of beef cattle could rise, and thus the price of beef might fall, even though the consumer price of milk products might rise. In general, vegetables are less subsidized than grains, and hence there would be a shift away from grains towards vegetables. Shipping costs are, however, less for grains than for vegetables, and vegetable markets tend to be localized. Thus, even if vegetable prices in developed countries fall, it will have little impact on developing countries.

For a few crops, like sugar, there are quotas. The elimination of the quota would lower producer and consumer prices in those developed countries imposing quotas, and raise international producer and consumer prices. The overall impact on developing countries depends on who receives the quota rents. Even when the rent goes to those in developing countries, it does not seep down to producers.

Differences between production and export subsidies are often exaggerated. A production subsidy of t_p per cent in an economy producing x_p raises output by approximately $t_p\eta_s$, where η_s is the elasticity of supply. The output impact per dollar of subsidy is $t_p\eta_s/t_p px = \eta_s/px$, and the impact on exports is $\eta_s/px\alpha$, where α is the ratio of exports to total production. On the other hand, an export subsidy raises both the production price and the consumption price, so that output is increased and consumption reduced. The impact on exports is thus $\eta_s/px\alpha + (1/\alpha - 1)\eta_d/pc$, where c is consumption. While the impact on developing countries per dollar of subsidy is

---

[2] Consumer prices could even fall.

greater, the difference is small if the elasticity of demand is small, which is the case for many agricultural commodities.

It is important to recognize that among the 'consumers' of agricultural goods is agro-business. While the higher price discourages direct consumption, it also discourages agro-business, shifting it to other countries, including developing countries. Thus, while there remains a presumption that export subsidies are worse than production subsidies for developing countries, there is some question not only about the magnitude, but even about the sign.

There are several additional concerns about the effects of agricultural liberalization on developing countries. The effects of Uruguay Round liberalization were noted at the Marrakech Meeting, where the Ministerial Decision on 'Measures Concerning the Possible Negative Effects of the Reform Program on Least Developed and Net Food-Importing Developing Countries' addressed the need to provide adversely affected countries with assistance.

The effect of liberalization on poverty is difficult to determine, largely for the same reasons that we noted that there was an ambiguity in the impact on developing countries as a whole: consumers lose while producers gain. One problem is that the limited resources of small farmers could prevent them from taking advantage of liberalized markets unless credit facilities are improved.

One of the most significant effects of liberalization on the poor is felt through changes in the price of food. Anderson, Dimaranan, Francois *et al.* (2000) model a general equilibrium framework and find that full liberalization of OECD farm policies would have a large effect on the volume of international food trade (a 50 per cent increase) but only a small effect on prices (a 5 per cent increase on average). Beghin, Roland-Holst and vander Mensbrugghe (2003) find that the price rise is larger for some commodities. However, this does not include the effects of reform to non-farm trade and so may misstate the effect in a multisector agreement. But even in this study, the expected price increases are not large—the smallest increases (about 4–6 per cent) are in the wheat, rice, and coarse grains sectors. The effect of price increases on poverty is hard to generalize across developing countries and within countries. This is because the relationship between liberalization and poverty depends on the shares of household income from different factors (land, labor, capital)—the prices of which will change. The size of these changes depends on factor substitutability, factor intensities, and factor mobility. The impact of price changes on welfare depends on the relative shares of different goods in the production bundle. Additionally,

liberalization could have effects on net transfers, including increased welfare, remittances from distant relatives, or changed taxation levels (Anderson 2003).

Despite these difficulties, Anderson (2003) argues that *since most of the poorest people are net sellers of food (or at least sellers of agricultural labor) liberalization would reduce poverty*. Increases in the price of food would stimulate production and increase the demand for unskilled farm labor. Because unemployment (both open and disguised) is chronic in developing countries, this in itself would have enormous benefits.

Another concern is food self-sufficiency. Some fear that cuts to protection by OECD countries will lead to unaffordably high international food import bills (see e.g. Sharma, Konondreas, and Greenfield 1996).

Table A1.5 shows the proportion of the population that is undernourished in several developing countries. The last two columns show the value of food imports as a percentage of total exports and total agricultural exports. Interestingly, however, net food importer status (greater than 100 per cent in the last column) is not highly correlated with the FAO's category 'Low-income food-deficit country' (LIFDC). Botswana, Jamaica, and Peru are all net importers but are not classified as food-deficient. Also Côte d'Ivoire, Malawi, and Kenya all import less than 20 per cent of their export volume, but are classified as food-deficient.

An additional concern is that the liberalization of agricultural trade would prevent countries from managing external price shocks. However, Zwart and Blandford (1989) argue that liberalization could lead to less volatile food prices, since trade can even out surpluses and deficits across countries with heterogeneous production shocks.

But governments may want to intervene to stabilize either producer or consumer prices, especially in developing countries, where means for risk absorption are limited. Thus, initiatives at agriculture liberalization should leave scope for developing countries to implement such stabilization schemes.

A final concern is that many of the least developed countries already receive preferential access to OECD country markets. Some of the benefi-ciaries of these agreements are concerned that their advantages might be eroded under a broader multilateral agreement.

However, there are several reasons why multilateralism should be preferred. First, preferential agreements harm those countries that are not in the agreement, including many which are very poor. Borrell (1999) discusses this point in the context of the banana dispute of the 1990s, for which one study showed that for every dollar of benefit to producers of

Table A1.5. **Income category and food trade status**

LI, LMI, and UMI refer to the World Bank classifications of low-income, lower-middle-income and upper-middle-income countries; LDCs are least-developed countries, as recognized by the UN; LIFDCs are low-income food-deficit countries, defined by the FAO as those countries with a GNP per capita less than $1,445 in 2000 and which are net importers of food defined on a calorie basis; NFIDCs are net food-importing developing countries, as defined by the WTO Committee on Agriculture.
n.a.: not available

	Population under-nourished (%)	Income/food trade status groupings		Food Imports	
				(% of total exports)	(% of agricultural exports)
Bangladesh	35	LDC		LIFDC	21	829
Botswana	25	UMI	NFIDC		14	256
Brazil	10	UMI			7	30
Costa Rica	5	UMI			6	19
Côte d'Ivoire	15	LI	NFIDC	LIFDC	9	17
Egypt	4	LMI	NFIDC	LIFDC	20	542
Fiji	n.a.	LMI			9	52
Guyana	n.a.	LMI			7	23
Honduras	21	LMI	NFIDC	LIFDC	13	48
India	24	LI		LIFDC	5	42
Indonesia	6	LI		LIFDC	6	56
Jamaica	9	LMI	NFIDC		12	111
Kenya	44	LI	NFIDC	LIFDC	13	32
Malawi	33	LDC		LIFDC	13	16
Morocco	7	LMI	NFIDC	LIFDC	12	146
Pakistan	19	LI	NFIDC	LIFDC	15	134
Peru	11	LMI	NFIDC		14	152
Philippines	23	LMI		LIFDC	6	123
Senegal	25	LDC		LIFDC	26	357
Sri Lanka	23	LMI	NFIDC	LIFDC	12	68
Thailand	18	LMI			2	14
Uganda	21	LDC		LIFDC	20	41
Zimbabwe	38	LI			5	13

Source: Anderson (2003: table 4).

bananas in ACP countries, the regime harmed non-ACP developing country producers by a similar amount and reduced the welfare of EU consumers by 13 dollars. This type of scheme does not seem to be a very efficient means of assisting banana producers in ACP countries, who could be directly compensated by gains from the removal of the preference.

Second, if developing countries only sell part of their production in preferential markets, then they are selling the rest of their output at lower than

Table A1.6.   **Welfare and efficiency gains expected from a 40% liberalization in agriculture, 2005**

Column (1) reports the efficiency changes as a share of food and agricultural value added. AgrMkt40 (col. (5)) excludes reductions in production subsidies whereas Agr40 covers all forms of protection.

Region	Agr40 experiment ratios (percentages)				Total EV by experiment ($m)			
	Eff/$VA (1)	Eff/EV (2)	EV/Exp (3)	Agr40 (4)	AgrMkt40 (5)	Manufact40 (6)	BusFinSvces (7)	T&Tsvces (8)
NAmerica	9	11	0.035	3,401	1,436	3,310	4,517	52,532
WEurope	6	104	0.369	36,959	27,810	8,180	8,532	128,593
Aus/Nzl	6	−12	0.377	1,786	1,348	207	209	8,421
Japan	6	120	0.253	12,552	13,461	6,607	2,564	33,358
China	6	1,067	0.012	172	753	22,593	826	8,710
Taiwan	4	143	0.060	265	295	3,288	83	6,072
Other NICs	3	115	0.333	2,672	2,996	5,270	612	23,228
Indonesia	2	1,183	0.002	6	26	792	270	1,474
Other SEAsia	2	101	0.465	1,931	1,247	2,631	393	11,092
India	1	137	0.200	1,058	927	3,084	19	3,989
Other SoAsia	1	118	0.852	1,176	1,181	1,645	9	2,213
Brazil	1	64	0.245	1,988	1,683	4,491	457	3,625
Other LatAm	1	48	0.360	3,055	2,366	1,449	652	8,611
Turkey	1	123	0.142	338	332	619	70	3,524
Other MENA	0	−15	−0.202	−1,506	−718	1,074	231	16,667
EIT	0	142	0.033	301	282	1,391	1,865	10,265
SoAfrCU	0	46	0.080	129	54	283	128	1,897
Other SSA	0	31	0.194	436	529	249	30	4,496
RoWorld	−1	115	0.741	2,601	2,611	2,399	137	3,798
World				69,320	58,619	69,564	21,604	332,565

Source: Hertel, Anderson, Francois *et al*. (2000: table 8).

normal prices because of the depressing effect of OECD protection on prices in the rest of the international market.

The empirical results below come largely from CGE (computable general equilibrium) models.

Hertel, Anderson, Francois *et al*. (2000) report simulation results from a 40 per cent liberalization of all types of protection (including production and export subsidies). The impacts of these changes on real income are dominated by efficiency and terms-of-trade effects.

There are significant gains from increases in allocative efficiency. The first column in Table A1.6 reports the efficiency gains as a share of food and agricultural value added. Large gains accrue to countries with the most distorted policies, such as Europe, the US, and Japan. In Western Europe the

AQ: Please check the correction done for cross reference, with regard to the answer for the quary. Check the placement of table A1.7

228 **FAIR TRADE FOR ALL**

efficiency gains from liberalization amount to more than 8 per cent of the entire sector's value added.

Hertel, Anderson, Francois *et al.* (2000) add these efficiency gains to the terms-of-trade effects to calculate a measure of welfare gains, the 'equivalent variation' (EV)—which represents the amount of money that would make consumers equally well off had there been no liberalization. The second column in Table A1.6 shows the ratio of efficiency gains to total gain (EV). Where this is greater (less) than 100 per cent the terms-of-trade effects are negative (positive). For example, India experiences a terms-of-trade loss. Sub-Saharan Africa, Brazil, and Latin America experience a terms-of-trade gain because they are net exporters of food.

Table A1.7. **Change in world trade volume from agricultural liberalization %**

Change in world trade resulting from a 40% reduction in protection across 3 sectors: agriculture, manufactured goods, and services. AgrMkt40 excludes reductions in production subsidies whereas Agr40 covers all forms of protection.

	AgrMkt40	Agr40	Manufac40	Services40
food grains	1.9	−7.2	1.2	0.5
feed grains	4.1	1	0.7	0.5
oilseeds	0.6	5.8	0.1	0.3
meat & livestock	5.6	4.9	1.1	0.3
dairy	−6.7	−6.9	0.1	0.7
other agriculture	8.3	8.1	0.9	0.4
other food	12.1	11.8	0.5	−0.1
beverages & tobacco	27.5	27.6	0	0.8
extract	0	−0.1	1.8	0.3
textiles	0.2	0.2	16.3	0.3
wear & apparel	0.7	0.4	22.3	0.6
wood & paper	0	0	3.6	0.4
chemical & universal	0	−0.1	4.6	0.6
metals	0	0	5.5	0.4
autos	0.3	0.5	9.4	0.9
electronics	0.1	0.1	4.1	−0.1
other manufactures	0.1	0.2	5.2	0.2
house utilities	0	0	0.1	1
trade & transport	0.5	0.5	1.5	59.8
construction	0.3	0.5	0.4	18.3
business & finance	0.1	0.1	0.5	10.8
government & service	−0.1	−0.1	0.8	39.2

Source: Hertel, Anderson, Francois *et al.* (2000: table 6).

The total global welfare increase from a 40 per cent liberalization of agricultural protection is $70 billion in this study. The distribution of these gains across countries is regressive. By far the largest absolute gains (col. (4)) accrue to developed countries, Western Europe, and Japan, who benefit from the reduction in their own subsidies. However, col. (3) shows a measure of relative welfare which accounts for the importance of food in GDP in each region. Although the benefits of liberalization to Western Europe are large, the food sector only represents 5 per cent of GDP. Column (3) shows the total gain (EV) as a percentage of expenditure on food in that region. This is one way of representing the benefits of liberalization relative to the import- ance of agriculture in the economy. On this category, the largest gains are realized in Other South Asia (non-India), Rest of the World (RoWorld), Other South-East Asia (non-Indonesia), the Other NICs, and then Western Europe.

For comparison, Table A1.8 shows the results of a second CGE study by Anderson, Dimaranan, Francois *et al.* (2001). They estimate that the total welfare gain from the liberalization of all (i.e. 100 per cent) of agricultural protection is $164 billion.[3] The Anderson study reports the impact of liber- alization by different regions on other regions. It concludes that the farm policies of the OECD countries—after the Uruguay reforms have been accounted for—reduce welfare in developing countries by $11.6 billion.

Table A1.8. **Welfare gains from global removal of trade barriers,** 2005 **(US$bn)**

Liberalizing region	Benefiting region	Agriculture and food	Other primary	Textiles & clothing	Other manufactures	Total
High-income	High-income	110.5	−0.0	−5.7	−8.1	96.6
	Low-income	11.6	0.1	9.0	22.3	43.1
	Total	122.1	0.0	3.3	14.2	139.7
Low-income	High-income	11.2	0.2	10.5	27.7	49.6
	Low-income	31.4	2.5	3.6	27.6	65.1
	Total	42.6	2.7	14.1	55.3	114.7
All countries	High-income	121.7	0.1	4.8	19.6	146.2
	Low-income	43.0	2.7	12.6	49.9	108.1
	Total	164.7	2.8	17.4	69.5	254.3

Source: Anderson, Dimaranan, Francois *et al.* (2001).

[3] This study is roughly consistent with Hertel, Anderson, Francois *et al.* (2000), whose predicted $70bn gain was based on a 40% reduction of barriers.

This is a small number in comparison to the gains realized by developing countries as a result of liberalization in other developing countries ($31.4 billion), and the gains realized by developed countries as a result of their own liberalization ($110.5 billion). It is also a small number in comparison to the gains predicted from liberalization in the temporary movement of natural persons. The reason many developing countries do not gain more is not difficult to understand given the structure of these models. Their gains from more efficient resource allocation are offset by an adverse change in the region's terms-of-trade.

Moreover, these models simply add up the gains and losses: no note is made of the fact that rural producers may be far poorer than the average person in society; or that those who buy *imported* food (say wheat) are far richer than those who live off locally grown crops, like millet. Nor does it take into account any multiplier effects, e.g. the losses in income to producers may have a larger effect on GDP than corresponding gains in income to consumers (e.g. because of differences in marginal propensities to consume). With unemployment rampant in most developing countries, aggregate demand is often a constraining variable. Nor do these models take into account the effects of credit constraints: higher prices allow poor rural farmers to buy more fertilizer and higher-quality seed, thus providing a further boost to their income. The higher incomes, in turn, may allow other forms of high-return investment—including temporary migration into higher-paying urban areas. Finally, there is considerable evidence that at very low incomes, productivity depends on nutrition, and the higher incomes accordingly will have a direct impact on agricultural productivity—another effect not incorporated into these models.

For further comparison, we look at studies which focus on the effects of specific protection mechanisms. Dimaranan, Hertel, and Keeney (2003) examine the effect of domestic support (not including market access restrictions) in industrialized countries on developing countries. The terms-of-trade effect dominates welfare outcomes in their simulations, leading them to conclude that a cut in OECD production subsidies would lead to welfare losses in most developing regions. The first column in Table A1.9 reports the average world price impacts of cutting domestic support in all industrialized countries for all agricultural commodities by 50 per cent. The table shows that domestic support has the largest effect on price for program crops (wheat, corn, barley, rice) and ruminant livestock (beef). Sugar and dairy, which are mainly protected by tariffs, show small price declines and land and labor shifts out of program crops. The remaining columns in Table A1.9 decompose the world price effects by type of domestic

Table A1.9. **Change in average world prices due to comprehensive OECD domestic support**

Commodity	World price change	Contribution by tax/subsidy to world price change			
		Output	Int.Input	Land	Capital
pdrice	0.26	0.12	0.34	0.05	−0.23
wheat	4.91	1.03	1.68	1.11	1.09
crsgrns	5.5	1.42	1.79	1.02	1.27
oilsds	3.53	0.92	1.21	0.79	0.6
rawsgr	−0.58	0.09	0.14	−0.33	−0.48
othcrops	−1.5	−0.01	−0.03	−0.69	−0.77
ruminants	4.3	0.48	0.95	−0.38	3.25
nonrumnts	0.54	0.26	0.45	−0.14	−0.02
rawmilk	0.21	0.14	0.81	−0.33	−0.4
pcrice	0.27	0.13	0.12	0.06	−0.03
vegoilfat	0.97	0.2	0.34	0.24	0.2
refsgr	−0.06	0.05	0.06	−0.03	−0.15
rummeat	2.21	0.31	0.56	−0.11	1.44
nrummeat	0.43	0.17	0.28	−0.06	0.04
dairy	−0.19	0.14	0.36	−0.27	−0.43
othprfood	0.22	0.06	0.11	0.07	−0.03
mnfc	0.12	0.01	0	0.1	0.01
srvc	0.11	0.01	0	0.1	−0.01

Source: Dimaranan, Hertel, and Keeney (2003: table 10).

instrument: output subsidies, intermediate input subsidies, land-based payments, and capital subsidies (including livestock-based payments).

As shown in Table A1.10, the welfare impacts of domestic support reduction arise from allocative efficiency, output stimulus, and terms-of-trade effects. The two largest agricultural exporters, Argentina and Brazil, gain considerably in each of these categories. For these countries the terms-of-trade effects are large and positive. However, for most developing countries the terms-of-trade effects are negative and exceed the allocative efficiency gains. A 50 per cent reduction in OECD domestic support results in a decline in aggregate developing-country welfare of $357 million.

Turning our attention to another experiment in partial liberalization, Hertel, Anderson, Francois *et al.* (2000) analyse the effect of reductions in border protection (leaving production subsidies unchanged). They report that, not surprisingly, the global gains from this partial liberalization are smaller than when liberalization also includes production subsidies: $59

Table A1.10. **Welfare impacts of domestic support reform ($m)**

Region	Equivalent variation				Terms-of-trade components region		
	Total	Allocative efficiency	IS effect	Terms of trade	World price	Export price	Import price
China	−69.1	−69.6	−18.0	18.5	−51.8	137.1	−66.8
Indonesia	−13.6	0.8	−1.9	−12.4	−54.5	35.5	6.6
Vietnam	−8.2	−1.9	0.3	−6.6	−10.0	5.8	−2.4
ASEAN4	−15.2	4.9	−4.3	−15.9	−47.4	113.4	−81.9
India	35.9	15.2	−2.1	22.8	−22.9	38.6	7.1
RoSoAsia	−44.2	−3.3	−1.2	−39.7	−57.2	17.2	0.3
Argentina	157.3	26.2	10.6	120.5	183.1	−53.1	−9.5
Brazil	200.2	73.3	31.9	94.9	1.1	88.5	5.3
RoLatAmer	−214.3	−29.9	−1.0	−183.4	−244.7	101.8	−40.5
MENA	−270.1	−50.6	−1.8	−217.7	−315.9	83.1	15.1
Tanzania	−7.0	−1.2	−1.0	−4.9	−7.1	1.8	0.4
Zambia	0.0	0.2	0.0	−0.3	−1.4	0.4	0.7
RoSSA	−126.1	−16.0	−2.1	−108.0	−149.7	31.1	10.6
RoWorld	17.1	27.7	−1.1	−9.4	−221.4	285.9	−73.9
LDC total	−357.3	−24.2	8.4	−341.6	−999.7	887.0	−228.9

Source: Dimaranan, Hertel, and Keeney (2003: table 11).

billion rather than $70 billion (see Table A1.7). However, the additional benefit from including production subsidies accrues entirely to developed countries, which reap allocative efficiency gains. Western Europe alone gains an additional $9 billion when production subsidies are included. By contrast, many developing countries are worse off when production subsidies are liberalized because of the terms-of-trade effect. The Middle East and North Africa and Sub-Saharan African countries outside the customs union are significantly worse off as a result of the reduction in production subsidies (Table A1.7).

The quantitative studies above indicate that the effect of agricultural liberalization on developing countries is complex. Competing efficiency and price effects have different effects across heterogenous countries.

For the reasons explained earlier, these results should not be taken too seriously. The underlying assumptions of the computable general models do not provide a good description of the economies of developing countries. The results are highly sensitive to assumptions about elasticities and cross-elasticities of supply and demand.

Still, there are three lessons that emerge from these admittedly highly restrictive studies. The first is that in the process of liberalization, many

developing countries will find themselves worse off, especially urban workers. But these adverse effects can be mitigated by adjustment assistance from the more developed countries, *which at the same time leaves the more advanced industrial countries better off*. This is because of the large allocative inefficiencies associated with the distorted patterns of production.

The second is that, while a true Development Round has to go well beyond agriculture, it must include agriculture, it is too important to some of the developing countries; there can be no principled trade agreement without including agriculture; and, not surprisingly, as a consequence, it has taken on enormous symbolic value.

Thirdly, the potential for losses does not suggest that multilateral reform should be abandoned. Instead, it suggests that to share benefits among all countries, reform must accommodate differences across countries. The case for liberalization is particularly strong for those commodities, like cotton, the elimination of whose subsidies would have little direct bearing on the standard of living of those in developing countries.

The empirical results surveyed above indicate that uniform elimination of all agricultural protection would result in negative terms-of-trade shocks for developing countries and sharp declines in farm incomes in Europe and North America. The latter are in a position to bear the costs; the former may not be. A reform agenda must carefully discriminate between liberalization instruments. Such an agenda would have three key components.

First, a significant reduction in border protection in developed countries (particularly the EU), including tariff cuts and the elimination of export subsidies. Tariffs on the goods produced primarily by developing countries, as well as those consumed primarily in developed countries, should be reduced most rapidly. For example, the elimination of US and EU quotas and tariffs on sugar and tropical products would increase the price received by developing world producers but only have a small effect on consumer prices in developing countries.

Second, domestic production support for price-sensitive necessities that are widely consumed in developing countries should be reduced gradually, with some of the savings in developed country subsidy budgets being directed at ameliorating the adjustment costs of those in the developing world. Many developing countries in North Africa, Sub-Saharan Africa and Latin America (though not Brazil, Argentina, or Mexico) rely on imports of subsidized grains and oilseeds from OECD producers. The empirical evidence reviewed above suggests that these countries are particularly exposed to agricultural reforms which might increase the price of some commodities.

Third, domestic support should be shifted from market price support to alternative payment systems. Reinstrumentation of protection in OECD

countries towards the least trade-distorting instruments (such as land-based payments) is one possible means of compensating OECD farmers while minimizing the impact on developing-world consumers. But many of the so-called non-trade-distorting subsidies do in fact lead to increased production, and too much has been made of the distinction between export subsidies and production subsidies.

This type of program is similar to the thrust of the OECD in its 'Positive Reform Agenda' for agriculture (OECD 2002) and is supported by a series of recent research contributions.[4]

A1.2 **Services**

This section analyses the potential gains from the liberalization of services. Services represent an increasingly large share of GDP in both developed and developing countries—but a much larger share in developed countries. Indeed, the area of focus of trade negotiations during the past fifty years, manufacturing, is increasingly becoming the province of developing countries. It is natural, then, that the developed countries like the United States should shift their focus towards liberalization of services.

The bulk of the empirical studies surveyed below suggests that the liberalization of services could yield significant welfare gains—much larger than the gains from agricultural or manufactured goods. The estimates of global gains are as high as $400 billion. The estimates are large because protection levels are high in the service sector, and services make up a large (and growing) share of world trade. Additionally, services are key inputs into the production of almost all goods.

The enthusiasm in the cross-country empirical literature is tempered by negative experiences at the national level. Opening up markets has been

---

[4] Rae and Strutt (2003) use a CGE framework to compare the welfare gains of liberalization in border measures and domestic support. They find that improved market access generates far greater trade and welfare gains than reductions in domestic support. They conclude that the WTO should focus primarily on achieving reductions in border restrictions and give a lower priority to the elimination of domestic support. Hoeckman, Ng, and Olarreaga (2002) focus on the effect of OECD agricultural reform on developing countries. They reach the same conclusion—that developing countries' interests are better suited through tariff cuts rather than domestic support. It is still the case, however, that the elimination of domestic subsidies for certain commodities (like cotton) is likely to have a small effect on consumers in a developing country, and a large benefit to producers. There are other crops for which this is also likely to be true. The critical distortion differs markedly across commodities, and their results are highly dependent on assumptions concerning demand and supply elasticities, and therefore results may differ markedly across commodities. In the case of sugar, it is trade restrictions which dominate; in the case of wheat, it is almost surely production and export subsidies which dominate.

accompanied at times by a reduction in competition, and an increase in prices.[5] In the case of financial services, there are even allegations that the supply of credit to medium-sized and small domestic enterprises has been reduced. Financial and capital market liberalization has been associated with greater instability, not higher levels of economic growth. These adverse consequences, in turn, help to explain the unhappiness of many countries about efforts to force further opening up of the service sector.

It is easy to explain the discrepancy between the models and the outcomes. It is partly that, deficient as the models used to analyse the consequences of agricultural liberalization are, those in the area of services are far worse. They model trade in services in exactly the same manner as they model trade in goods, and thus the models have *all* the problems we noted earlier. But in addition, there are several further problems. There are some formal barriers to trade: the United States, for example, does not allow coastal shipping by ships of another nationality. There are restrictions on media ownership. Foreigners may not buy spectrum in the US, and if they cannot buy spectrum they cannot provide broadcasting services except by selling services to Americans who own stations. But many of the barriers to trade are more subtle, and are typically hard to quantify. Because the estimates of government-created trade barriers are unreliable, so are the resulting estimates of the benefits that would accrue from eliminating them. Worse still, debates about liberalization in services do not center around discussions of lowering the effective barrier from, say, 40 per cent to 20 per cent. Rather, they center around particular *measures*, such as privatization and elimination of particular regulations. In each of these cases, the ramifications of the particular measure extend well beyond the impacts on trade; in many cases, these are incidental. Inevitably, then, debates about service sector liberalization devolve into fundamental debates about national economic and social policy. Should the media, for instance, be controlled by a few rich, foreign firms, who are able to use their wealth to control the flow of information to the citizenry? This is an issue which is fundamental to the functioning of democracy, and should not be relegated to trade negotiators. (At the same time, we should recognize that there are certain service sector liberalizations which are little different in their impact than a standard trade liberalization; such is the case for construction and maritime

---

[5] For example, privatization of utilities—such as South Africa's experience of granting its newly privatized telecommunications utility Telekom a 5-year monopoly—can lead to inefficient services (OECD 2002). Similarly the poor regulation of financial sectors across South-East Asia contributed to instability prior to the crises of the late 1990s. Poor electricity deregulation has led to problems in many countries.

services—areas which were not included in the Uruguay negotiations, and which are of some concern to developing countries.)

Part of the reason that the standard models are unpersuasive arises from the fact that they fail to take account of the highly differentiated nature of services, and the large 'local information' content. There are other ways in which trade in services is *obviously* different from trade in goods. For the most part, services have to be consumed at the point of production. In the case of haircuts, the point is obvious. But the same is true for retail sales, hotels, and electricity. Thus, the issue of trade in services in inextricably linked (as already noted) to the movement of capital and labor. Without these, there can be little trade in services.

But movements of labor and capital introduce a host of other considerations, quite different from those associated with trade in goods. The issues of labor—which are of vital concern to developing countries—are dealt with in the next section. The central issue of concern for capital flows is investor protections. What the investors would like, of course, is a world without regulation or taxation, but that would compromise the general well-being of the developing world. Indeed, most of the failures of liberalization have been because of failures to put into place an adequate regulatory environment (including one which ensures competition).

Economic theory, of course, says that, under certain idealized circumstances (e.g. constant returns to scale), full global efficiency can be gained either through the free mobility of capital or the free mobility of labor. But in the general case, equating the marginal returns to capital will not suffice to equate the marginal returns to labor.

What do international firms provide when they provide services? Why might an American company have a competitive advantage in financial services over a domestic company? Presumably, this relates to *knowledge* and *information*, e.g. about how to organize the provision of the services.

There are, in fact, a variety of ways besides direct investment by which such services are sold. Hotels and restaurants issue franchises, which have been enormously popular. Firms may contract out management services.

Of increasing concern in recent years in the United States is the problem of 'contracting out' services through the Internet. This is one area in which production of a service can occur at a place different from that where the service is consumed. Such services are, in many ways, very much like traded goods. It is of importance to developing countries that this nascent industry not be impaired by the creation of new trade barriers by the developed countries.

A further concern is that many service sector liberalizations increase poverty, by increasing prices of essential services or reducing access for the poor. Private firms may be less willing to engage in cross-subsidization of market segments in poor and rural areas. Even if liberalization leads to lower average costs through increased competitiveness and efficiency, prices for some end-users may rise. Mosely (1999) estimates the impact of financial liberalization on access to rural credit in four African countries—Uganda, Kenya, Malawi, and Lesotho. The study found that liberalization expanded credit where it was accompanied by innovative reforms with regulation focused on rural access and poverty reduction. However, merely privatizing government micro-credit agencies had a negative effect on rural areas, as witnessed by the consequences of reform in Malawi.

There is also a concern that some service sector liberalizations, even if they increase economic welfare, narrowly defined, have an adverse effect on community life. Each individual in the community values having the local store. The local store owner, like other local businessmen, provides essential services for the community. But these are services that are not 'priced'. It pays each consumer to buy the goods for the lowest price. Walmart is thus able to drive the local store out of business. But there are fundamental questions: 'Is the community better off with the local businessman replaced by a hired manager that is rotated in and out of the community in three years' time?'

The Services sector account for half of GDP in developing countries (60 per cent in developed countries) and are some of the fastest-growing industries in many economies. The performance of the services sector is critical to growth. For example, the strength of a country's financial sector is a determinant of growth (see Levine 1997; Carlin and Mayer 2003). Well-managed and well-regulated banks lead to an efficient transformation of savings to investment, ensuring an appropriate allocation of resources. Similarly, efficient business services reduce transactions costs and telecommunications capabilities are an important prerequisite for development in many sectors.

The GATS framework provides for four modes of service delivery:

- Mode 1, *cross—border supply*, which is analogous to trade in goods, arises when a service crosses a national frontier, for example, the purchase of software or insurance by a consumer from a supplier located abroad.

- Mode 2, *consumption abroad*, occurs when the consumer travels to the territory of the service supplier, for example, to purchase tourism, education, or health services.
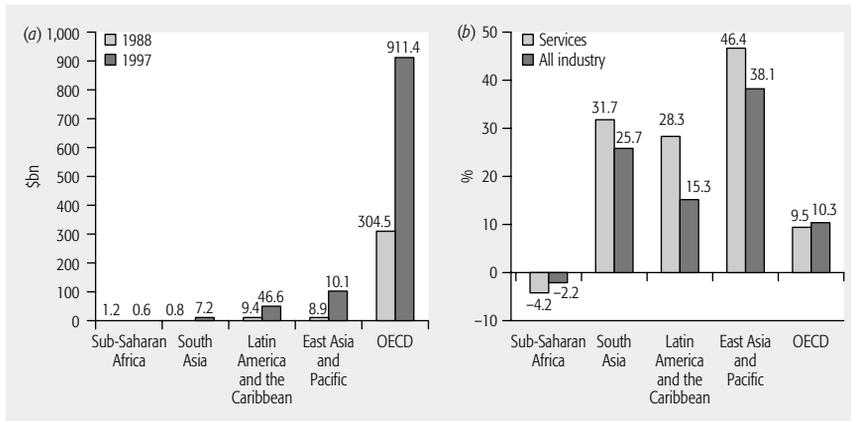
Figure A1.2. **Foreign direct investment in services (a) Regional FDI stock (b) Compound annual growth rate**

Source: OECD (2002).

- Mode 3, *commercial presence*, involves foreign direct investment, for example, when a foreign bank or telecommunications firm establishes a branch or subsidiary in the territory of a country. Figure A1.2 indicates that the stock of service-sector Foreign direct investment (FDI) in developing countries is small relative to OECD countries. However, as Fig. A1.2*b* indicates, service, sector FDI is growing more rapidly in developing countries, with the exception of Sub-Saharan Africa.

- Mode 4, *movement of individuals*, occurs when independent service providers or employees of a multinational firm temporarily move to another country.

These four elements of the General Agreement on Trade in Services (GATS) encompass the movement of both capital and labor for services provision. This broad approach enables countries to bargain to exploit their comparative advantage. For example, developing countries might exchange greater market access for capital for more fluid movement of unskilled workers to developed countries. Figure A1.3 shows that the existing commitments have been lopsided, with the development of Mode 4 proceeding most slowly.

International service transactions remain heavily protected in many countries. Table A1.11 estimates the tariff-equivalent protection levels for the construction services, business and finance, trade and transport, and government services sectors across various countries and regions. These are taken from estimates by Francois (1999) based on predictions of the level of
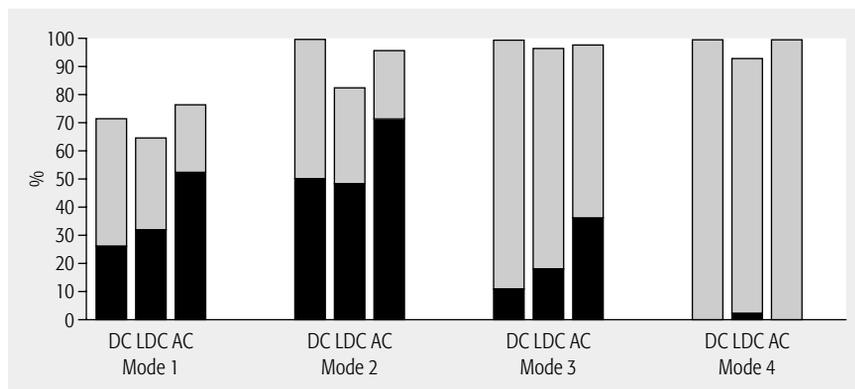
Figure A1.3. **Full and partial market access commitments under GATS**

DC = Developed countries: LDC = Developing and transition economies; AC = Acceding countries

Source: OECD (2002).

bilateral services trade with the US. Discrepancies between the actual level of bilateral trade (from US trade data) and the predicted level are assumed to result from protection. The estimates for the trade and transport and the government services sectors are taken from Hoekman (1995).

Table A1.11 indicates that impediments to trade are quite high in trade and transport, government services, and construction and that barriers to trade in services are much larger than barriers to trade in manufactures and extraction industries. Findlay and McGuire (2003) report that impediments to international services tend to fall as income rises, except in some professional service activities. This is indicated in Fig. A1.4.

One has to be careful, however, about interpreting these data, which refer primarily to Mode 1 impediments. There are some service sectors—like haircuts—that are typically small businesses. Without Mode 4 liberalization, there is likely to be little cross-border sale of these services, even though standard economic theory would suggest that there would be large gains to trade. Services are highly individualized, often requiring large amounts of localized information. Thus, even with no artificially created barriers, individuals in one country may prefer to deal with those from their own community; and those from their own community may be able to provide the services that individuals want. Local banks may have a competitive advantage in knowing who the good borrowers are (an advantage which may more than offset the problem of correlated risk). Large multinationals, geared to providing services to those in advanced industrial countries, may

240   **FAIR TRADE FOR ALL**

Table A1.11. Estimated average rates of protection by region and sector, 2005

Note that figures for services are tariff-equivalent rates. For example, in China, the figures below suggest that import prices in the construction industry must be 41% above their free trade level to explain the relatively low share of imports in this market.

Region	Food	Manufactures	Services			
			Construction	Business & financial	Trade & transport	Government services
NAmerica	5	3	10	8	69	34
WEurope	8	1	18	9	84	40
Aus/Nzl	4	7	24	7	91	31
Japan	58	2	30	20	71	32
China	18	20	41	19	96	42
Taiwan	41	4	5	3	93	36
Other NICs	21	2	10	2	82	37
Indonesia	5	8	10	7	85	43
Other SEA	25	12	18	5	88	40
India	40	35	62	13	96	41
Other SoAsia	37	20	46	20	92	41
Brazil	4	16	57	36	71	44
Other LatAm	9	10	26	5	79	43
Turkey	31	6	46	20	92	40
Other MENA	15	14	10	4	92	40
EIT	12	9	52	18	71	35
SoAfrCU	8	8	42	16	58	26
Other SSA	13	9	11	0	94	43
RoWorld	76	33	46	20	97	38

Source: Hertel, Anderson, Francois *et al.* (2000: table 4). Original sources: Francois (1999), Hoekman (1995).

find it difficult to provide the services demanded in poor developing countries. In short, there are reasons to believe that even apart from artificially created barriers to trade in services, such trade might be more limited than trade in manufactured goods. In that case, even though the service sector is today larger than the manufacturing sector in developed countries, potential gains from trade, and the reductions of trade barriers, may be more limited.

Moreover, one has to distinguish *protection* from the legitimate role of government in imposing *regulations* that promote a variety of concerns of general interest, *even when such regulations have the effect of discouraging foreign firms*. For instance, affirmative action requirements might have this effect, yet it is a legitimate objective of government policy to advance the economic well-being of the disadvantaged.
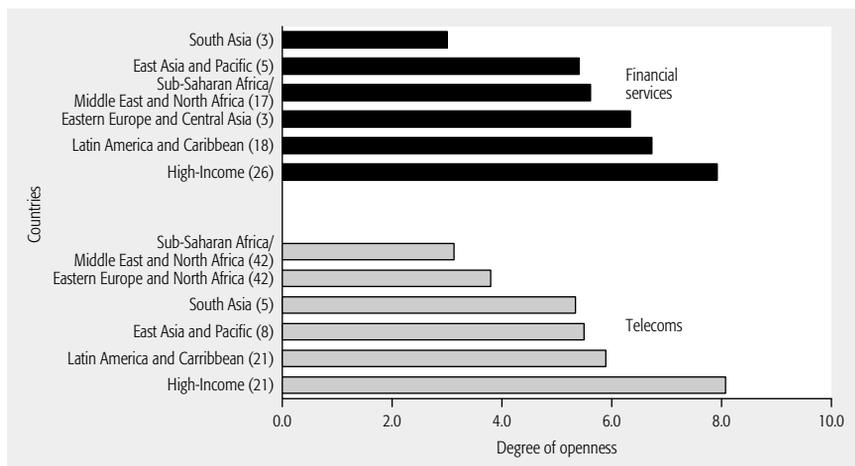
Figure A1.4. **Service sector openness by region: financial services and tele-communications**

The index for financial services captures the restrictions on new entry, foreign own-ership, and capital mobility (IMF's Annual Report on Exchange Arrangements and Exchange Restrictions). The openness index for telecommunications captures the degree of competition, restrictions on ownership, and the existence of an independent regulator (ITU-World Bank database for 1998).

Sources: Mattoo, Rathindran, and Subramanian (2001); OECD (2002).

Inefficient service industries operate like a tax on an economy. Since services are essential production inputs for most goods, the price and quality of services provided to other producers have major impacts on the whole economy. This is particularly true in key service industries such as telecommunications, transport, energy, and finance.

For this reason the majority of gains from effectively managed reform accrues to the liberalizing region itself. Domestic firms benefit from access to services at lower prices; consumers gain; employees in most service industries earn higher wages than in manufacturing (OECD 2002).

This poses two questions. First, if the benefits of liberalization are so great to the liberalizing country, why does one need to include such liberalizations within a trade agreement? Won't countries have an incentive to do that on their own? The answer traditionally put forward is that this is part of the political economy of trade liberalization: one gives up something of value to the other side (refusing at the same time to do something that would be of even greater value to oneself) in order to extract a concession out of the other side. The problem with this argument, in the context of services, is

that typically the advanced industrial country *as a whole* has relatively little to gain, though particular firms in the developed country may gain a large amount. Thus, in the area of services, one is pandering to special interests. Pandering to special interests is not only bad economic policy, it is dangerous, because after the foreign firm comes in, the company continues to put pressure on its government to put pressure on the foreign government to pass legislation or regulations that are to its benefit, to renegotiate concessions when they prove unprofitable, or not to abrogate a contract even when there is clear evidence that the contract was only entered into because of corruption.

The reason that particular firms have much to gain, though not necessarily countries as a whole, is associated with the very reason that there are gains to trade in services: these arise not out of the standard differences associated with differences in factor supplies (after all, most of the production actually occurs in the purchasing country) but out of differential *information and knowledge*, including organizational capacity. If that information is widespread within a society, it is more likely that that information can easily flow abroad, especially in our highly interconnected global economy. Walmart, Toys-R-Us, and AIG have certain strengths that may not (or, in some cases, may) be easily imitated. When hard bargaining by the US allowed Toys-R-Us to open up in Japan, Japanese children benefited from the cheaper toys, as did Chinese workers, as China's sales of toys increased. But America benefited only to the extent that Toys—R—Us profits increased. American jobs were essentially unaffected.

The second, related issue is why these liberalizations should be part of an international trade agreement. Such agreements should focus on areas where there is a *global public good* being provided, e.g. through the setting of standards or dealing with global externalities.

For agriculture and manufacturing, most models report results dominated by two main effects—allocative efficiency gains and changes in terms of trade. For services liberalization, movements of capital across borders generate additional effects. First, foreign direct investment inflows and outflows can lead to an expansion or contraction in the capital stock located within a region. Changes in capital endowments affect national output, but since the capital is still *owned* by foreigners, the effect on GNP is less than on GDP.

A second effect on income works through the rents earned on foreign direct investments. Rents are created by barriers to services trade which fall during liberalization. It is conceivable that service sector liberalization could increase GDP but lower GNP, as domestic providers of services lose

their rents, foreign firms capture rents associated with their superior knowledge and information, and the gains to others from the more efficient provision of services are less than the losses in domestic rents.

Unlike agriculture, the modeling which focuses on the benefits resulting from assumed gains in the efficiency of the provision of services suggests that the main beneficiaries of reform in terms of both absolute and relative welfare gains (as a percentage of GDP) are the developing countries.

Dee and Hanslow (2000) use a CGE model called FTAP, to report that the total global gain from liberalizing all post-Uruguay trade restrictions on services is $130 billion.[6] This amounts to half the total gain ($260 billion) from total post-Uruguay liberalization—with the other half made up of gains from agriculture ($50 billion) and manufactures ($80 billion). These are the projected gains in real income about ten years after the liberalization has occurred. They include the gains from increased trade and more efficient resource allocation.

In a similar exercise by Hertel (1999), world welfare gains were predicted to be smaller than those in Dee and Hanslow (2000). Hertel predicts that the gains from liberalization in agriculture, manufactures, and services are $164 billion, $130 billion, and $55 billion respectively. This variation is largely accounted for by differences in modelling assumptions. In agriculture, Hertel assumes no effective Uruguay liberalization post-1995, leaving much more to be done and more gains to be realized. In manufactures, the difference is largely accounted for by differences in the base year (Dee and Hanslow use 1995, Hertel 2005). Applying the 2005 base to the FTAP model accounts for 90 per cent of the difference. In the service sector, Hertel models only liberalization in the construction and business services sector. He also does not include liberalization of FDI.

Brown, Deardorff, and Stern (2002) use a CGE model to calculate the welfare effects of a 33 per cent reduction to barriers in the service sector. Table A1.12 shows that they expect global welfare to rise by $413 billion. All of the countries listed experience welfare gains as well as increases in real wages and returns to capital. Developed countries experience large welfare gains—$142 billion for the EU, $131.4 billion for the US, and $57.9 billion for Japan. Brown, Deardorff, and Stern note that their results—which are dependent on the accuracy of the size of barriers they estimated indirectly from trade flow data—show that the liberalization of services is likely to yield significantly larger gains than other reforms.

---

[6] Welfare gains are reported in standard CGE 'real income' terms. Real income is a measure of national income deflated by an index of national prices.

Table A1.12.　Welfare effects of service sector liberalization

Welfare effects of a 33% reduction in barriers to service trade on imports, exports, terms of trade, welfare, real wages, and the return to capital.

Country	Imports (US$m)	Exports (US$m)	Terms of trade (%)	Welfare (%)	Welfare (US$m)	Real wages (%)	Return to capital (%)
Australia & NewZealand	2,354.4	1,962.3	0.385	1.050	5,379.6	0.694	0.657
Canada	2,244.0	2,136.3	0.083	0.811	5,910.4	0.317	0.316
European Union & EFTA	35,478.1	35,336.8	0.032	1.295	142,003.2	0.553	0.546
Japan	14,797.7	15,501.6	−0.067	0.891	57,875.1	0.247	0.277
United States	32,467.7	32,231.5	−0.033	1.448	131,426.8	0.524	0.534
India	919.2	803.9	0.212	0.552	2,321.6	0.170	0.204
Sri Lanka	121.7	99.1	0.335	1.202	200.4	0.881	0.507
Rest of South Asia	374.3	286.7	0.286	0.689	804.9	0.293	0.453
China	5,660.3	6,210.9	−0.128	1.320	11,959.1	0.840	0.603
Hong Kong	7,587.2	8,058.4	−0.611	4.382	5,643.1	5.638	5.927
South Korea	4,842.2	5,002.5	−0.102	1.339	7,619.5	0.913	0.956
Singapore	3,325.1	3,776.2	−0.297	3.322	2,470.8	4.821	3.972
Indonesia	1,401.3	1,469.4	−0.072	1.256	3,177.0	0.327	0.307
Malaysia	1,487.6	1,466.8	0.049	1.267	1,514.5	1.026	0.928
Philippines	1,986.7	2,195.0	−0.462	2.342	2,067.1	1.739	1.622
Thailand	3,324.2	3,625.3	−0.413	1.401	2,886.4	1.088	0.904
Mexico	863.1	809.1	0.110	0.878	3,099.3	0.204	0.195
Turkey	1,733.3	1,462.9	0.589	1.781	3,745.9	0.695	0.884
Central Europe	3,841.7	3,744.5	0.061	1.409	5,227.2	1.067	0.996
Central & South America	4,199.9	4,442.8	−0.179	1.050	18,363.5	0.256	0.272
Total	129,009.6	130,621.8			413,695.4		

Source: Brown, Deardorff, and Stern (2002: table 4).

Hertel, Anderson, Francois *et al*. (2000) also compare the gains from services liberalization to those for agriculture and manufactures. They report that a 40 per cent cut in protection in the business services and construction sectors yields a $22 billion gain. Their estimate of the potential gains in the trade and transport sectors is $332 billion. The trade and transport sectors represent a large share of global trade in services and provide a significant flow on benefits to other sectors of the economy. Table A1.13 shows the wide distribution of these gains across developed and developing countries.

Table A1.13. **Welfare and efficiency gains from liberalization of agriculture, manufacturing, and services**

Column (1) reports the efficiency changes due to a 40% liberalization in agriculture as a share of food and agricultural value added. The second column reports the efficiency gain as a proportion of the total gain in terms of equivalent variation (EV)— where this is larger than 100, the terms-of-trade effect is negative. Column (3) reports the EV as a proportion of total expenditure. Columns (4)–(8) report the EV for 5 different sector liberalization experiments.

Region	Agr40 experiment ratios (%)			Total EV by experiment ($m)				
	Eff/$VA (1)	Eff/EV (2)	EV/Exp (3)	Agr40 (4)	AgrMkt40 (5)	Manuf40 (6)	BusFinSvces (7)	T&Tsvces (8)
NAmerica	9	11	0.035	3,401	1,436	3,310	4,517	52,532
WEurope	6	104	0.369	36,959	27,810	8,180	8,532	128,593
Aus/Nzl	6	−12	0.377	1,786	1,348	207	209	8,421
Japan	6	120	0.253	12,552	13,461	6,607	2,564	33,358
China	6	1,067	0.012	172	753	22,593	826	8,710
Taiwan	4	143	0.060	265	295	3,288	83	6,072
Other NICs	3	115	0.333	2,672	2,996	5,270	612	23,228
Indonesia	2	1,183	0.002	6	26	792	270	1,474
Other SEAsia	2	101	0.465	1,931	1,247	2,631	393	11,092
India	1	137	0.200	1,058	927	3,084	19	3,989
Other SoAsia	1	118	0.852	1,176	1,181	1,645	9	2,213
Brazil	1	64	0.245	1,988	1,683	4,491	457	3,625
Other LatAm	1	48	0.360	3,055	2,366	1,449	652	8,611
Turkey	1	123	0.142	338	332	619	70	3,524
Other MENA	0	−15	−0.202	−1,506	−718	1,074	231	16,667
EIT	0	142	0.033	301	282	1,391	1,865	10,265
SoAfrCU	0	46	0.080	129	54	283	128	1,897
Other SSA	0	31	0.194	436	529	249	30	4,496
RoWorld	−1	115	0.741	2,601	2,611	2,399	137	3,798
World				69,320	58,619	69,564	21,604	332,565

Source: Hertel, Anderson, Francois *et al*. (2000: table 8).

Verikos and Zhang (2001) analyse the sectoral impacts of liberalization in financial and communication services. They estimate that the gain from each sector is $24 billion. In both sectors, the majority of the gains come from removing restrictions that discriminate against foreign firms.

These gains are not of course divided equally across all countries. In Dee and Hanslow's analysis, their $133bn gain accrues disproportionately to developing countries. The service sectors in many developing countries are projected to expand as their relatively large barriers to entry are removed.

For example, the service sector in China (which captures a large part of the welfare gains) is projected to increase by a third when its large barriers to entry are removed. This is predicated, of course, on the assumption that China cannot obtain the requisite knowledge and information to improve its service sector without opening itself more fully, an assumption which is increasingly looking dubious.

Dee and Hanslow report results for only a small number of Commonwealth developing countries. The gain to Malaysia from global service sector liberalization is $1bn—equivalent to 0.7 per cent of GDP. The gains to the 'rest of the world' which includes smaller developing countries is $23bn or 0.8 per cent of GDP. Australia, China, Mexico, Chile and Indonesia all gain more from tertiary liberalization than from primary and secondary combined.

Service sector liberalization has the potential to deliver large welfare gains to developed and developing countries. But the results of attempts to estimate these benefits need to be taken with even more caution than results in agriculture and manufacturing. The localized nature of the services and the information that leads to success in its provisions means that the elimination of government imposed barriers may not necessarily lead to as much increase in trade as these models predict, and the gains in efficiency may be partially offset as rents are transferred from domestic to foreign producers. Some worry that financial service sector liberalization may even lead to a reduction in national output, as the supply of credit to domestic small and medium size enterprises is reduced. Empirical work estimating these effects is limited, and most of the CGE models simply proceeds by assuming that the production and sales of services is little different than those of agriculture and manufactured goods. Thus to the litany of qualifications to the use of CGE models noted earlier, the additional ones noted here mean that the results need to be taken with circumspection.

Since a large part of the gains from reform in the services sector accrue to domestic policy reforms, it is not obvious why international negotiations are necessary to achieve desirable outcomes. If the main gains could be achieved unilaterally, then what is the utility of multilateral negotiations? Matoo (2002) observes that many developing countries are in a situation where their ability to implement reform is hindered by opposition from domestic lobbies. In this context, it may be useful for some countries to undertake reforms in the context of the momentum of broad international negotiations.

There are however other areas where co-ordinated reciprocity could yield significant gains in the context of multilateral negotiations. On one hand

developing countries have a number of developed country market access interests, particularly in the area of access to labour markets (GATS Mode 4), but also in construction and back-office business services. This suggests the prospect for a deal based on access to labour markets in exchange for a developed country demand such as greater commercial presence by foreign service providers in developing countries (Matoo 2002). But the shape of earlier service sector negotiations undermined this rationale; financial sector liberalization, for instance, *preceded* liberalization in construction and other service sectors that were of interest to developing countries.

Moreover there are several cases in which international cooperation may be valuable. One example is competition policy: a permissible merger in one jurisdiction may have a detrimental effect on competition in a smaller foreign jurisdiction. Fink, Matoo and Rathindran (2001) suggest that the GATS should require domestic competition law to consider the effect of collusive agreements on foreign markets. Second they suggest that foreign consumers should have the right to take action in foreign courts against corporations that abuse their market power.

A1.3 **Temporary migration**

As we noted earlier, the GATS recognises four modes of service delivery. The temporary movement of natural persons (TMNP) is known as Mode 4. It is by far the smallest in terms of trade flows and the volume of scheduled concessions recorded under the GATS (see Fig. A1.3).

The limited commitments that have been made refer to high-skill personnel—business executives etc.—whose mobility is closely linked to foreign direct investment and is an issue of interest to business lobbies in developed countries. Thus far Mode 4 has not progressed in a way that allows developing countries to use their comparative advantage in low-and-medium skill labor-intensive services.

The empirical studies surveyed below suggest that an expanded Mode 4 could generate enormous welfare gains. The temporary movement of less skilled workers from developing countries (where they are in oversupply) to developed countries (where they are relatively undersupplied) is estimated to increase world welfare by hundreds of billions of dollars, even if the scale of the labor flow is modest.

The movement of natural persons is usefully divided into three categories.

Flows from developed to developing countries

This category represents highly skilled technical or managerial workers who work in developing countries, either providing specialized services such as consulting and legal advice or fulfilling senior management roles in foreign-owned firms. This is a widespread practice which aids the management of multinational firms and supplies useful skills to firms in developing countries.

Skilled flows from developing to developed countries

The emigration of skilled workers from developing countries is actively encouraged by developed countries and provides clear gains to them. Over 30 per cent of all doctors and nurses in the British health care system were born outside the UK. The same is true for more than 12 per cent of academic staff in British universities.

From the perspective of developing countries, this flow is better known as the 'brain drain'. The loss of skilled local workers deprives the country of various economic and non-economic spillovers. The brain drain reduces total output, diminishes the competence of domestic high-skill sectors, and erodes the tax base. To the extent that these skilled workers are complementary to other factors of production, such as unskilled labor, the emigration of these skilled workers leads to lower incomes for these other factors. Desai, Kapur, and McHale (2001) point out that the one million Indians living in the United States account for just 0.1 per cent of India's population but earn the equivalent of 10 per cent of India's national income.

On the other hand, the temporary emigration of skilled persons can benefit developing countries in several important ways. First, the possibility of temporary migration for skilled workers may increase the returns to education in the source country, inducing more investment in human capital. Commander, Kangasniemi, and Winters (2002) argue that this leads to an increase in skilled workers in the domestic economy (even taking account of those that migrate out) which partly offsets the direct effects of the brain drain.

Second, remittances from workers in developed countries back to their families are an additional benefit of migration (Massey, Araugo, Hugo *et al.* 1998). Remittances are an economically significant transfer for LDCs. In 2002, the Inter-American Development Bank reported that $32 billion in remittances was sent to the countries of Latin America and the Caribbean. This was far greater than total development aid and only slightly less than

foreign direct investment (Ellerman 2003). (Though impressive in size, it is worth being circumspect about the potential for remittances to generate sustained development. Martin and Straubhaar (2001) argue that income from remittances is potentially less valuable than income from newly established local enterprises or export earnings because the domestic spillovers may be smaller.)

Additionally there is evidence that national diasporas are an important source of growth. For example, the 50 million Chinese living abroad have been remarkably beneficial to the Chinese economy. They are a source of business experience, network connections, and capital.

Unskilled flows from developing to developed countries

The movement of unskilled workers to developed countries offers the greatest gain because it is associated with the largest difference between factor prices and the largest scope for movement, measured as number of willing people. It is also, however, the subject of the greatest concern in developed countries.

Developed countries experience benefits and costs from unskilled migration. Foreign workers are an important source of labor in developed countries. London's catering industry depends on migrants for 70 per cent of its labor force and a large proportion of seasonal agricultural workers are foreign (Home Office 2001).

Opposition to unskilled labor flows comes from the fear thatforeigners displace local workers and contribute to unemployment.[7] A study by the British Home Office (2001) examines the widely held perception that immigration is detrimental to native workers. It concludes that unskilled workers often fill jobs in low-paid and insecure industries. In many cases these are jobs that native workers are unwilling to accept. In these jobs, foreign workers are filling labor market gaps rather than displacing native workers. Where migrants move in to industries with unfilled vacancies, their presence has little effect on either employment or wages of domestic workers.

Even in industries where migrants are competing with domestic workers, the effect is not much different than the impact of labor-intensive imports of foreign goods on domestic manufacturing.

---

[7] Such concerns are, of course, not consistent with the CGE models, which typically are based on full employment.

In an early study, Hamilton and Whalley (1984) suggest that if labor were free to move between countries sufficiently to equalize wages around the world, world output would rise by more than 150 per cent.[8]

Even using the more conservative assumption that part of the cross-country difference in wages reflects productivity differences which persist irrespective of location—e.g. health and education—the gains are large. Winters, Walmsley, Wang *et al.* (2002) assume that workers from poor countries are naturally only one third as productive as workers in developed countries. They estimate the gain from full labor mobility to be 70 per cent of world GDP.

Obviously full labor mobility is an extreme and impractical assumption. Winters (2000) estimates that even a relatively modest increase in labor mobility would increase world welfare by $300 billion. This study assumes that 50 million additional workers from developing countries are permitted to work in developed countries. Winters assumes that when workers move from a low-to a high-wage country, they make up one quarter of the wage gap, i.e. three quarters of observed wage gaps are due to persistent differences in productivity.

These rough estimates have been subsequently corroborated by Winters, Walmsley, Wang *et al.* (2002) using a general equilibrium model. They find that if developed countries allowed temporary workers from developing countries to increase their workforces by 3 per cent (8 million skilled and 8.4 million unskilled workers), world welfare would increase by over $150 billion. Winters *et al.* use the GTAP model and database developed by Hertel (1997). They assume that temporary workers make up half the productivity differences between their home country and their host country when they move.

The initial residents of developing countries (which are labor-exporting) gain most from the increase in migration. Their share of the total gain is approximately $80 billion, more than developed countries and a significantly larger fraction of their income. The largest part of this increase accrues to temporary migrants themselves. In several developing countries Winters *et al.* find that the remaining residents of developing countries generally experience a loss in welfare. Despite increases in remittances and an improvement in their terms of trade (as the fall in GDP reduces the supply of their goods), the decrease in labor supply leads to a fall in the return to other factors which outweighs these gains.[9] However for many

---

[8] Assuming an elasticity of substitution between factors of 1.

[9] This result is obviously based on the assumption that the migrants are not unemployed unskilled workers, and that there is not an equilibrium level of unemployment.

Commonwealth countries including India and those in South Asia and South Africa, the welfare of permanent residents increases. For these under-developed countries, the increase in remittances outweighs the decline in labor and capital income. Remittance income increases the demand for domestic goods and allows the real wages of both skilled and unskilled workers to rise. The welfare of permanent residents in India and the rest of South Asia increases by $16 billion and $350 million respectively. In South Africa, the welfare of permanent residents increases by $82 million, while the welfare of temporary migrants increases by $4.4 billion.

The substantial benefits estimated to be available to developing countries from the liberalization of temporary migration for the unskilled—related to the huge differences in wages in developed and less developed countries—suggest that this is a promising area of reform. The global efficiency gains too are probably an order of magnitude greater than those associated with capital market liberalization, which has been the subject of so much atten-tion. Not surprisingly, unskilled workers in developed countries have been worried about the effect of the migration of unskilled labor on their wages, and have so far been effective in limiting the extent of migration. (On the other hand, business interests in developed countries have been successful in allowing migration of skilled workers; this may be partially because unskilled workers have thought that such workers are complements, and thus they too will benefit. But such skilled labor migration is of ambiguous benefit to the developing world.) Winters *et al.* suggest that one possible way forward is to include existing foreign worker schemes under the GATS by scheduling them and subsequently extending them. Many countries already have short-term foreign worker schemes for low-skilled jobs in agriculture, tourism, and construction.

A second approach is to focus on subcontracting schemes in future Mode 4 negotiations. Restricting the movement of people to existing employees of incorporated firms avoids many of the problems of mobility for individual workers (but also limits the scope of benefits). The pre-employment guarantee ensures that the workers will arrive with a job and increases the likelihood of their return after completion of the project. Where firms are responsible for their staff, they can provide housing, health insurance, etc. These services may reduce the costs of mobility for some workers.

However, there are also many disadvantages associated with subcon-tracting. First, many service transactions are not appropriate for subcon-tracting. Limiting mobility to transactions that are suitable for provision by subcontractors obviously diminishes the potential gains from liberalization of migration.

In spite of the huge barriers that developed countries have imposed on the movement of unskilled labor, the economic force leading to such migration is so great that large amounts still occur, in spite of the barriers, and the developing countries have received large benefits, e.g. as a result of remittances. The developing countries have an interest in facilitating the flow of these remittances and in improving the rights and living conditions of the migrants (many of whom are illegal). These issues would be high on an agenda for a Development Round of trade negotiations centered on the concerns of the developing countries.

A1.4 **Manufacturing**

The Doha Ministerial Conference agreed to launch tariff-cutting negotiations on all non-agricultural products. The aim is to 'reduce, or as appropriate eliminate, tariffs, including the reduction or elimination of tariff peaks, high tariffs, and tariff escalation, as well as non-tariff barriers, in particular on products of export interest to developing countries'. (Doha Ministerial Declaration, para. 16).

Significant progress on tariff reduction has been made in several sectors. The empirical evidence below suggests that this reform has been accompanied by an increase in the share of manufactured goods in world trade and in the share of manufactured goods in developing country exports.

However, several studies suggest that the potential gains from the Doha Round might be larger than those realized as a consequence of Uruguay Round reform. This may be because the Uruguay Round was tilted against the interests of developing countries. The reduction in tariff peaks on goods of interest to developing countries and the reduction in protection on South–South trade are promising areas for reform.

Figure A1.5 shows that over the same period there has been a shift in the composition of global export towards manufactured products, while the share of agricultural products has fallen.

While the average rate of agricultural protection in OECD countries has risen in the last three decades, manufacturing protection levels have fallen. Average tariffs on industrial goods imported into the OECD countries fell from around 40 per cent in 1950 to 1.5 per cent in 1998 (Hertel 2000). Figure A1.6 shows that in the last forty years, the share of agriculture in total developing country exports has fallen from 45 per cent to less than 10 per cent, while the share of manufactures has risen from 23 per cent to 79 per cent.
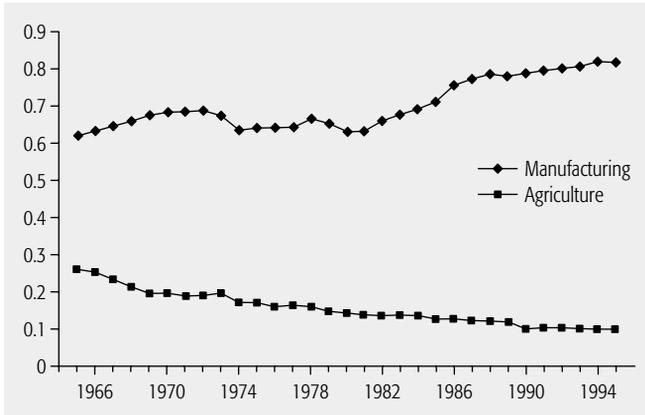
Figure A1.5. **Share of world exports, manufacturing and agriculture, 1965–1995**
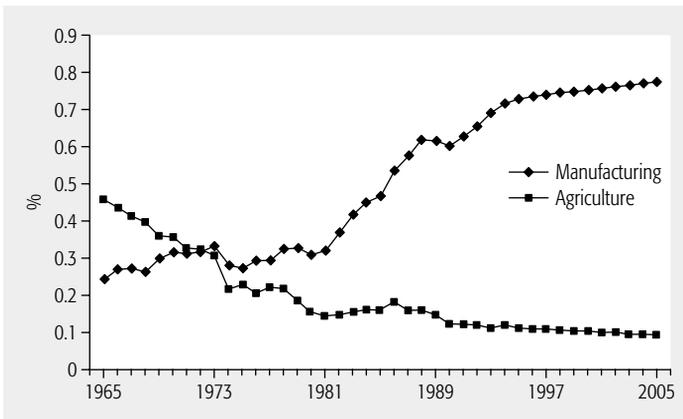*Source*: Herterl (2000).

Figure A1.6. **Share of developing countries' exports, manufacturing and agriculture, 1965–2005**
Source: Hertel (2000).

South–North trade

Despite their export shift from agriculture to manufactures (Fig. A1.6) and their increasing share of the world trade in manufactures (Fig. A1.7), developing countries as a group are still net importers of manufactured goods and net exporters of agricultural goods.

Figure A1.8 shows that developing countries have succeeded in increasing the quantity of manufactured goods they provide to major developed
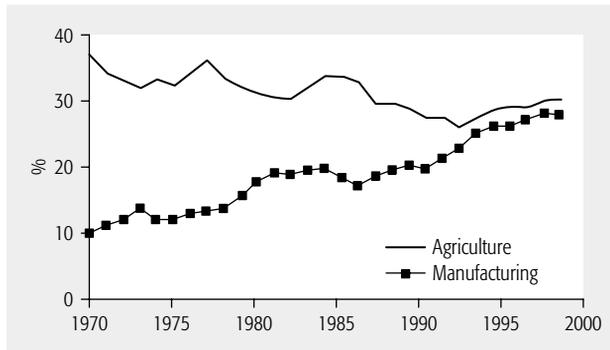
Figure A1.7. **Developing countries' share of world trade, 1970–2000**
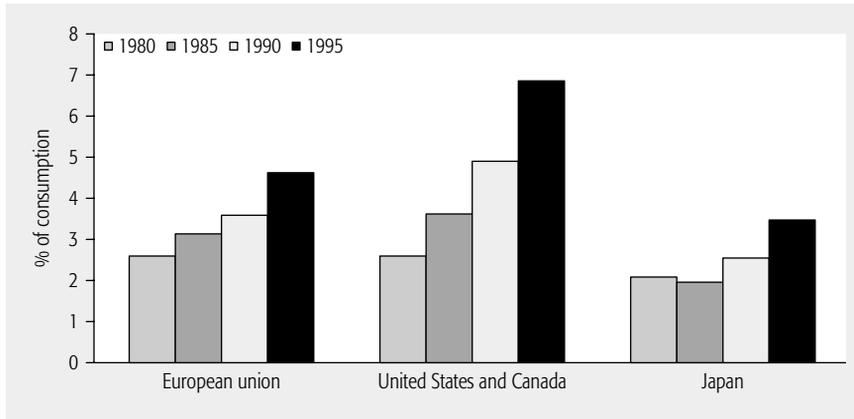*Source*: World Bank (2002).

Figure A1.8. **Selected developed country imports from all developing countries, 1980–1995**
Source: UNCTAD (1996).

economies. However, even in the last period reported (1995) the shares were low, ranging from just over 3 per cent in Japan to under 7 per cent in North America.

Aggregate data hides the existence of tariff peaks, which may restrict access to developing countries' products. For example, in the processed food sector, Canadian, Japanese, and EU tariffs on fully processed food are 42, 65, and 24 per cent respectively. By contrast, the least processed products face tariffs of 3, 35, and 15 per cent in the same countries. Partly because of these trade restrictions, the penetration of developing country processed food has been limited (World Bank 2002).

Table A1.14. **Average manufacturing tariff rates**

Average tariff rates faced by high- and low-income countries of their own and each other's goods.

Exporting region	Importing region	
	High-income countries	Developing countries
High-income	0.8	10.9
Developing	3.4	12.8
World	1.5	11.5

Source: Hertel and Martin (2000).

South–South trade

Notwithstanding tariff peaks, developing countries' goods are subject to much higher barriers in other developing countries than in OECD countries. Table A1.14 shows that developing countries face average manufacturing tariffs of just 3.4 per cent in developed countries but 12.8 per cent in developing countries.

Figure A1.9 shows the average MFN tariff on manufacturing by importer in 1995 and 2005. The highest tariffs are in developing countries, particularly India, China, and Other South-East Asia.

Brown, Deardorff, and Stern (2002) use a CGE simulation model to test the effects of trade liberalization in manufactures. In their model domestic consumers respond to reductions in protection by purchasing more imported goods. Industrial sectors in each country expand or contract depending on whether their protection is reduced by more or less than in other countries. Countries with larger than average tariff reductions experience a real depreciation of their currency to maintain a constant trade balance.[10] Welfare in their model is determined by the effect of these changes on allocative efficiency and each country's terms of trade. The authors also incorporate non-tariff barriers. These generate rents to the preferred exporters, which are lost upon elimination. Thus the effect of liberalization may not be positive for all exporters.

Brown *et al.* initially apply their model to the Uruguay Agreement on manufactures. They estimate the welfare gains resulting from a scenario in which all countries reduce their tariffs as per the Agreement. Table A1.15

[10] This is the kind of effect which is often ignored in popular discussions of trade liberalization, but is absolutely essential when attempting to appraise the true (general equilibrium) effects.

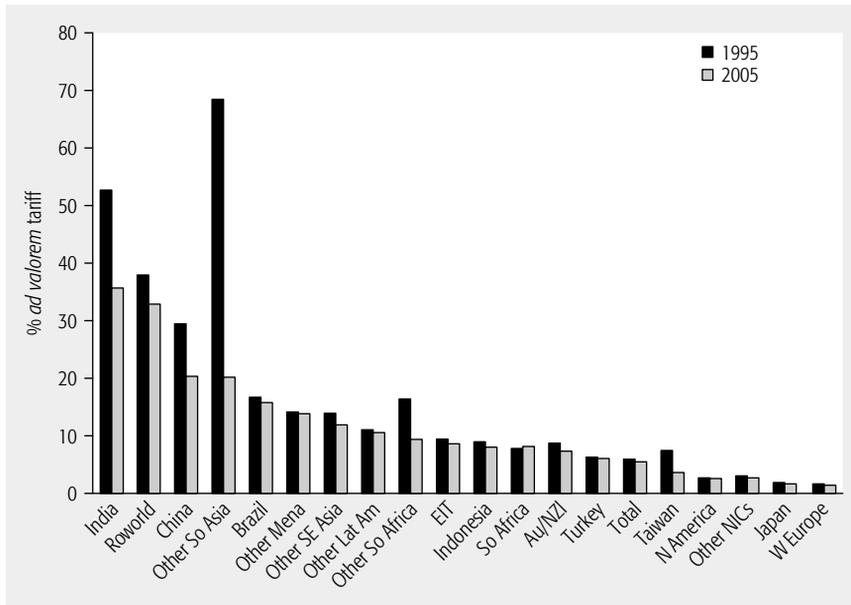AQ: Please note we have renumbered foot noe for continuity.

Figure A1.9. **Average MFN tariff on manufactures, 1995 and 2005**
Source: Hertel (2000).

shows that global welfare increases by $56.5 billion and the gains are shared across all countries. The largest welfare increases in absolute terms accrue to the European Union ($17.4 billion); however, large relative gains—expressed as a share of GDP—accrue to the Rest of South Asia, the Philippines, and Malaysia.

Brown *et al*. follow this simulation with an estimation of the welfare gains available in the Doha Round (Table A1.16). They present the results of a 33 per cent reduction in post-Uruguay Round tariffs. They estimate that the potential gains from the Doha Round ($163.4 billion from a 33 per cent reduction) are significantly larger than those realized in the Uruguay Round (Table A1.15). In particular, most developing countries gain significantly more as a share of GDP than they did in the Uruguay Round. The authors suggest that this may be because the Uruguay Round was tilted against developing countries.

Hertel, Anderson, Francois *et al*. (2000) use the GTAP model of global trade to make similar estimates about the welfare gains from a 40 per cent liberalization of post-Uruguay tariffs on manufactures. They find that the global gain is in the region of $70 billion, roughly the same size as the gains

Table A1.15. **Estimated welfare gains from the Uruguay reductions in manufactures tariffs**

	Change in imports ($m)	Exports ($m)	Terms of trade (%)	Welfare (%)	($m)	Real wage (%)	Return to capital (%)
Australia & New Zealand	2,848.0	2,527.6	0.347	0.327	1,674.8	0.345	0.300
Canada	1,071.9	1,354.5	−0.086	0.127	926.3	0.137	0.114
European Union and EFTA	16,826.6	15,358.5	0.145	0.159	17,405.6	0.157	0.163
Japan	8,680.6	8,331.3	0.062	0.102	6,608.4	0.092	0.115
United States	12,426.0	13,459.3	−0.133	0.123	11,187.1	0.124	0.122
India	2,585.3	3,628.9	−2.099	0.446	1,875.4	0.316	0.577
Sri Lanka	98.8	106.3	−0.193	0.558	93.0	0.507	0.608
Rest of South Asia	3,454.8	4,820.1	−7.541	2.025	2,366.5	2.224	1.828
China	3,112.6	1,917.7	0.456	0.305	2,762.2	0.347	0.271
Hong Kong	763.5	480.1	0.254	0.360	464.1	0.346	0.373
South Korea	2,858.6	2,733.2	0.068	0.422	2,403.3	0.409	0.435
Singapore	3,539.8	3,647.5	−0.078	2.111	1,570.3	1.943	2.258
Indonesia	936.5	894.5	0.068	0.247	626.0	0.291	0.215
Malaysia	2,790.9	3,411.4	−0.563	1.919	2,293.9	1.816	1.974
Philippines	2,452.6	3,102.1	−1.989	1.917	1,691.7	1.853	1.964
Thailand	1,264.7	1,002.3	0.291	0.366	753.9	0.597	0.283
Mexico	−64.9	1.4	−0.026	0.019	66.3	0.038	0.010
Turkey	319.3	253.9	0.143	0.123	259.1	0.122	0.124
Central Europe	1,871.7	1,846.1	0.020	0.294	1,091.2	0.311	0.270
Central & South America	3,778.8	2,999.5	0.423	0.022	377.1	0.043	0.004
Total	71,616.2	71,876.4			56,496.0		

Source: Brown, Deardorff, and Stern (2002).

they predict from agriculture. Table A1.17 shows that, with the exception of Sub-Saharan Africa, developing countries gain more from the reduction of manufacturing tariffs than they do from reduction of tariffs on agriculture.

A third study, Hertel (2000), using the same GTAP model, estimates that the benefits of full (100 per cent) reduction in post-Uruguay manufacturing tariffs is a global gain of $130 billion. Again, the author predicts that a large share of this will accrue to developing countries. Figure A1.10 shows the developing country share of the gains from reform in three different sectors (and from combined reform). Manufacturing is the sector most benefited within developing countries (which gain over 70 per cent

Table A1.16. Estimated Welfare Gains from Manufacturing Liberalization in Doha Round

This table shows simulation results from a 33 per cent reduction in post Uruguay tariffs on manufactures.

	Change in imports ($m)	Exports ($m)	Terms of trade (%)	Welfare (%)	($m)	Real wage (%)	Return to capital (%)
Australia & New Zealand	3,720.7	3,457.2	0.267	0.545	2,790.6	0.508	0.515
Canada	1,996.0	2,097.3	−0.013	0.347	2,526.2	0.216	0.251
European Union and EFTA	23,184.8	22,840.3	0.050	0.358	39,273.0	0.190	0.199
Japan	19,071.4	15,817.0	0.548	0.696	45,190.9	0.234	0.304
United States	20,454.2	18,337.3	0.167	0.260	23,634.2	0.198	0.224
India	3,280.4	4,054.2	−1.384	0.733	3,084.4	0.439	0.592
Sri Lanka	536.8	592.1	−1.025	3.207	534.5	1.565	2.010
Rest of South Asia	1,892.0	2,018.4	−0.604	1.895	2,214.7	0.889	1.025
China	16,080.3	19,416.3	−1.221	1.199	10,859.3	1.470	1.323
Hong Kong	3,182.8	1,840.3	1.246	1.444	1,859.1	0.947	0.647
South Korea	8,023.4	8,440.7	−0.233	1.515	8,622.9	1.158	1.003
Singapore	4,382.9	4,161.8	0.131	2.276	1,692.5	2.481	2.611
Indonesia	2,362.7	2,336.0	0.053	0.835	2,113.3	0.645	0.447
Malaysia	4,242.8	4,805.2	−0.488	2.555	3,055.1	2.896	2.812
Philippines	3,984.0	4,535.1	−1.192	5.478	4,834.4	3.310	2.461
Thailand	3,406.1	3,970.1	−0.675	0.873	1,798.6	1.664	0.972
Mexico	916.3	1,132.6	−0.166	0.364	1,283.1	0.195	0.204
Turkey	1,421.0	1,558.6	−0.335	0.827	1,740.3	0.349	0.272
Central Europe	3,866.3	4,366.4	−0.428	0.734	2,724.2	0.816	0.722
Central & South America	5,038.9	6,103.2	−0.612	0.206	3,610.0	0.159	0.108
Total	131,043.7	131,880.0			163,441.4		

Source: Brown, Deardorff, and Stern (2002).

of the welfare and efficiency dividend). This persistent result in the literature is derived from the fact that developing countries have the highest tariffs on manufacturing goods and thus receive the largest gains from removing the distortions. The studies do not separately analyse 'consumer benefits' (access to goods at lower prices) and 'producer benefits' (the creation of new jobs as a result of access to markets abroad). Another implication of the analysis is that the realization of these allocative efficiency gains will entail significant adjustment costs—a theme we revisit in Appendix 2.

Table A1.17. **Estimated Welfare and Efficiency Gains from a 40% Liberalization in Agriculture and Manufacturing, 2005.**

Both columns report the benefits of reform in terms of equivalent variation.

	Total EV by experiment ($m)	
Region	Agriculture	Manufacturing
NAmerica	3,401	3,310
WEurope	36,959	8,180
Aus/Nzl	1,786	207
Japan	12,552	6,607
China	172	22,593
Taiwan	265	3,288
Other NICs	2,672	5,270
Indonesia	6	792
Other SEAsia	1,931	2,631
India	1,058	3,084
Other SoAsia	1,176	1,645
Brazil	1,988	4,491
Other LatAm	3,055	1,449
Turkey	338	619
Other MENA	−1,506	1,074
EIT	301	1,391
SoAfrCU	129	283
Other SSA	436	249
RoWorld	2,601	2,399
World	69,320	69,564

Source: Hertel, Anderson, Francois *et al*. (2000: table 8).
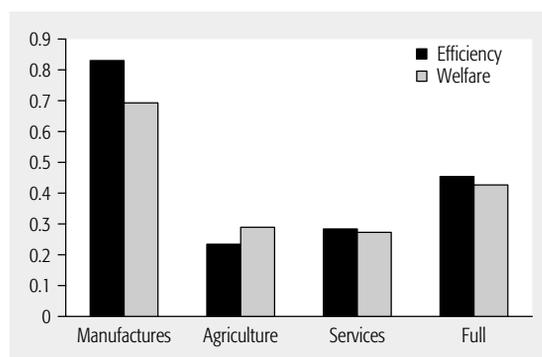

Figure A1.10. **Share of post-Uruguay global liberalization gains accruing to developing countries**

Source: Hertel (2000).

A1.5 **Conclusions**

The purpose of the empirical survey in this appendix is to suggest a priorit-
ization of trade issues that will benefit developing countries. When negotiat-
ing parties lobby at the WTO, it is assumed that they do so in their own
self-interest. In the case of developing countries and their advocates, it is not
always clear what evidence they are using to determine how different
reforms will affect them.

The CGE results presented in this appendix are certainly not perfectly
reliable estimates of the welfare effects of various WTO proposals—indeed
the estimates vary quite widely between different studies. However, they
draw attention to the wide range of global effects of WTO proposals.

The results of our empirical survey suggest a different prioritization from
the current hierarchy of market access issues receiving attention in the
WTO. The evidence we have presented suggests that an alternative market
access liberalization agenda might focus on labor market access for
unskilled workers, unskilled labor services, market access for agricultural
goods exported by developing countries, and tariff peaks for manufactured
goods. The empirical work has paid less attention to the non-market access
issues like competition policy but, as we noted in the text, here too the agenda
that has been pursued, e.g. in the Singapore Issues, is markedly different from
that which reflects the interests and concerns of the developing world.