Introduction

Price divergence is readily apparent to anyone who shops. Travelers from Chicago to Paris are hit by sticker shock. Products ranging from London Fog raincoats to Viagra are available over the Internet at half their retail store prices. Common experience tells us that prices for identical products differ among countries, cities, and even neighboring shops. On the other hand, common experience also tells us that open markets and greater competition will force a degree of price convergence, if not identical prices.

In today's world economy with freer trade and investment, improved transportation and communications, e-commerce, and worldwide delivery networks (UPS, FedEx, DHL, and similar services), the competitive model is becoming a *better* description of economic reality.[1] We emphasize "better," for the competitive model is still far from a generally applicable description of market behavior. This study examines the potential benefits from price convergence resulting from more competition and market integration, not *perfect* competition and market integration. To be specific, our calculations of potential benefits assume that the world economy can attain the same degree of competition and market integration—and hence price convergence—as now exists within the United States. We

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1. The Uruguay Round (1995) was an outstanding example of policy-driven multilateral liberalization. Other examples at a regional level include the European Union, the North American Free Trade Agreement (NAFTA), and the Southern Cone Common Market (Mercosur). Significant sectoral liberalization was achieved in the World Trade Organization Basic Telecommunication Agreement of February 1997 and Information Technology Agreement of April 1997. All of these agreements are intended to promote market integration.

use simple partial equilibrium analysis to assess the benefits from narrowing the range of worldwide price dispersion to the range now observed in the United States.

Our assumption that US experience provides a benchmark for the world economy seems bold. However, between 1990 and 1999, the standard deviation of tradable goods prices between European cities converged to approximately the same magnitude as observed between US cities.[2] Moreover, as table A.1 (appendix A) indicates, maximum and minimum prices for tradable goods usually differ by a factor of two or more among US cities. Therefore, using US price experience as the benchmark for our study is a far cry from assuming that the "law of one price" will prevail in the world economy.

We calculate the potential benefits of price convergence on a country-by-country basis, for select regional groups, and for the world as a whole. The data we use for price comparisons are stated for narrowly defined items (such as "mushrooms") within product sectors (for example, "fresh vegetables and fruits"). However, we do not present calculations on an item or sector basis. (The items and sectors are listed in appendix A, table A.1.) There are two reasons for not presenting detailed calculations. First, we do not believe the price data at an item or sector level are sufficiently reliable. Instead, we believe that errors in individual price observations will, to a significant degree, be "washed out" by aggregating benefits calculations to the country level. Moreover, we think the degree of price convergence that we impose in making our calculations is more plausible for an entire country than for items or sectors within a country.

If prices converged to a range that we characterize as the broad world price band (BWPB; corresponding to observed divergence within the United States), the potential static benefits—calculated starting with market exchange rates—could reach 2.1 percent of global GDP or $0.6 trillion per year (table 1.1).[3]

The gap between market exchange rates and purchasing power parity (PPP) exchange rates is often significant. The difference between market exchange rates and purchasing power parity rates (PPP rates) is explained and illustrated in box 1.1. At first impression, some readers may think that the gains we have calculated are nothing more than a reflection of the gap between market rates and PPP rates. For example, in 1999, the market rate for the Brazilian real was 2.0 reals/US dollar, while the PPP rate was 0.9 real/US dollar. This difference implies that the Brazilian real was significantly undervalued at the market rate compared with its PPP rate. Consequently, many Brazilian goods were "cheap" by US standards. The

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2. See Rogers, Hufbauer, and Wada (2001) and Rogers (2001).

3. The countries covered in our study (see table 1.1) represent 95 percent of world GDP measured at market exchange rates. Static gain calculations, expressed in dollars, refer only to the countries covered in tables 1.1 and 1.2.

hypothetical convergence of Brazilian prices toward the BWPB might seem to be nothing more than the flip side of realigning the market exchange rate of the Brazilian real toward its PPP rate. This is not the case. Indeed, we present an alternative set of calculations to demonstrate that international price convergence is a deeper story than the familiar gap between market exchange rates and PPP exchange rates.

In our alternative calculations, we start with PPP exchange rates. The alternative calculations confirm the presence of large potential benefits from international price convergence, even after the difference between market exchange rates and PPP exchange rates has been eliminated from the picture. In fact, the calculated gains are actually much larger when the starting point is PPP rates rather than market exchange rates. The world total is 6.3 percent of global GDP or $2.4 trillion per year (table 1.2).

Table 1.1 Potential benefits at country level, calculated with market exchange rates (percent of GDP)

	Benefits from falling prices	Benefits from rising prices	Table benefits	GDP (in US$ billions)
High-income group, weighted total benefits	**0.49**	**0.12**	**0.61**	**23,076.1**
Australia	0.22	0.61	0.84	364.7
Austria	0.41	0.01	0.41	211.9
Belgium	0.08	0.02	0.10	249.7
Canada	0.03	0.18	0.21	603.8
China (Hong Kong)	0.73	0.00	0.73	166.0
Denmark	0.55	0.02	0.57	174.1
Finland	0.26	0.00	0.26	126.5
France	0.41	0.10	0.51	1,451.8
Germany	0.78	0.21	0.99	2,361.8
Greece	0.17	0.16	0.33	120.7
Ireland	0.03	0.02	0.05	68.8
Israel	0.27	0.01	0.28	89.0
Italy	0.10	0.69	0.79	1,171.9
Japan	1.82	0.00	1.82	3,798.2
Kuwait	0.03	0.17	0.19	30.2
Luxembourg	0.07	0.04	0.11	17.4
Netherlands	0.23	0.26	0.49	378.4
New Zealand	0.22	0.46	0.68	52.7
Norway	0.30	0.00	0.30	145.9
Portugal	0.03	0.80	0.83	99.4
Singapore	0.77	0.35	1.12	84.4
Spain	0.22	0.91	1.14	553.2
Sweden	0.26	0.00	0.26	226.5
Switzerland	0.94	0.00	0.94	264.5
Taiwan	0.12	0.10	0.22	321.9
United Arab Emirates	0.14	0.30	0.44	44.6
United Kingdom	0.12	0.02	0.14	1,387.4
United States	0.06	0.01	0.07	8,510.7
Middle-income group, weighted total benefits	**0.16**	**3.68**	**3.84**	**3,663.2**
Algeria	n.a.	n.a.	n.a.	33.4
Argentina	0.10	0.75	0.85	298.3
Bahrain	0.18	0.12	0.29	6.1
Brazil	0.02	9.32	9.34	776.4
Chile	0.04	0.88	0.92	72.9
Colombia	0.09	1.70	1.79	62.8
Costa Rica	0.02	3.81	3.83	8.8
Czech Republic	0.01	3.25	3.26	55.0
Ecuador	0.02	36.74	36.76	14.5
Egypt	0.56	1.50	2.06	82.7
Guatemala	0.07	1.53	1.60	19.0
Hungary	0.03	7.28	7.31	31.9
Iran	0.28	4.50	4.78	160.2
Jordan	0.56	2.34	2.90	7.1
Korea	0.27	0.05	0.32	320.7
Malaysia	0.09	0.79	0.89	70.2
Mexico	0.11	1.24	1.35	415.0
Panama	0.10	1.53	1.62	9.2
Paraguay	0.02	37.03	37.04	8.4
Peru	0.02	1.03	1.04	62.7

(table continues next page)

Table 1.1   *(continued)*

	Benefits from falling prices	Benefits from rising prices	Table benefits	GDP (in US$ billions)
Philippines	0.03	3.36	3.39	65.1
Poland	0.02	2.66	2.67	128.0
Romania	0.04	1.52	1.56	38.2
Russia	0.70	3.71	4.41	276.7
Saudi Arabia	0.28	0.63	0.91	128.9
Serbia	0.10	3.26	3.36	21.2
South Africa	0.02	2.08	2.10	116.7
Sri Lanka	0.04	7.56	7.60	15.7
Thailand	0.11	2.33	2.45	111.3
Tunisia	0.17	3.93	4.11	20.0
Turkey	0.06	4.05	4.11	110.2
Uruguay	0.12	1.50	1.62	20.8
Venezuela	0.16	0.38	0.54	95.0
Low-income group, weighted total benefits	**1.79**	**17.62**	**19.41**	**1,665.2**
Bangladesh	0.24	9.38	9.63	32.9
Cameroon	0.56	1.50	2.06	8.5
China	2.88	0.73	3.61	918.9
India[a]	0.22	63.45	63.67	379.0
Indonesia	0.24	2.81	3.05	98.8
Kenya	0.17	5.40	5.57	9.2
Nigeria	1.12	2.74	3.86	56.5
Pakistan	0.18	36.64	36.82	61.3
Vietnam	0.47	14.49	14.96	96.2
Zimbabwe	n.a.	n.a.	n.a.	4.0
World total, weighted by GDP	**0.52**	**1.57**	**2.09**	**28,404.5**

n.a. = not available

a. Excludes fresh and frozen meat.

Notes: Based on calculations at a city level (appendix B). Total is weighted by country size, measured by GDP. The Spearman rank correlation coefficient for gains measured with market exchange rates versus EIU PPP rates is 0.84 (95 percent level of confidence).

Source: Authors' calculations.

Calculated gains are larger when PPP rates are used for two reasons: first, low-income countries become more important in the world GDP picture, and second, middle-income and high-income countries realize more gains from falling prices. The main conclusion we draw from the PPP calculations is that our original set of calculations—those based on market exchange rates—cannot be brushed aside simply on the argument that market exchange rates differ sharply from PPP rates.

In our calculations (whether based on market exchange rates or PPP rates), we exclude service items in which trade is nonexistent or very limited. Excluded items belong to the following sectors (see table A.1, appendix A): books and newspapers; dry cleaning, haircut, and other services; domestic help; entertainment, meal, and hotel; transportation; housing;

Table 1.2   Potential benefits at country level, calculated with the Economist Intelligence Unit PPP rates (percent of GDP)

	Benefits from falling prices	Benefits from rising prices	Total benefits	GDP (in US$ billions)
High-income group, weighted total benefits	**0.31**	**0.13**	**0.44**	**22,369.1**
Australia	0.55	0.27	0.83	410.3
Austria	0.31	0.02	0.33	196.4
Belgium	0.09	0.02	0.11	252.4
Canada	0.19	0.01	0.20	795.2
China (Hong Kong)	0.95	0.00	0.95	182.3
Denmark	0.25	0.08	0.33	143.9
Finland	0.19	0.00	0.20	116.4
France	0.30	0.17	0.47	1,365.8
Germany	0.45	0.52	0.96	2,128.8
Greece	0.31	0.08	0.39	135.2
Ireland	0.05	0.01	0.06	72.9
Israel	0.53	0.00	0.54	103.5
Italy	0.18	0.45	0.64	1,288.4
Japan	0.91	0.11	1.02	2,909.5
Kuwait	0.68	0.00	0.68	53.2
Luxembourg	0.05	0.05	0.10	16.7
Netherlands	0.21	0.28	0.49	371.9
New Zealand	0.81	0.06	0.87	71.6
Norway	0.12	0.00	0.12	121.0
Portugal	0.55	0.16	0.71	146.6
Singapore	0.59	0.62	1.21	72.6
Spain	0.54	0.38	0.93	665.6
Sweden	0.11	0.00	0.12	195.3
Switzerland	0.30	0.19	0.49	192.2
Taiwan	1.05	0.00	1.05	533.9
United Arab Emirates	0.14	0.30	0.44	44.6
United Kingdom	0.06	0.03	0.09	1,272.2
United States	0.06	0.01	0.07	8,510.7
Middle-income group, weighted total benefits	**1.79**	**0.19**	**1.98**	**7,635.8**
Algeria	3.65	0.00	3.65	70.2
Argentina	0.51	0.17	0.68	399.7
Bahrain	1.21	0.00	1.22	9.9
Brazil	1.79	0.32	2.11	1,729.1
Chile	2.41	0.00	2.41	207.3
Colombia	2.79	0.00	2.79	168.4
Costa Rica	1.57	0.09	1.67	20.8
Czech Republic	0.89	0.12	1.01	112.5
Ecuador	1.46	0.22	1.67	64.0
Egypt	3.14	0.00	3.14	193.2
Guatemala	2.26	0.00	2.26	48.2
Hungary	0.28	0.79	1.07	54.6
Iran	2.62	0.05	2.67	464.3
Jordan	3.06	0.06	3.12	15.5
Korea	1.94	0.00	1.94	596.8
Malaysia	2.37	0.00	2.37	217.7
Mexico	1.55	0.06	1.61	806.3
Panama	2.02	0.00	2.02	22.7
Paraguay	1.11	5.04	6.15	18.3
Peru	1.21	0.00	1.21	141.5

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Table 1.2 *(continued)*

	Benefits from falling prices	Benefits from rising prices	Total benefits	GDP (in US$ billions)
Philippines	2.70	0.00	2.70	235.7
Poland	0.61	0.18	0.79	229.8
Romania	1.11	0.00	1.11	90.8
Russia	1.84	1.04	2.88	392.6
Saudi Arabia	1.68	0.02	1.69	199.7
Serbia	n.a.	n.a.	n.a.	n.a.
South Africa	0.62	0.00	0.62	288.5
Sri Lanka	2.65	0.01	2.66	51.2
Thailand	2.99	0.00	2.99	359.2
Tunisia	2.12	0.08	2.19	51.1
Turkey	0.73	0.53	1.27	183.1
Uruguay	0.39	0.41	0.79	27.4
Venezuela	1.20	0.01	1.21	166.4
Low-income group, weighted total benefits	**24.54**	**1.56**	**26.10**	**8,212.8**
Bangladesh	2.17	0.01	2.18	114.5
Cameroon	6.04	0.00	6.04	28.9
China	35.50	0.00	35.50	5,044.6
India[a]	4.89	7.83	12.72	1,633.6
Indonesia	7.39	0.00	7.39	460.1
Kenya	4.02	0.00	4.02	29.2
Nigeria	6.02	0.03	6.05	139.9
Pakistan	3.20	0.19	3.39	228.9
Vietnam	17.40	0.00	17.40	511.7
Zimbabwe	3.59	0.12	3.71	21.5
World total, weighted by GDP	**5.81**	**0.45**	**6.26**	**38,217.6**

n.a. = not available
PPP = purchasing power parity

a. Excludes fresh and frozen meat.

Notes: Based on calculations at a city level (appendix B). Total is weighted by country size, measured by GDP.

Source: Authors' calculations.

and utilities. While trade in these items is very limited, many of them are amenable to the forces of economic integration through the medium of foreign direct investment. Foreign direct investment can improve production and distribution technology in many service sectors, but technological convergence need not necessarily lead to price convergence. For example, if Société Lyonnaise d'Eau applies better technology to distribute household water in a country where water is abundant and cheap (such as Thailand), water rates might fall relative to rates in a country (such as Israel) where technology is already very good, but water is scarce and expensive. While we think this example is highly atypical, it illustrates the distinction between eliminating trade barriers and eliminating investment barriers.

Box 1.2 Why do some low-income countries gain so much, and others so little?

Our calculations of static benefits, starting with market exchange rates, show very high gains for some low-income countries, such as India and Nigeria. At the same time, a few low-income countries, such as China and Kenya, have gains less than 10 percent of GDP. Why is the variation so large?

The very large gains calculated for a few developing countries, notably India and Nigeria, reflect the fact that their major cities are comparatively cheap places to live. In these countries, internal migration is relatively fluid, ensuring a large pool of very cheap labor in the urban centers. As a result, average per capita income in cities is somewhat similar to the low average per capita income in the countryside.

By contrast, internal labor mobility is very limited in China. Limited labor mobility has widened the income gap between "privileged" cities and the rest of China. The Chinese cities covered in the Economist Intelligence Unit (EIU) database, namely Beijing, Guangzhou, and Shanghai, are expensive places to live. Per capita income in those cities is more than four times the level in poor provinces. As a result, when the calculations start with market exchange rates, China appears to gain little from price convergence. Conversely, when the calculations start with PPP exchange rates, China appears to gain a lot.

What these calculations are saying is that, at PPP exchange rates, prices for most goods and services in Beijing, Guangzhou, and Shanghai would fall sharply. Substantial consumer benefits would result in the "privileged" cities. Comparable benefits would not occur throughout China, but our methodology assumes that the cities covered in the EIU dataset are representative of the entire country. A similar anomaly occurs for Kenya, Vietnam, and a few other developing countries.

In terms of our country classification, the covered Chinese cities are more like middle-income countries than low-income countries (see table below). China may have as much to gain by integrating its own internal markets—the markets between "privileged" cities and the rest of the country—as by integrating with the world economy. The same may be true for Kenya, Vietnam, and a few other developing countries.

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When the calculations are made starting with market exchange rates (table 1.1), the weighted total benefits for high-income countries are 0.6 percent of GDP; for middle-income countries, 3.8 percent of GDP; and for low-income countries, 19.4 percent of GDP. Potential static benefits are strikingly large for some low-income and middle-income countries. For example, the potential static benefits from convergence to the BWPB would be 63.7 percent of GDP for India and 36.8 percent for Pakistan (table 1.1). For these poor countries, most of the benefits arise because of the large gap between market exchange rates and PPP exchange rates. If instead we run the calculations starting with PPP rates (table 1.2), the potential static benefits from convergence to the BWPB would be 12.7 percent of GDP for India and 3.4 percent for Pakistan. By contrast, the picture is exactly reversed for China: starting with market exchange rates, the price convergence benefits for China are 3.6 percent of GDP; starting with PPP rates, they are 35.5 percent of GDP. The PPP-based calculation for China is an anomaly that reflects enormous internal price distortions within China (see box 1.2).

The very large difference in potential benefits for India (63.7 percent of GDP versus 12.7 percent) and for Pakistan (36.8 percent of GDP versus 3.4 percent) does, however, reflect the starting point—market exchange rates or PPP exchange rates. Starting with market exchange rates, a scenario of price convergence would compel Indian and Pakistani prices to rise sharply for nearly all tradable goods. In isolation, rising prices would imply a sharp deterioration of Indian and Pakistani competitiveness in world markets, followed by current account deficits and loss of foreign exchange reserves. However, even with the wonders of e-commerce, air cargo, and an end to border barriers, rising prices will not occur in isolation. Rather, the realignment of prices will force the reallocation of resources among economic sectors and a dramatic reorganization of market structures. Moreover, the realignment of internal prices will require huge infrastructure investments, including roads, ports, airports, and much else to accommodate the trade volumes engendered by deep economic integration. These changes will take time—perhaps decades. At

the end of the process, India, Pakistan, and other emerging economies will become far more powerful competitors in world markets than they are today.

In our view, an appropriately conservative calculation of near-term potential benefits for all country groups is obtained by taking whatever figure is lower for each individual country—benefits based on the market exchange rate or benefits based on the PPP exchange rate. On this conservative basis, the potential static benefits from convergence to the BWPB would reach 0.6 percent of global GDP, or $0.2 trillion per year for all countries (table 1.3). For high-income countries, the benefits would be 0.4 percent of GDP; for middle-income countries, 0.4 percent; and for low-income countries, 3.7 percent.

As a general finding, when potential benefits are calculated starting with market exchange rates, the larger the size of potential benefits, the larger the share of benefits that is accounted for by rising product prices. In other words, over the long term, starting with current market exchange rates, low-income and middle-income countries might gain the most benefits from price convergence, which lead to rising product prices, not falling product prices. This finding contradicts the notion that free trade and market integration usually mean lower prices. It also contradicts the notion that lower prices are the main source of net gains from international exchange. To be sure, lower prices translate into improved consumer welfare. When prices fall, the gains to consumers exceed the losses to domestic producers and workers, yielding net gains for the country as a whole. But higher prices also bring benefits. The reason (spelled out in appendix A) is that, when prices rise for internationally traded products, the gains to domestic producers and workers exceed the losses to domestic consumers, again yielding net gains for the country as a whole.

At first sight, it seems odd that both rising and falling prices for internationally traded goods can bring net gains to a country. But this result is just an aspect of the old law of comparative advantage. When a country's local price for an item is lower than the world price, market integration and price convergence will benefit local producers and workers more than they will harm local consumers. The opposite happens when the country's local price is higher than the world price.

We reach a simple conclusion from these speculative calculations. The potential gains from the integration of world markets, and the compression of price divergence, are large. This is not a new finding, but our calculations represent a new way of reaching a familiar result.

Many scholars have concluded that when a country has denser trade and investment relations with the world economy, it will enjoy a higher income, other things being equal.[4] Their results are based both on

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4. For a summary of the literature, see Hufbauer (2001).

Table 1.3 Potential benefits at country level, calculated with the lesser of market exchange rates or PPP exchange rates (percent of GDP)

	Benefits from falling prices	Benefits from rising prices	Total benefits
High-income group, weighted total benefits	**0.28**	**0.08**	**0.36**
Australia	0.22	0.27	0.50
Austria	0.31	0.01	0.32
Belgium	0.08	0.02	0.10
Canada	0.03	0.01	0.04
China (Hong Kong)	0.73	0.00	0.73
Denmark	0.25	0.02	0.27
Finland	0.19	0.00	0.19
France	0.30	0.10	0.40
Germany	0.45	0.21	0.66
Greece	0.17	0.08	0.25
Ireland	0.03	0.01	0.04
Israel	0.27	0.00	0.27
Italy	0.10	0.45	0.56
Japan	0.91	0.00	0.91
Kuwait	0.03	0.00	0.03
Luxembourg	0.05	0.04	0.09
Netherlands	0.21	0.26	0.47
New Zealand	0.22	0.06	0.28
Norway	0.12	0.00	0.12
Portugal	0.03	0.16	0.18
Singapore	0.59	0.35	0.94
Spain	0.22	0.38	0.61
Sweden	0.11	0.00	0.11
Switzerland	0.30	0.00	0.30
Taiwan	0.12	0.00	0.12
United Arab Emirates	0.14	0.30	0.44
United Kingdom	0.06	0.02	0.08
United States	0.06	0.01	0.07
Middle-income group, weighted total benefits	**0.16**	**0.22**	**0.38**
Algeria	3.65	0.00	3.65
Argentina	0.10	0.17	0.26
Bahrain	0.18	0.00	0.18
Brazil	0.02	0.32	0.34
Chile	0.04	0.00	0.04
Colombia	0.09	0.00	0.09
Costa Rica	0.02	0.09	0.11
Czech Republic	0.01	0.12	0.13
Ecuador	0.02	0.22	0.24
Egypt	0.56	0.00	0.56
Guatemala	0.07	0.00	0.07
Hungary	0.03	0.79	0.82
Iran	0.28	0.05	0.33
Jordan	0.56	0.06	0.62
Korea	0.27	0.00	0.27
Malaysia	0.09	0.00	0.09
Mexico	0.11	0.06	0.17
Panama	0.10	0.00	0.10

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**Table 1.3 Potential benefits at country level, calculated with the
lesser of market exchange rates or PPP exchange rates**
(percent of GDP) *(continued)*

	Benefits from falling prices	Benefits from rising prices	Total benefits
Paraguay	0.02	5.04	5.06
Peru	0.02	0.00	0.02
Philippines	0.03	0.00	0.03
Poland	0.02	0.18	0.20
Romania	0.04	0.00	0.04
Russia	0.70	1.04	1.74
Saudi Arabia	0.28	0.02	0.30
Serbia	0.10	3.26	3.36
South Africa	0.02	0.00	0.02
Sri Lanka	0.04	0.01	0.05
Thailand	0.11	0.00	0.11
Tunisia	0.17	0.08	0.25
Turkey	0.06	0.53	0.59
Uruguay	0.12	0.41	0.53
Venezuela	0.16	0.01	0.17
Low-income group, weighted total benefits	**1.79**	**1.86**	**3.65**
Bangladesh	0.24	0.01	0.25
Cameroon	0.56	0.00	0.56
China	2.88	0.00	2.88
India[a]	0.22	7.83	8.05
Indonesia	0.24	0.00	0.24
Kenya	0.17	0.00	0.17
Nigeria	1.12	0.03	1.14
Pakistan	0.18	0.19	0.37
Vietnam	0.47	0.00	0.47
Zimbabwe	3.59	0.12	n.a.
World total, weighted by GDP	**0.35**	**0.20**	**0.55**

n.a. = not available
PPP = purchasing power parity

a. Excludes fresh and frozen meat.

Notes: Based on calculations at city level (appendix B). Total is weighted by country size, measured by GDP.

Source: Authors' calculations.

cross-country econometric studies and on calculations using computable general equilibrium (CGE) models. As recent examples, we cite the CGE findings of Brown, Deardorff, and Stern (forthcoming) and Scollay and Gilbert (2001). Brown, Deardorff, and Stern calculate that global free trade in both goods and services, with all post-Uruguay Round trade barriers completely removed, would increase world welfare by $1.9 trillion annually, calculated at market exchange rates. This calculation encompasses both static and dynamic gains. By contrast, Scollay and Gilbert calculate that global free trade in goods alone, counting only static gains,

would increase world welfare by $0.16 trillion annually. As these two CGE results suggest, different specifications can lead to substantially different conclusions as to the magnitude of gains from trade liberalization.

Our conservative calculation of world welfare gains from international price convergence is $0.2 trillion for merchandise trade alone (merchandise accounts for about 75 percent of world trade in goods and services). In other words, by applying a static partial equilibrium framework to price divergence data, we reach results that are about the same magnitude of gains calculated by Scollay and Gilbert, using a CGE model that captures static benefits.

When the details of our results are contrasted with CGE calculations, important differences emerge in the distribution of benefits between high-income, middle-income, and low-income countries.[5] The Brown, Deardorff, and Stern (forthcoming) static-plus-dynamic estimates suggest that 80 percent of the global benefits from complete liberalization would accrue to high-income countries. Only 20 percent would accrue to middle-income and low-income countries. By contrast, Scollay and Gilbert's (2001) static estimates suggest that 45 percent of the global benefits would accrue to high-income countries,[6] while 55 percent would accrue to middle-income and low-income countries. Similarly, our conservative calculations suggest that the global benefits are distributed about 50 percent to high-income countries and 50 percent to middle-income and low-income countries.

Probably the big reason for the distributional difference between Brown, Deardorff, and Stern (on the one hand) and Scollay and Gilbert and ourselves (on the other) has to do with the differing distribution of static and dynamic gains. Roughly speaking, static gains from import liberalization (as a percentage of GDP) are proportional to the height of the country's own trade barriers before liberalization and imports as a share of GDP. Static gains from liberalized access to export markets will, as a rough approximation, depend on the export share of GDP, since countries face the same global market. Dynamic gains, on the other hand, are more nearly proportional to GDP, since all countries enjoy approximately the same benefit per unit of GDP from a more open global economy. Rich countries generate most of the world's GDP; hence, they get most of the dynamic benefits (and hence most of the total gains). However, middle-income and low-income countries tend to have higher trade barriers and

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5. A CGE model with lesser dynamic effect, designed by Anderson et al. (2000, table 4), suggests that world welfare gains from complete liberalization would total $254 billion annually, of which 55 percent would accrue to high-income countries and 45 percent to low-income countries.

6. In the Scollay and Gilbert calculations (2001, table 3.2e), the United States actually loses (through terms-of-trade effects) from liberalization.

larger trade shares than rich countries. This helps explain their greater share of static gains. A second reason for the difference is that Brown, Deardorff, and Stern capture gains from liberalized services trade. Since high-income countries dominate trade in services (both exports and imports), they probably capture nearly all the gains.

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