DEVELOPING COUNTRIES, NEW TRADE BARRIERS, AND THE GLOBAL ECONOMIC CRISIS

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The financial crisis that began in mid-2008 quickly spread globally and resulted in a major shock to the international economy. The initial concern was whether the global economy would suffer as deep an economic decline as in the Great Depression of the 1930s. The onset of a coordinated recession across the world's major economies and a severe collapse in international trade flows further stoked fears of an impending protectionist backlash. Just as the 2008–09 recession led to injured industries and massive unemployment and drew comparisons to the Great Depression, the specter of the 1929 U.S. Smoot-Hawley tariffs and the subsequent international protectionist response of the 1930s created the worry that the recent crisis would result in a similar global imposition of new trade barriers and severely curtail the timely resumption of international trade (Eichengreen and Irwin 2009a, forthcoming; Irwin, forthcoming).

This chapter presents a set of stylized facts on the new protectionism that has emerged during the global economic crisis of 2008–09. We assess the magnitude and distribution of the policy changes that occurred by placing them into recent historical context. In line with the types of explicit trade barriers that countries have imposed during the crisis, we place special emphasis on the role of import restrictions resulting from national use of antidumping, countervailing duty, and safeguard policies.[1] Examination of the detailed evidence from the World Bank's *Temporary Trade Barriers Database* (Bown 2010c) on the evolving use of these policies also mandates that we pay particular attention to the interests of

developing economies—both as imposers of new trade barriers and as exporters whose trade is most likely to be adversely affected by such barriers.[2]

To begin, figure 6.1 presents monthly data on the growth of imports from Freund and Horenstein (2010) for the period January 2008 through November 2009. The fourth quarter of 2008 saw a sudden and almost simultaneous drop in global trade flows for virtually all the major regions of the world. The trend continued through the first three quarters of 2009, which continued to register negative rates of import growth. The World Trade Organization (WTO) (2009, 3) estimates a year-on-year decline in world trade in the fourth quarter of 2008 alone as over 10 percent, with another year-on-year decline of 30 percent in the first quarter 2009. In our focus on protectionism during the crisis, we first clarify the limited role that trade barriers contributed to the trade collapse of 2008–09. The evidence we present on the timing and the scale of the new import protection under these barriers is consistent with the existing evidence that such protection likely contributed only slightly to the sharp decline in global trade flows.[3]

We examine the evolving changes in protectionism across countries resulting from the crisis to infer how such barriers may affect future patterns of trade, including the potential for a V-shaped postcrisis trade recovery. While the newly documented protectionism imposed during 2008–09 may have played a minuscule role in causing the global trade collapse, the emerging pattern of new trade

Figure 6.1. Monthly Import Growth by Region, January 2008–November 2009
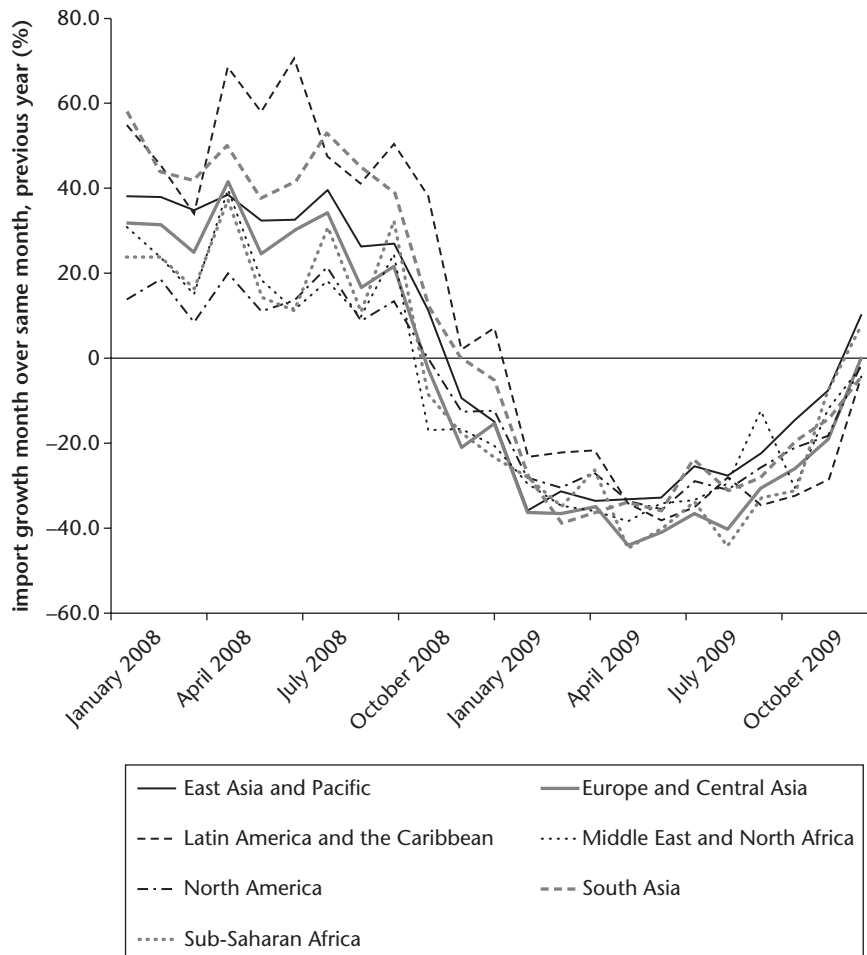
Source: Authors, based on data in Freund and Horenstein 2010.

barriers imposed across countries and exporters during the crisis is likely to have longer-term implications for the potential trade recovery in 2010 and beyond. Much of the evidence of new crisis-era protectionism is in the form of South-South trade barriers—policies such as antidumping that one developing economy imposes on the imports of other developing economies, including, but not limited to, imports from China. While this phenomenon is not new—that is, it had been trending in this direction long before 2008–09—it was certainly accentuated during the crisis period.

The chapter proceeds as follows. In the next section, we describe newly compiled, detailed data on the imposition of trade barriers from the perspective of the policy-imposing economies. The following section turns its attention to exporting countries and the impacts they have seen. We conclude the chapter with a final discussion of lingering issues and policy implications.

Protectionism from the Perspective of Domestic Industries and Importing Economies

We begin our analysis of protectionism during the crisis by examining it from the perspective of the policy-imposing economies and their imports that are likely affected by the imposition of new barriers to trade. We focus primarily on the Group of 20 (G-20) members as the policy-imposing economies.

Temporary Trade Barriers: Antidumping, Countervailing Duties, and Safeguards

Long before the onset of the 2008–09 crisis, most of the G-20 economies had a significant history of using at least one of the four policies that we refer to collectively as temporary trade barriers (TTBs): antidumping, countervailing duties, global safeguards, and the China-specific safeguard.[4]

For the purpose of tracking trends in *levels* of import protection over time, we group together these four TTBs because they are relatively substitutable forms of import protection. The WTO establishes a minimal set of conditions for each of the four different TTBs that national policy makers must follow in order to implement new import protection.
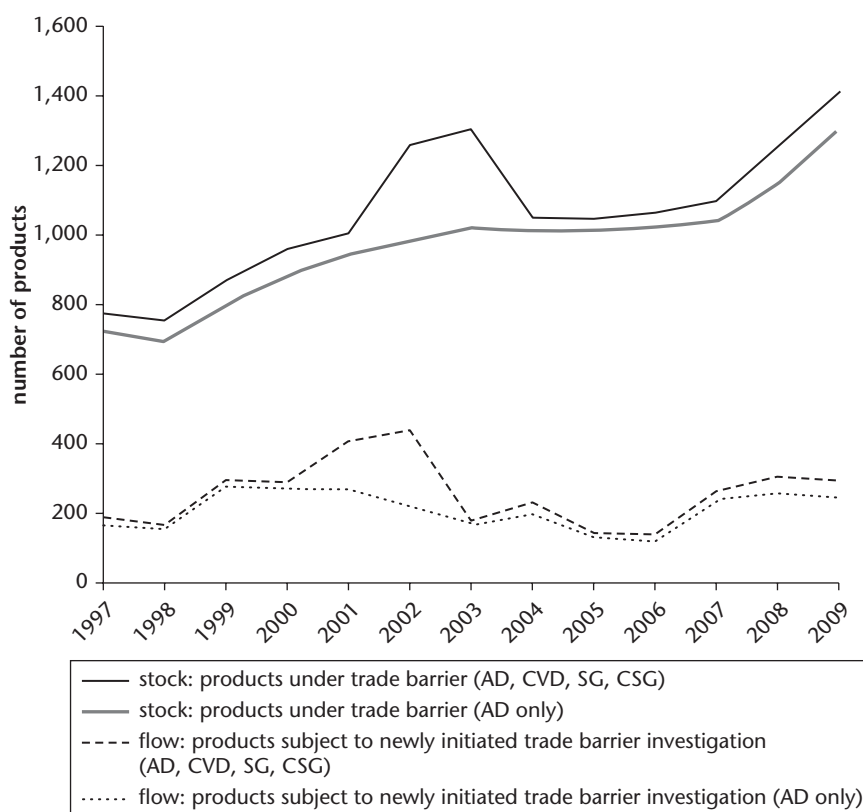
The Products Affected by TTBs and the Global Economic Crisis

In this section, we follow the methodology described in detail in Bown (2010b) and begin by assessing the "stock" of six-digit Harmonized Commodity Description and Coding System (HS) products on which an economy has imposed at least one of the four import-restricting TTB policies.[5] The basic argument for focusing first on the stock of products covered is that changes in the flow of new barriers imposed *and* removed can affect the level of

TTB protection over time. The underlying stock of products that *could be* subject to a TTB is relatively fixed over time (at least at the six-digit HS level), and thus, our stock measure is a simple indicator of the scope of imported products affected by an economy's use of TTBs over time.

The first stylized fact is that the combined G-20 use of such temporary trade policies has resulted in a significantly higher stock of products covered by import protection in 2009 relative to precrisis levels.[6] The dark black line of figure 6.2 provides a summary from the World Bank's Temporary Trade Barriers Database of the combined major G-20 users of these four policies over the 1997–2009 period. While the database contains information for many of these economies that dates back further and even into the 1980s, 1997 is a useful starting point for the current analysis, because that is the first year in this sample in which each of the G-20 economies that we analyze started using these temporary trade barriers.

Figure 6.2. Combined G-20 Use of Temporary Trade Barriers, 1997–2009

legend:
— stock: products under trade barrier (AD, CVD, SG, CSG)
— stock: products under trade barrier (AD only)
- - - flow: products subject to newly initiated trade barrier investigation (AD, CVD, SG, CSG)
· · · · flow: products subject to newly initiated trade barrier investigation (AD only)

Source: Bown 2010b.
Note: Data on the stock of policies imposed and removed over 1988–2009 were compiled from the Temporary Trade Barriers Database. A "product" is defined at the six-digit HS level. Figure 6.2 illustrates the number of importing country–product combinations affected by policies such as antidumping, countervailing duties, global safeguards, and China-specific transitional safeguards. The data are aggregated over the following 12 G-20 economies: Argentina, Australia, Brazil, Canada, China, the European Union, India, Indonesia, the Republic of Korea, South Africa, Turkey, and the United States. The only major G-20 user of such policies not included in the figure is Mexico, for reasons described in the text. The "stock" includes both imposition and removal of import restrictions after terminations or sunset reviews. With roughly 5,000 six-digit HS product categories per importing economy and 12 policy-imposing countries, the maximum value that the vertical axis could possibly take is 60,000. AD = antidumping, CSG = China-specific transitional safeguards, CVD = countervailing duties, SG = global safeguards.

According to figure 6.2, by the end of 2009 the major G-20 users of TTBs together subjected 25 percent more import product lines to these trade barriers than they did in 2007. While the detailed information in the Temporary Trade Barriers Database does indicate that each of the four TTB policies was used during the crisis, the gray line in figure 6.2 shows that most of the products subject to the TTBs in place during 2007 through 2009 are covered by antidumping policies, which is still the primary TTB of choice for many governments. The dashed and dotted lines in figure 6.2 provide information on the potential "flow" of products that may be subject to new TTBs by illustrating the number of six-digit HS lines subject to newly initiated investigations each year.

As is also clear from figure 6.2, the increase in imported products subject to TTBs between 2007 and 2009 is part of a broader, longer-term upward trend in the use of these sorts of trade barriers. A number of these G-20 member economies undertook extensive tariff-cutting, trade liberalization episodes in the 1990s and early 2000s and subsequently promised to keep their *applied tariffs* low—either through WTO tariff "binding" commitments or through preferential trade agreements. Thus, a general increase in the stock of products subject to these *other*, more flexible TTB policies, which may be thought of as imperfect substitutes for tariffs, is perhaps not surprising. The broad sense from figure 6.2 is that this trend has been ongoing at least since 1997 and perhaps would have continued at some level irrespective of the crisis.

Figure 6.3 presents a second way to measure and examine the extent of imports covered by the TTBs imposed by the major G-20 economies in effect over time. The unit of measurement here goes beyond the product to include the number of distinct exporting-country targets that a new TTB over a given product affects. It therefore measures the combination of products and exporting countries affected by (only) antidumping, countervailing duty, and the China-specific safeguard policies: that is, omitting products subject only to global safeguard policies since such policies are applied on a most-favored nation basis against all foreign sources. The figure also breaks out the incidence of the exporters affected by these policies into three groups: developed-economy exporters, China, and other (non-China) developing economies.

Compared to 2007, figure 6.3 illustrates that the major users of these country-specific policies had a 12 percent higher stock of product-exporter combinations subject to TTBs by the end of 2009. Two main factors explain why the 12 percent increase from 2007 to 2009 of product-exporter combinations is lower than the 25 percent increase for products alone. First, the 2007 stock of products was less

Figure 6.3. Combined G-20 Use of Selected Temporary Trade Barriers by Import Source, 1997–2009
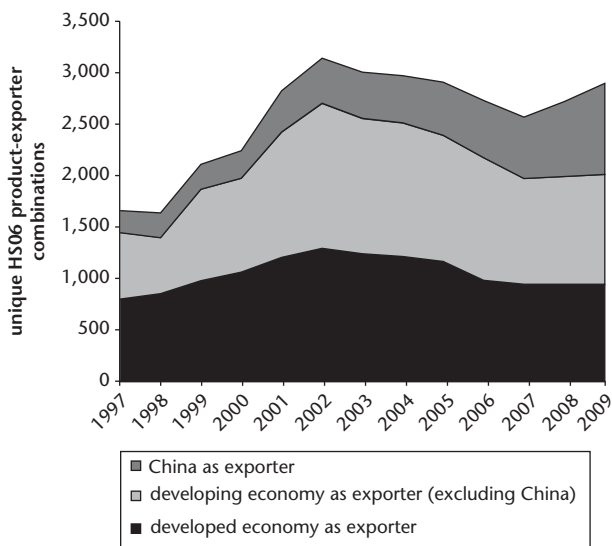
Source: Data on the stock of policies imposed and removed over 1988–2009 compiled from the Temporary Trade Barriers Database.
Note: A "product" is defined at the six-digit HS level. Figure 6.3 illustrates the number of importing country-product–exporting country target combinations affected by policies such as antidumping, countervailing duties, and China-specific transitional safeguards. The policies are aggregated over the following 12 G-20 economies: Argentina, Australia, Brazil, Canada, China, the European Union, India, Indonesia, the Republic of Korea, South Africa, Turkey, and the United States. Mexico is the only major G-20 user of such policies not included, and the reason for its exclusion in this figure is described in the text. The "stock" includes both imposition and removal of import restrictions after terminations or sunset reviews. Unlike figure 6.2, this figure does not reflect the economy's potential use of the global safeguards policy, which is not exporting-country specific.

than the 2007 stock of product-exporter combinations, and starting from a lower baseline leads to higher growth rate. Second, as we describe in more detail below, the incidence of new barriers imposed between 2007 and 2009 was increasingly on a single foreign supplier (that is, products the G-20 imported from China). The stock of products the G-20 had covered with TTBs that was in effect by 2007 affected many more foreign suppliers on average than the new TTBs that added to that stock in 2008–09.[7]

Figure 6.3 illustrates this second point: how the incidence of the new TTBs added to the stock during 2008–09 was not uniform across export sources. China had 40 percent more exported product lines subject to these G-20 TTBs by the end of 2009 relative to the precrisis level of 2007. The combined increase for all other developing-economy exporters was 4 percent, while developed-economy exporters faced roughly the same number of products affected in 2009 as in 2007. We describe in substantially more detail these and other insights from the exporter's perspective below.

Table 6.1 summarizes the economy-by-economy differences across the major G-20 users of these TTBs. Column (1)

Table 6.1. Stocks of Temporary Trade Barriers Imposed by Individual G-20 Economies, 2009

G-20 economy imposer	Stock of products subject to such barriers in 2009 (1)	% change in (1) relative to precrisis 2007 level (2)	Stock of product–exporter combinations subject to such barriers in 2009 (3)	% change in (3) relative to precrisis 2007 level (4)	Share of (3) imposed against all developing economies (5)	Share of (3) imposed against China only (6)
Developing economies						
India	287	0.61	527	0.41	0.58	0.39
Turkey	256	0.46	276	0.19	0.88	0.55
Argentina	139	0.48	342	0.26	0.77	0.22
Brazil	82	0.22	113	0.06	0.70	0.42
Mexico	61	–2.84	80	–2.59	0.56	0.19
China	46	–0.10	132	–0.26	0.16	NA
South Africa	40	–0.18	59	–0.17	0.80	0.34
Indonesia	24	0.69	66	1.05	0.74	0.18
Total developing economies	935	0.41[a]	1,595	0.22[a]	0.68[b]	0.35[b]
High-income economies						
United States	260	0.10	781	0.05	0.63	0.22
European Union	137	–0.05	249	–0.07	0.86	0.41
Canada	69	0.16	238	0.08	0.70	0.26
Korea, Rep.	38	–0.44	72	–0.25	0.60	0.31
Australia	31	0.39	43	0.26	0.65	0.44
Total high-income economies	535	0.03	1,383	0.02	0.68	0.27

Source: Authors, based on data from the Temporary Trade Barriers Database (Bown 2010c).
a. Data on the stock of policies in place in 2009 compiled by the authors from the Temporary Trade Barriers Database (Bown 2010c). Column (1) includes products affected by the use of one or more of the following four policies: antidumping, countervailing duties, global safeguards, and China-specific transitional safeguards. Column (3) documents the number of exporting country–product combinations affected by the use of only three policies: antidumping, countervailing duties, and China-specific transitional safeguards. The "stock" includes both imposition and removal of import restrictions after terminations or sunset reviews. The maximum value that column (1) could take on for any one economy is roughly 5,000 six-digit HS products. In columns (2) and (4), the percent change from 2007 to 2009 aggregated for the developing economies does not include Mexico for reasons described in the text.
b. In columns (5) and (6), the developing-economy aggregated total does not include China's use.

lists the stock of six-digit HS products covered by at least one TTB in effect in 2009, defined consistently with the aggregated figure 6.2. Column (2) illustrates the percentage change in this stock for each economy when compared to the stock of products covered in 2007. Eight of the 13 G-20 economies listed in the table *increased* the number of products subject to these import restrictions in 2009 when compared to 2007—including Argentina (48 percent more products covered), Australia (39 percent), Brazil (22 percent), Canada (16 percent), India (61 percent), Indonesia (69 percent), Turkey (46 percent), and the United States (10 percent). Only China, the European Union, Mexico, the Republic of Korea, and South Africa reduced the number of products subject to such import barriers between 2007 and 2009.

Columns (3) and (4) of table 6.1 present economy-by-economy differences of the second approach of measuring the stock of imports covered by TTBs in 2009 (consistent with figure 6.3); that is, the product-exporter combinations affected by country-specific TTBs such as antidumping, countervailing duties and the China-specific safeguard. First, while the rank ordering of countries based on (3) is close to the ordering based on (1), it is not identical for two basic reasons. Most important, a larger economy may apply the same product-level TTB to more foreign sources simply because it imports a given product from more trading partners on average owing to its larger market. Furthermore, countries like India and Turkey were more likely to have global safeguard policies in effect in 2009. While any product covered by the global safeguard policy is captured in (1), we have chosen not to include product-exporter combinations subject to global safeguards in (3). Next, column (4) reports growth rates of TTB coverage of product–foreign source combinations in 2009 compared to 2007. Similar to the aggregated statistics described in reference to figure 6.3, on a country-by-country basis this statistic is generally lower than the percentage change for product coverage alone reported in column (2).

Columns (5) and (6) of table 6.1 report the incidence of the stock of temporary trade barriers in place in 2009 that were imposed on imports from *developing*-economy exporters overall and then specifically against China. Overall, 68 percent of the TTBs that G-20 developing economies had imposed by the end of 2009 were on the imports from

other developing countries. They ranged from a low of 56 percent (Mexico) to a high of 88 percent (Turkey). Of this number, a large share of the TTBs were being imposed on imports from China—an average of 35 percent of all product-exporter combinations involved China, ranging from a low of 19 percent (Mexico) to a high of 55 percent (Turkey). The users of TTBs from high-income economies listed in table 6.1 were imposing roughly the same share of barriers on imports from developing economies *overall* (68 percent). However, and perhaps surprisingly, in 2009 high-income economies imposed a *smaller* share of their TTBs against China (27 percent) than did developing economies (35 percent).

More broadly, figures 6.4 and 6.5 illustrate the evolution of each policy-using economy's stock of imposed TTBs over time and across the three different trading partner categories; that is, the figures decompose figure 6.3 on the basis of policy-imposing countries.[8] Before turning to interesting differences in time trends across policy-using countries, we begin by noting substantial differences in the underlying *levels* of product coverage across the policy-using countries. Specifically, the cumulative levels in 2009 in each figure correspond to column (3) in table 6.1; for example, in figure 6.4, India had 527 product-exporter combinations covered by the TTBs imposed by 2009, which was almost 10 times as many as the 2009 number of only 66 for Indonesia.

Figure 6.4 illustrates the major *developing*-economy members of the G-20 that are users of the TTBs. As described above and summarized in table 6.1 column (4), the stock of product-exporter combinations targeted in 2009 increased in comparison to the precrisis 2007 levels for the following economies: Argentina (26 percent), Brazil (6 percent), India (41 percent), Indonesia (105 percent), and Turkey (19 percent). The only decrease in the stock of product-exporter combinations covered by TTBs during this period took place in China, Mexico, and South Africa.

The illustration for Mexico in figure 6.4 underscores why we have chosen to exclude it from the aggregated analysis pictured in figures 6.2 and 6.3.[9] In 1993, Mexico imposed new antidumping duties on China covering more than a *thousand* six-digit HS product lines (roughly 20 percent of all of its six-digit HS codes), and these duties stayed in place until October 2008 when an agreement was finally reached to remove them. Because this removal coincides with the timing of the 2008–09 global economic crisis (but is unrelated to the crisis) and is so extreme in scale, we have chosen to leave Mexico out of figures 6.2 and 6.3 to better capture the impact of the crisis on aggregate protectionist trends.

Figure 6.4 also reveals the prevalence of China and other developing economies as targets for developing-country

use of these TTBs. Although there is some heterogeneity, this incidence of South-South protectionism through TTBs has been increasing over time. Some of the protectionism is certainly to be expected given the evolution of trade patterns and emerging-economy exports. Because a number of developing-economy exporters have become more successful at penetrating new markets for their products, including many developing-economy *import* markets, adjustment in national import-competing industries needs to occur. In some instances, domestic industries resist such adjustments and will request (and sometimes be granted) protection from the new import competition through additional TTBs.

Figure 6.5, which illustrates the time-varying stock of TTBs imposed by high-income economies broken out by the same three categories of exporters, shows several broad trends. First, the stock of TTBs in place by 2009 had declined relative to the post-1995 peak for all five of these economies. For Australia and the EU, the peak was around 1997; for Canada and the United States, it was during the recession of 2001–02.[10] Second, for Australia, Canada, the EU, and the United States, the stock of TTBs imposed on products from developed-economy exporters either remained unchanged or even decreased between 2005 and 2009. In contrast, for the products subject to the continuing TTBs, there is a compositional change toward using such barriers to confront imports from China and other developing economies.

The Potential Trade Impact of the New TTBs Imposed during the Crisis

The previous section provided one way to assess the changing nature of TTB protectionism: through examination of the stocks of products and product-exporter combinations affected by TTBs and of changes in those stocks during the 2008–09 crisis. Next, we provide estimates of the potential trade impact of the flow of TTBs newly imposed during 2008 and 2009.[11] We begin by matching the tariff line TTB policy data to 2007 (precrisis) bilateral, tariff line import data for the G-20 economies of interest. We hope to come up with a basic estimate of how much trade might be eliminated if the newly imposed TTBs were high enough to be prohibitive and with an estimate of the importance of the lost trade to total trade.

As an example, the value of 2007 Indian imports of products on which India would subsequently impose TTBs during 2008–09 was US$3.1 billion, which was 1.4 percent of its total 2007 imports (table 6.2). Of the US$3.1 billion of Indian imports subject to new TTBs in 2008–09, roughly 74 percent (US$2.3 billion) were new Indian TTBs

Figure 6.4. G-20 Developing Economies' Use of Selected Temporary Trade Barriers by Import Source, 1990–2009
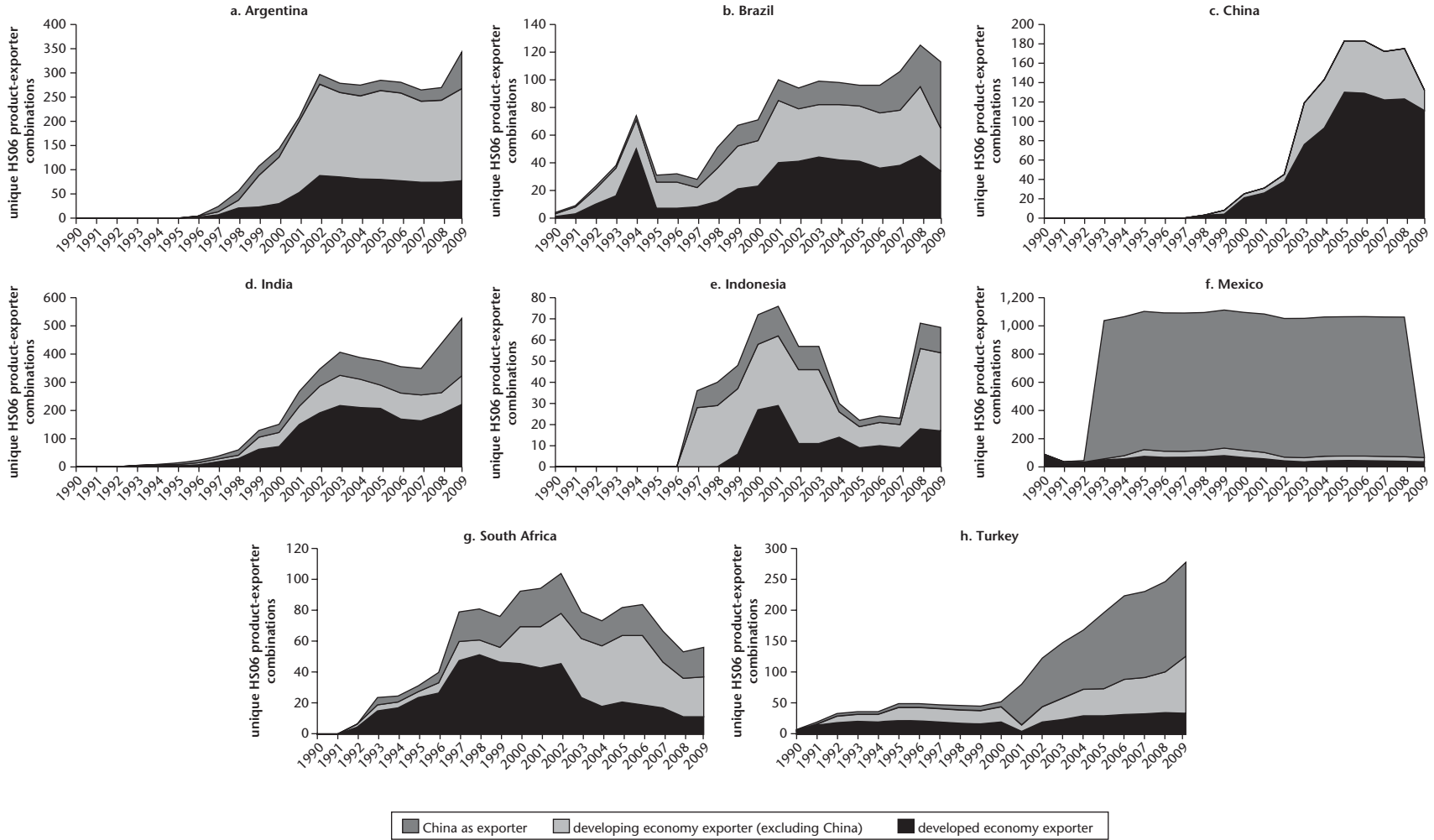
Source: Data on the stock of policies imposed and removed over 1988–2009 compiled from the Temporary Trade Barriers Database.
Note: A "product" is defined at the six-digit HS level. Each figure illustrates the number of importing country-product combinations affected because of the use of exporting-country-specific policies such as antidumping, countervailing duties, and China-specific transitional safeguards. The figures do not reflect the economy's potential use of the global safeguards policy which is not exporting-country specific.

Figure 6.5. G-20 High-Income Economies' Use of Selected Temporary Trade Barriers by Import Source, 1990–2009
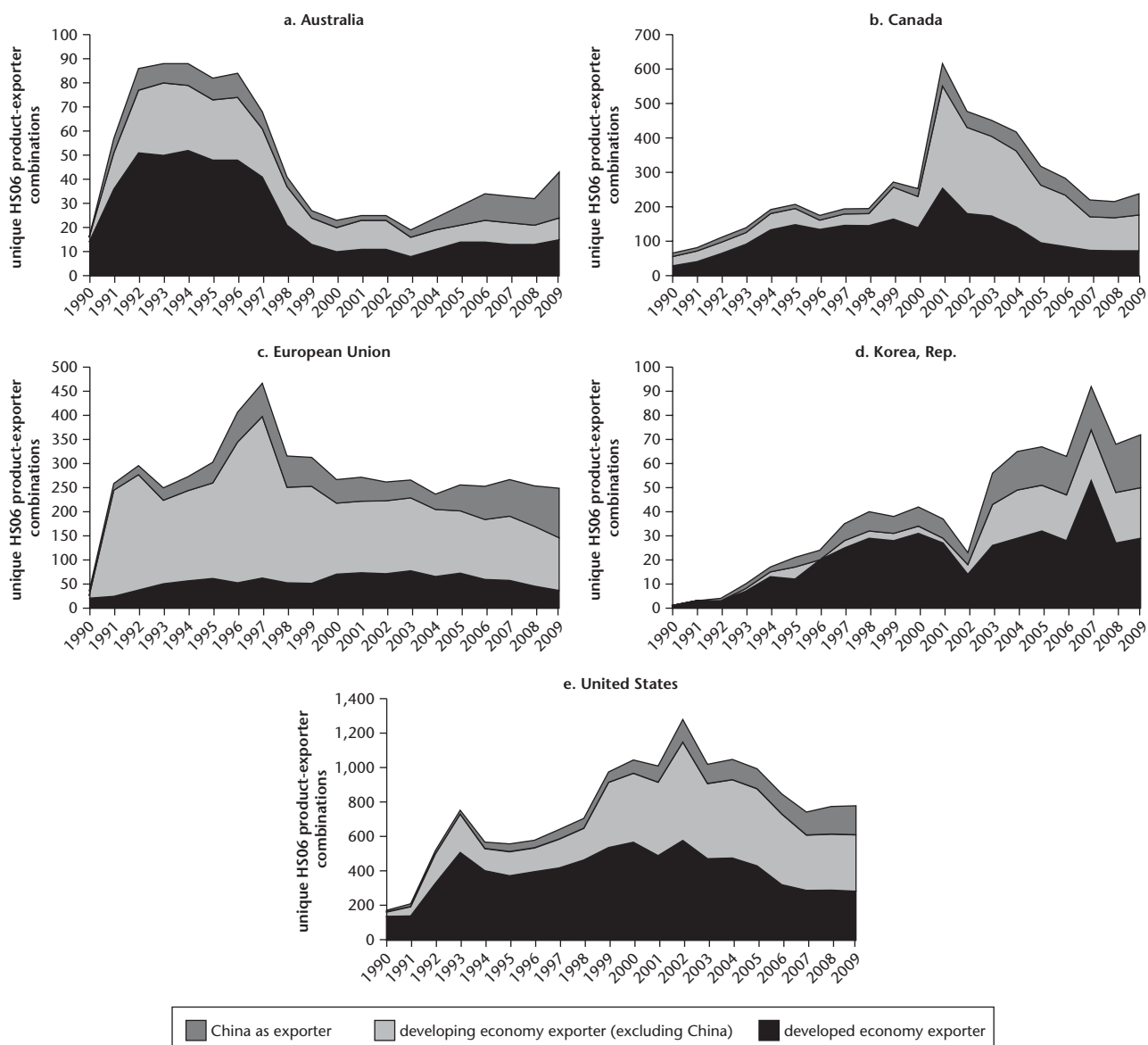
Source: Data on the stock of policies imposed and removed over 1988–2009 compiled from the Temporary Trade Barriers Database.

against imports deriving from China alone. Finally, US$2.3 billion in imports from China subject to new Indian import restrictions covered products that made up 9.5 percent of all Indian imports from China in 2007.

Country-by-country information provided in table 6.2 also indicates that the magnitude of trade potentially affected by India's new TTB policies was not typical of each of the major G-20 economies. Only Turkey (1.1 percent of 2007 total imports) imposed new TTBs in 2008–09 over a comparable share of its total imports. And while the United States (US$10 billion) and European Union (US$7.8 billion) imposed TTBs covering a greater *value* of imports than India, these new TTBs covered a much smaller fraction

of each of these economies' overall 2007 imports (0.5 percent and 0.2 percent, respectively).

One common theme from the table is the extent to which China's exports have been subject to new TTBs imposed during the crisis. As we have described in the context of figure 6.3, the stock of Chinese exported product lines facing TTBs in 2009 was 40 percent higher than the measured stock before the crisis in 2007. Table 6.2 translates the new TTBs in 2008–09 imposed on China's exports as covering an estimated US$20.5 billion in trade in 2007. This number is roughly 80 percent of the entire amount of these economies' total 2007 imports covered by new TTBs imposed during 2008–09. Furthermore, the estimated

Table 6.2. G-20 Imports Subject to Newly Imposed Temporary Trade Barriers, 2008–09

G-20 economy imposer	2007 imports for products subject to new TTBs in 2008–09 (US$, thousands) (1)	Share of economy's total 2007 imports (2)	2007 imports from China subject to new TTBs in 2008–09 (US$, thousands) (3)	(3) as a share of (1) (4)	(3) as a share of all 2007 imports from China (5)
Developing economies					
India	3,140,000	0.014	2,332,000	0.743	0.095
China	2,447,700	0.003	n.a.	n.a.	n.a.
Turkey	1,940,000	0.011	640,000	0.323	0.048
Brazil	1,218,000	0.005	653,000	0.536	0.026
Argentina	303,800	0.007	167,400	0.551	0.033
Indonesia	289,026	0.004	123,533	0.427	0.014
Mexico	76,400	0.000	39,600	0.518	0.001
South Africa	7,803	0.000	5,631	0.722	0.001
High-income economies					
United States	9,990,000	0.005	9,080,000	0.909	0.027
European Union	7,750,000	0.002	6,540,000	0.844	0.010
Canada	673,000	0.002	622,000	0.924	0.017
Australia	281,600	0.002	272,200	0.967	0.012
Total	28,117,330	0.003	20,475,365	0.798[a]	0.018

Source: Temporary trade barriers imposed during 2008 or 2009 and 2007 import data on the economy's national tariff line level from Comtrade matched to tariff line policy data from the Temporary Trade Barriers Database (Bown 2010c).
Note: n.a. = not applicable.
a. The aggregated total subtracts out from the denominator the value of China's imports subject to its own new TTBs, since China does not impose TTBs on its own exports.

US$20.5 billion was 1.8 percent of the value of total Chinese exports to these particular G-20 markets in 2007.

Finally, table 6.2 presents data for the potential trade affected by the *aggregated* G-20 use of TTBs during 2008–09. While over US$28 billion in G-20 member economy imports from 2007 was subsequently subjected to new TTBs during 2008–09, that number was only 0.3 percent of these G-20 member economies' total imports.

Tariffs, Antidumping, and the Overall Trade Restrictiveness Index

Another way to study the potential crisis-era trade impact of policies such as tariffs and antidumping duties is to construct an overall trade restrictiveness index (OTRI) for each policy-imposing economy and compare their changes over time. The OTRI is a more sophisticated way to measure average tariffs, which takes into account the composition of import volume and import demand elasticities. A country's OTRI is higher than its import-weighted average tariff when it levies higher tariffs on the more elastic imported products: that is, when tariffs and import demand elasticities are positively correlated. Kee, Neagu, and Nicita (2010) constructed the OTRI for a wide range of countries over the crisis period using data on product-line tariff changes (International Trade Centre) and imposed antidumping duties (Bown 2010a).[12] Table 6.3 presents

results for the G-20 policy-imposing economies broken into three categories: all sectors, manufacturing, and agriculture. The middle three columns present the estimates of the OTRI for 2008, the estimates of the OTRI for 2009, and the change from 2008 to 2009, respectively. The right-most column is the estimated *trade impact* in dollars of the changes in these economies' OTRI between these two years.

Among the G-20 economies, Argentina, the Russian Federation, and Turkey have the largest increases in their OTRIs, at 0.9, 1.2, and 0.8 percentage points, respectively. Since we do not have detailed data on antidumping use for Russia, its increase in OTRI is driven entirely by its increase in tariffs, mainly in the manufacturing sector. Similarly for Turkey, the increase in its agricultural tariff was the main culprit for its OTRI change, even outweighing the magnitude of its substantial resort to new antidumping duties during the crisis period.[13] For Argentina, roughly two-thirds of its OTRI increase and the resulting trade loss can be attributed to antidumping duties, while the remaining share is due to the tariff increases in its manufacturing sector.

For the EU and the United States, changes in antidumping duties had relatively more impact than tariff changes, particularly for manufactured products from China and other exporters.[14] These duties have resulted in a large loss in trade that overshadows the EU's tariff liberalization in the agricultural sector.

Table 6.3. Overall Trade Restrictiveness of G-20 Economies, 2008–09

Imposing economy	Sector	OTRI 2008	OTRI 2009	Change	Aggregate trade effects (US$, thousands)
Argentina	All	0.039	0.048	0.009	–914,534
Australia	All	0.044	0.031	–0.014	4,575,676
Brazil	All	0.080	0.083	0.003	–991,122
Canada	All	0.013	0.016	0.003	–1,857,762
China	All	0.064	0.068	0.003	–5,263,381
European Union	All	0.017	0.018	0.001	–1,935,871
Indonesia	All	0.033	0.027	–0.006	990,744
India	All	0.064	0.067	0.004	–1,833,246
Japan	All	0.044	0.044	0.000	–75,556
Korea, Rep.	All	0.093	0.093	0.000	–78,149
Mexico	All	0.017	0.015	–0.002	707,280
Russian Federation	All	0.096	0.108	0.012	–4,834,623
Saudi Arabia	All	0.040	0.040	0.000	–1,186
South Africa	All	0.033	0.031	–0.002	199,176
Turkey	All	0.020	0.028	0.008	–2,218,696
United States	All	0.011	0.017	0.005	–24,100,000
Argentina	MF	0.045	0.056	0.011	–926,261
Australia	MF	0.047	0.033	–0.014	4,447,388
Brazil	MF	0.089	0.093	0.004	-986,717
Canada	MF	0.009	0.010	0.001	–401,627
China	MF	0.055	0.055	0.000	646,881
European Union	MF	0.012	0.014	0.001	–3,648,412
Indonesia	MF	0.032	0.026	–0.006	902,396
India	MF	0.057	0.057	0.000	25,154
Japan	MF	0.011	0.011	0.000	130,473
Korea, Rep.	MF	0.042	0.042	0.000	–15,776
Mexico	MF	0.016	0.014	–0.002	745,403
Russian Federation	MF	0.076	0.088	0.012	–4,381,372
Saudi Arabia	MF	0.039	0.039	0.000	–304
South Africa	MF	0.030	0.029	–0.001	110,732
Turkey	MF	0.008	0.011	0.002	–628,322
United States	MF	0.011	0.017	0.006	–24,100,000
Argentina	AG	0.011	0.011	–0.001	11,728
Australia	AG	0.012	0.006	–0.005	128,288
Brazil	AG	0.033	0.033	0.000	–4,404
Canada	AG	0.058	0.087	0.029	–1,456,455
China	AG	0.161	0.203	0.042	–5,910,257
European Union	AG	0.081	0.073	–0.008	1,712,236
Indonesia	AG	0.044	0.038	–0.005	88,347
India	AG	0.248	0.352	0.104	–1,858,403
Japan	AG	0.316	0.317	0.001	–206,023
Korea, Rep.	AG	0.604	0.605	0.001	–62,371
Mexico	AG	0.021	0.022	0.001	–38,123
Russian Federation	AG	0.204	0.211	0.007	–453,253
Saudi Arabia	AG	0.043	0.043	0.000	–883
South Africa	AG	0.066	0.058	–0.008	88,444
Turkey	AG	0.212	0.314	0.102	–1,590,374
United States	AG	0.019	0.019	0.000	3,707

Source: Kee, Neagu, and Nicita 2010.
Note: All calculations are based on bilateral tariffs and antidumping duties, with the exception of India, Japan, and Korea when most-favored nation tariffs are used because of missing data. Changes reported in parentheses are estimated decreases in OTRI. AG = agriculture; MF = manufacturing.

Developing-Country Exporters and the Incidence of Crisis-Era Protectionism

In this section, we consider the impact of new, crisis-era G-20 protectionism from the perspective of the exporting economies subject to the trade barriers. We follow the same basic presentation approach as the previous section. Because so much of crisis-induced protection has come in the form of TTBs, we begin by examining changes in the pattern of the stock of exported products subject to TTBs over time. We then use the tariff-line import data matched to these TTBs imposed during the crisis to project the amount and distribution of exporters' trade possibly affected by the imposition of new TTBs in 2008–09. Finally, we turn to model-based estimates of the market access–OTRI.

Temporary Trade Barriers and the Incidence on Developing-Country Exports

While the stock of products subject to new temporary trade barriers in 2009 has increased 25 percent over the precrisis levels of 2007, the data also reveal a nonuniform impact of such barriers across exporters: both in the level and in the growth rate. As can be surmised from table 6.2, many of the new trade barriers during this period have affected China's exports.

Figures 6.6 and 6.7 provide evidence on how the imposed exporter-specific trade barriers are affecting a number of exporting economies over time, including during the crisis era. Both figures show data on the number of an economy's exported products subject to a G-20-imposed TTB each year, further broken down into two categories based on whether the policy-imposing country was a *developed* or a *developing* G-20 member economy.[15] In addition to the interesting trends in the data, there are also substantial differences in the level of TTB stocks imposed across exporting economies. For example in figure 6.6, European Union exporters had 223 (six-digit HS) products subject to foreign-imposed TTBs by the end of 2009, whereas exporters from the United States had only 91 products subject to foreign-imposed TTBs.
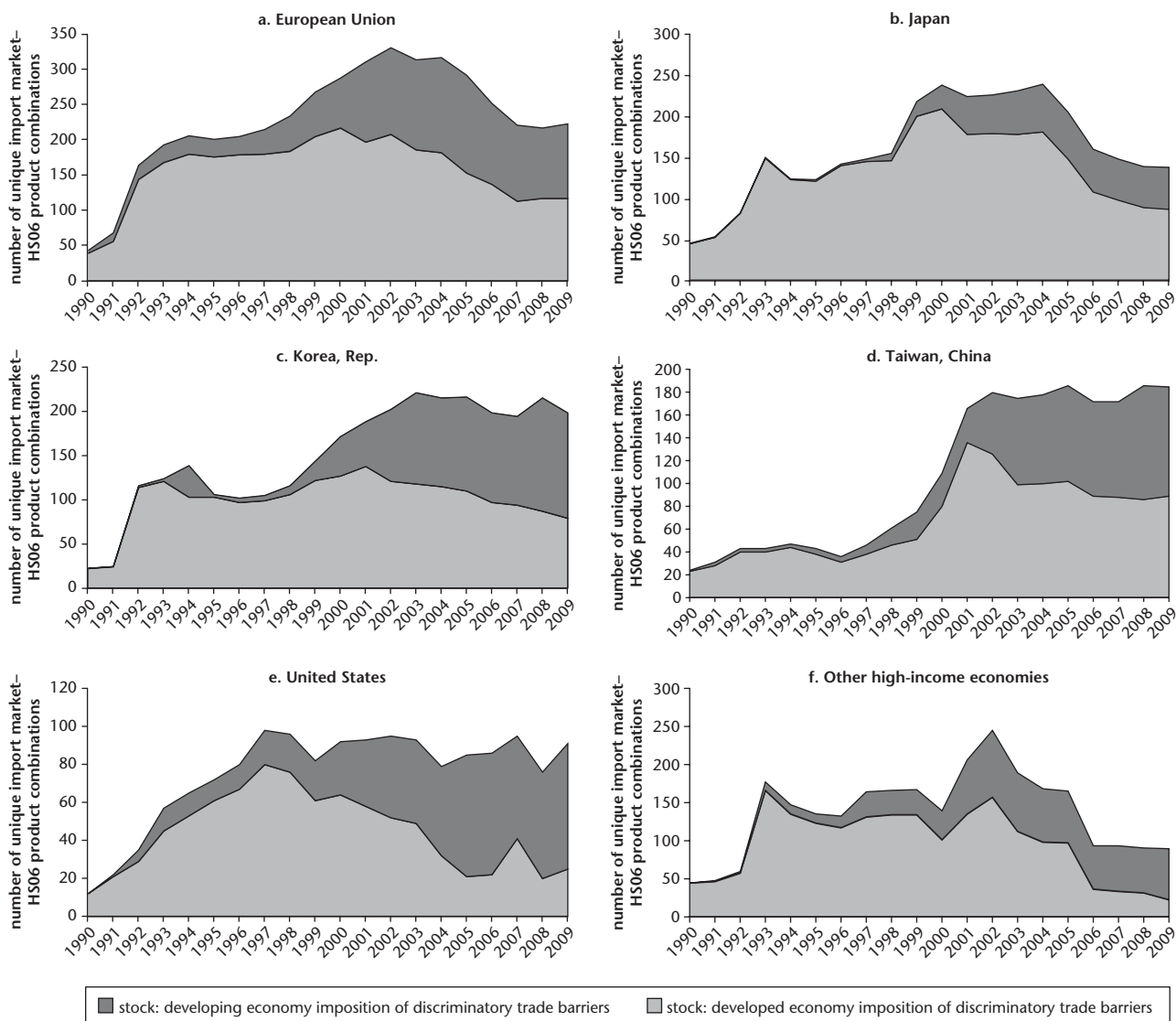
Figure 6.6 identifies and examines the main high-income exporting economies that have been subject to TTBs over time. As we have already mentioned (with respect to figure 6.3), in the aggregate exporters from high-income economies were subject to roughly the same stock of imposed TTBs in 2009 as before the onset of the crisis in 2007. The economy-specific panels in figure 6.6 also illustrate little heterogeneity during the crisis period across these different exporting economies. While the overall stock of TTBs imposed on these high-income exporting economies has remained relatively flat in recent

years, even during the crisis, a longer time frame indicates some change in the *composition* of TTBs by policy-imposing economy. In each of the panels of figure 6.6, an increasing share of the products covered by TTBs imposed over time derives from policies imposed by *developing* economies.

Figure 6.7 presents the same breakdown of information for the TTBs affecting a number of *developing* economies whose exporters are subject to TTBs. As observed in the context of the aggregated figure 6.3, the stock of G-20 TTBs confronted 884 different Chinese exported product-import market combinations in 2009, a 40 percent increase over the stock of product-market combinations subject to G-20 TTBs in 2007. Brazil, India, Indonesia, Russia, South Africa, Thailand, and Ukraine are examples of other developing-economy exporters that confronted a relatively high number of their exported products subject to foreign-imposed TTBs in 2009. Nevertheless, as the economy-specific panels in figure 6.7 illustrate, there are differences across these economies in (a) the frequency with which they are subject to such TTBs, and (b) whether the importing-economy trading partner imposing the new TTBs is a developed or a developing economy. Finally, with the exception of Vietnam, it is also important to note that few countries classified as low income by the World Bank have a high stock of exported products subject to TTBs**.**

Table 6.4 summarizes key elements of information contained in figures 6.6 and 6.7. The first column provides data on which exporting countries face the greatest total quantity of imposed import restrictions on their traded products. By the end of 2009, China's exported products faced roughly four times as many G-20 TTBs as the second-most-affected exporting economy (European Union). Table 6.4 also provides estimates of the change in the 2009 stock relative to the precrisis year of 2007. The middle column of data again shows that, in the aggregate, exporters in developed economies face roughly the same number of such barriers in 2009 as they did in 2007. And while the stock of barriers facing all developing economies in the aggregate increased by 18 percent, those facing all developing countries aside from China increased by only 4 percent. Nevertheless, the increase in total combined product-import market coverage between 2007 and 2009 was particularly pronounced for developing-economy exporters such as India (17 percent), Indonesia (25 percent), Thailand (23 percent), and Vietnam (73 percent).

In addition to the exporter incidence associated with the crisis-era growth of such trade barriers, the last column of table 6.4 provides summary statistics on the extent to which the particular stock of exported products affected by TTBs in place by 2009 is South-South in
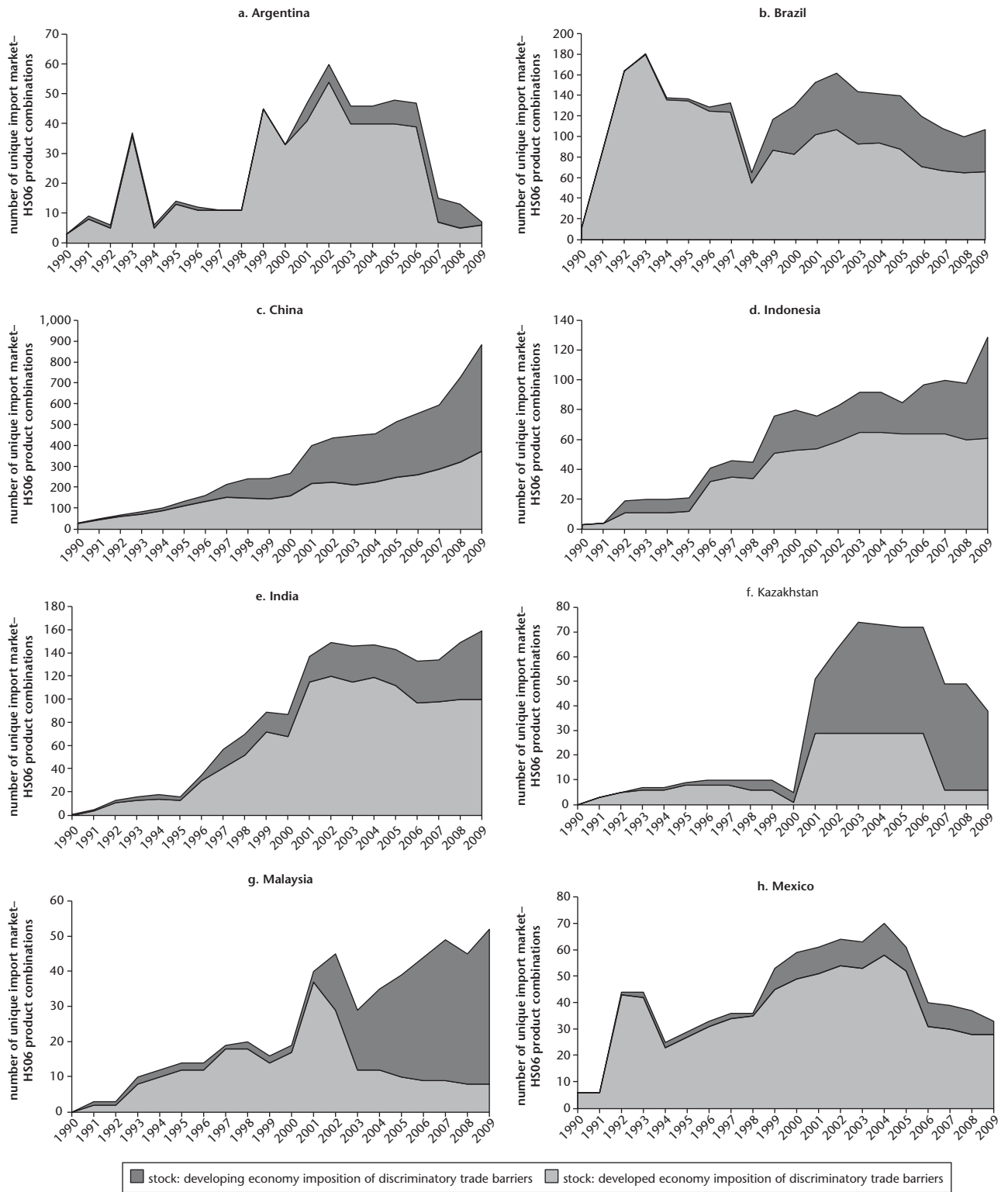
Figure 6.6. Exports of High-Income Economies Subject to Selected Temporary Trade Barriers, 1990–2009

a. European Union

b. Japan

c. Korea, Rep.

d. Taiwan, China

e. United States

f. Other high-income economies

■ stock: developing economy imposition of discriminatory trade barriers   □ stock: developed economy imposition of discriminatory trade barriers

Source: Data on the stock of policies imposed and removed over 1988–2009 compiled by the authors from the Temporary Trade Barriers Database.
Note: The figures illustrate the number of importing country–product combinations affected by the use of policies such as antidumping, countervailing duties, and China-specific transitional safeguards aggregated over the following G-20 economies: seven developing (Argentina, Brazil, China, India, Indonesia, South Africa, and Turkey) and five developed (Australia, Canada, the European Union, the Republic of Korea, and the United States). The only major G-20 user of such policies not included in the figures is Mexico. The "stock" includes both imposition and removal of import restrictions after termina-tions or sunset reviews. With roughly 5,000 six-digit HS product categories per importing economy and 12 policy-imposing countries, the maximum value that the vertical axis could possibly take is 60,000. "Other" includes Australia; Canada; Croatia; Denmark; the Faeroe Islands; Hong Kong SAR, China; Israel; Kuwait; Liechtenstein; Macau SAR, China; Norway; Oman; Qatar; Saudi Arabia; Singapore; Trinidad and Tobago; and the United Arab Emirates.

nature. Overall, other developing economies imposed 52 percent of the TTBs facing developing-economy exporters in 2009. With a (somewhat arbitrary) threshold of 90 product-import market combinations as the cutoff defining which exporting economies were most severely affected by TTBs as of 2009, developing economies were responsible for more than 50 percent of the TTB-affected products for the following exporters above the cutoff: China (58 percent), Indonesia (53 percent), Malaysia

(85 percent), South Africa (57 percent), and Thailand (60 percent). Only for major emerging-market exporters like Brazil (38 percent), India (37 percent), Russia (40 per-cent), and Ukraine (25 percent) did developing economies impose a minority of the TTBs they faced in 2009. And as figure 6.7 illustrates, even for these emerging economies, over time other developing economies are imposing an increasing share of the TTBs that confront their exporters.

Figure 6.7. Exports of Developing Economies Subject to Selected Temporary Trade Barriers, 1990–2009

Figure 6.7. *(continued)*

i. Pakistan

j. Russian Federation

k. South Africa

l. Thailand

m. Turkey

n. Ukraine

o. Vietnam

p. Other low- and middle-income economies

■ stock: developing economy imposition of discriminatory trade barriers   ▨ stock: developed economy imposition of discriminatory trade barriers
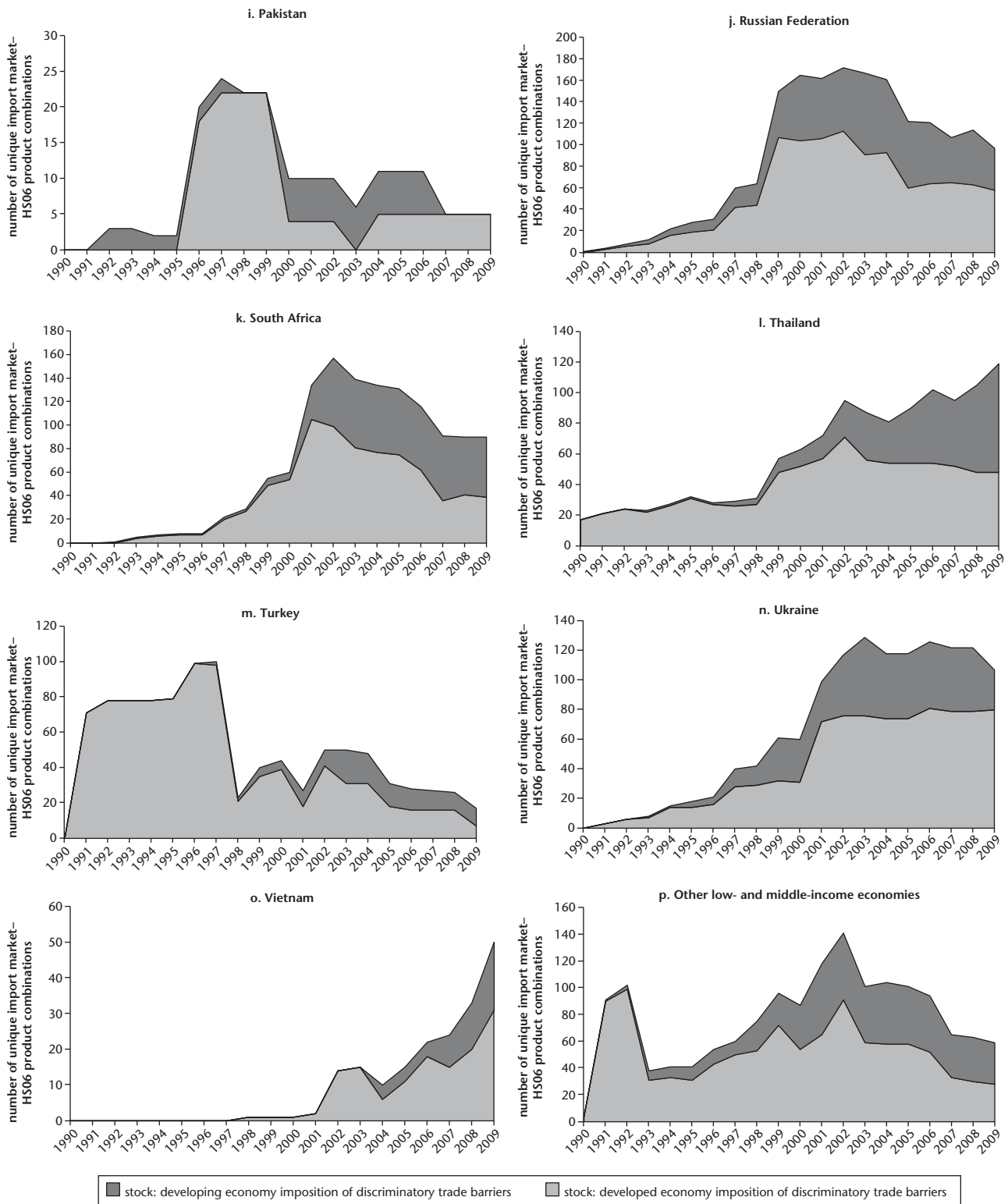
Source: See source notes to figure 6.6.
Note: "Other" includes Albania, Algeria, Armenia, Azerbaijan, Bangladesh, Belarus, Bosnia and Herzegovina, Chile, Colombia, Costa Rica, Côte d'Ivoire, Cuba, Dominican Republic, Ecuador, the Arab Republic of Egypt, Georgia, the Islamic Republic of Iran, Kyrgyz Republic, Lebanon, the Former Yugoslav Republic of Macedonia, Malawi, Moldova, Nepal, Nigeria, Paraguay, Peru, the Philippines, Sri Lanka, Uruguay, and República Bolivariana de Venezuela.

Table 6.4. Major Exporters Subject to Stock of Selected G-20 Temporary Trade Barriers, 2009

Exporting economy	Stock of product – import market combinations subject to such barriers in 2009 (1)	% change in (1) relative to precrisis 2007 level developing G-20 economies (2)	Share of (1) imposed on exporter by (3)
Developing-country exporters			
China	884	0.40	0.58
India	159	0.17	0.37
Indonesia	129	0.25	0.53
Thailand	119	0.23	0.60
Brazil	107	–0.01	0.38
Ukraine	107	–0.13	0.25
Russian Federation	97	–0.10	0.40
South Africa	90	–0.01	0.57
Malaysia	52	0.06	0.85
Vietnam	50	0.73	0.38
Kazakhstan	38	–0.25	0.84
Mexico	33	–0.17	0.15
Turkey	17	–0.46	0.59
Argentina	7	–0.76	0.14
Pakistan	5	0.00	0.00
Other developing countries	59	–0.10	0.53
Total developing-economy exporters	1,953	0.18	0.52
High-income exporting economies			
European Union	223	0.01	0.48
Korea, Rep.	199	0.02	0.60
Taiwan, China	185	0.07	0.52
Japan	138	–0.07	0.37
United States	91	–0.04	0.73
Other high-income countries	89	–0.04	0.75
Total high-income economy exporters	925	0.00	0.55

Source: Data on the stock of policies imposed and removed over 1988–2009 compiled by the authors from the Temporary Trade Barriers Database (Bown 2010a).
Note: The table illustrates the number of importing country–product combinations affected by the use of policies such as antidumping, countervailing duties, and China-specific transitional safeguards aggregated over the following twelve G-20 economies: Argentina, Australia, Brazil, Canada, China, the European Union, India, Indonesia, Korea, South Africa, Turkey, and the United States. Mexico is the only major G-20 user of such policies not included, and the reason for its exclusion in this table is described in the text. The "stock" includes both imposition and removal of import restrictions after terminations or sunset reviews. With roughly 5,000 six-digit HS product categories per importing economy and 12 policy-imposing countries, the maximum value that column (1) for any one exporting economy could possibly take is 60,000.

The Potential Trade Impact of New TTBs on Exports During the Crisis

Analogous to the approach adopted above, we move beyond examining stocks of six-digit HS exported products subject to TTBs and consider the *value* of exports potentially affected by the flow of the main G-20 users' imposition of new TTBs during 2008–09.

As an example, the value of China's 2007 exports that would subsequently be subject to new TTBs imposed by the other G-20 members during 2008–09 was US$20.5 billion, which was 1.8 percent of its total exports to those economies in 2007 (table 6.5). Of the US$20.5 billion in exports, US$4 billion was exported to developing economies, which was 3.5 percent of China's total exports to those economies. In contrast, US$16.5 billion was

exported to developed economies, which was only 1.6 percent of China's total exports to those economies. As such, a much larger fraction of China's exports to other developing economies was subject to new TTBs in 2008–2009 than its exports to high-income economies.

A similar phenomenon holds for seven of the next most frequently targeted countries on the list of developing-economy exporters in table 6.5. India, Indonesia, Pakistan, Russia, Thailand, Turkmenistan, and Uzbekistan each had a larger share of its 2007 exports to other developing economies become subject to new TTBs in 2008–09 than the share of the 2007 exports sent to high-income economies. In the aggregate, 1.3 percent of the 2007 value of all developing-economy exports to G-20 developing economies would be subject to new TTBs in 2008–09,

Table 6.5. The Value of Exports Subject to G-20 Temporary Trade Barriers Newly Imposed in 2008–09

Exporting economy	2007 exports to G-20 subject to new TTBs in 2008–09 (US$, thousands)	% of total exports to to G-20 subject new TTB	2007 exports to G-20 developing economies subject to new TTBs in 2008–09 (US$, thousands)	% of total exports to G-20 developing economies subject to new TTB	2007 exports to G-20 developing economies subject to new TTBs in 2008–09 (US$, thousands)	% of total exports to G-20 developing economies subject to new TTB
Developing-economy exporters total	23,401,616	0.008	6,140,224	0.013	17,261,392	0.007
China	20,470,000	0.018	3,970,000	0.035	16,500,000	0.016
India	583,729	0.005	575,000	0.022	8,729	0.000
Indonesia	416,200	0.005	358,000	0.016	58,200	0.001
Russian Federation	389,500	0.001	343,000	0.007	46,500	0.000
Moldova	345,000	0.166	—	0.000	345,000	0.171
Thailand	278,000	0.002	278,000	0.008	—	0.000
Uzbekistan	186,000	0.038	186,000	0.182	—	0.000
Vietnam	128,861	0.003	7,861	0.001	121,000	0.003
Pakistan	128,000	0.008	128,000	0.054	—	0.000
Malaysia	99,000	0.001	99,000	0.002	—	0.000
Mexico	85,800	0.000	—	0.000	85,800	0.000
Turkmenistan	69,000	0.042	69,000	0.151	—	0.000
Brazil	62,400	0.000	45,200	0.001	17,200	0.000
Other developing countries	160,125	0.000	81,161	0.001	78,963	0.000
Total high-income exporting economies	4,720,216	0.001	3,287,316	0.002	1,432,900	0.000
European Union	1,308,000	0.002	1,130,000	0.003	178,000	0.000
United States	1,279,000	0.001	486,000	0.002	793,000	0.001
Taiwan, China	1,094,000	0.005	993,000	0.008	101,000	0.001
Korea, Rep.	552,000	0.002	408,000	0.003	144,000	0.001
Canada	136,032	0.000	32	0.000	136,000	0.000
Other high-income countries	351,184	0.000	270,284	0.001	80,900	0.000

Source: Temporary trade barriers imposed during 2008 or 2009, 2007 import data at the tariff line level from Comtrade matched to tariff line policy data from the Temporary Trade Barriers Database (Bown 2010a).
Note: Exports aggregated over the following twelve G-20 economies: Argentina, Australia, Brazil, Canada, China, the European Union, India, Indonesia, Mexico, South Africa, Turkey, and the United States. Korea is the only major G-20 user of such policies not included. The aggregated figures in this table may not match exactly those in table 6.2 due to rounding. — = not available.

whereas only 0.7 percent of their exports to G-20 high-income economies would be affected. These data provide additional evidence of the increasing prevalence of South-South protectionism in the crisis era.

MA-OTRI

A final approach used to identify which exporting countries are hardest hit by the G-20's changing trade policies during the crisis period is to use the market access overall trade restrictiveness index (MA-OTRI) (see table 6.6). Analogous to the OTRI described earlier, the MA-OTRI measures the average foreign tariff faced by a given country's exporters, taking into account export composition and the import demand elasticities of the importing economies. Kee, Neagu, and Nicita (2010) calculate the changes in the MA-OTRI for a wide range of countries over the crisis period due to trade policy changes of G-20 and non-G-20 countries.

Consistent with the impact described above that focused exclusively on TTBs and disregarded tariffs, the exporter most affected by G-20 changes in trade policy during the crisis was China. China's MA-OTRI increased by 1.5 percentage points, which translates to an estimated US$28 billion reduction in exports (if the model allows trade to fall more than the 2008 level) or US$5 billion (if the model restricts the value of the fall in trade to an amount no larger than the 2008 level). The biggest trade value impact facing China comes in the form of new G-20 antidumping duties imposed on manufacturing exports, particularly those imposed by developed economies such as the United States. This finding too is consistent with the results of table 6.5.

Nevertheless, the MA-OTRI results indicate that a number of other developing countries witnessed severe erosion of access to G-20 markets. Bosnia, Indonesia, Kazakhstan, and Panama each experienced an MA-OTRI increase in the range of 0.12 to 0.4 percentage points. Most of Indonesia's trade loss came from India's removal of a temporary tariff reduction on palm oil. Kazakhstan and Panama suffered mainly from additional tariff restrictions in the agricultural sector in China, India, and Turkey. Bosnia lost access to export markets in manufactured products to the EU. Bhutan, Botswana, Brazil, the Kyrgyz Republic, Lebanon, Russia, Sri Lanka, Tanzania, and Ukraine also experienced export reductions due to G-20 changes in trade policy, with a joint loss in access to export markets of roughly US$621 million.

Besides the developing countries, high-income economies such as the European Union; Hong Kong SAR, China; Israel; Korea; Norway; and the United States also faced an increasingly adverse impact of crisis-era restrictions on exports. In particular, China increased its tariff on salmon from Norway from 10 to 40 percent, which severely restricted Norway's access to the Chinese market, given the very elastic import demand for that product**.**

Other important insights arise from analysis of the MA-OTRI, given that we can also calculate the indexes at the sectoral level. Table 6.6 decomposes the overall changes into compositional changes for the agriculture and manufacturing sector MA-OTRIs during the crisis period. For agricultural products, increased tariff protection in Turkey on meslin and wheat spelt, as well as the European Union's on bananas, severely restricted the market access of Kazakhstan, Panama, and Russia. The agriculture MA-OTRI of these countries increased from 2 to 3.7 percentage points, resulting in a trade loss of US$738 million. The above-mentioned tariff reversal on palm oil by India explains a large part of Indonesia's MA-OTRI increase of 7.4 percentage points and the corresponding trade loss of $1.5 billion.

Argentina, Bosnia, Botswana, Brazil, Indonesia, Sri Lanka, and Ukraine are other countries aside from China whose manufacturing exports were adversely affected by increased barriers. Each of these countries saw its manufacturing MA-OTRI increase by 0.1 to 0.4 percentage points, and jointly their exports were decreased by US$550 million. For most countries, the main new G-20 trade barriers came in the form of increased tariffs, while the impact on Brazil and Indonesia was the result of additional antidumping duties imposed on manufactured goods.

Finally, while the intensity of G-20 imposed TTBs such as antidumping did increase during the crisis period, for a number of exporting economies the adverse impact on market access may be offset by simultaneous G-20 tariff reductions for other imported product lines. As such, we can reconcile some of the different magnitudes to the estimates presented in tables 6.5 (TTBs only) and 6.6 (tariffs and antidumping only). For example, table 6.5 indicates that India's exporters were subject to substantially more new TTBs and even that 2.2 percent (or US$575 million) of its 2007 exports to other G-20 developing economies would become subject to newly imposed TTBs during the crisis. Nevertheless, table 6.6 indicates that this adverse impact on market access due to TTBs was at least partially offset by new market access opportunities for Indian exporters of other products; one specific example turns out to be due to China's reducing its applied tariff on cotton imports from 40 percent to 6.4 percent. Furthermore, while Vietnam was also adversely affected by new TTBs, its MA-OTRI is positively affected by China's reducing its tariff from 378 percent to 25 percent for television imports

Table 6.6. Examples of Major Changes in MA-OTRI due to G-20 Trade Policy Changes, 2008–09

Exporting economy	Sector	2008	2009	Change	Aggregate trade effect (US$, thousands)
Norway	All	0.018	0.049	0.032	−8,307,226
China	All	0.045	0.060	0.015	−27,500,000
Indonesia	All	0.037	0.049	0.012	−1,676,246
Panama	All	0.024	0.031	0.007	−30,388
Kazakhstan	All	0.005	0.011	0.005	−338,276
Hong Kong SAR, China	All	0.026	0.030	0.004	−388,736
Bosnia And Herzegowina	All	0.005	0.009	0.004	−11,076
Botswana	All	0.002	0.005	0.003	−3,992
Tanzania	All	0.023	0.026	0.003	−6,707
United States	All	0.043	0.046	0.002	−3,688,027
Kyrgyz Republic	All	0.027	0.029	0.002	−1,605
Sri Lanka	All	0.052	0.053	0.002	−20,263
Israel	All	0.012	0.013	0.001	−101,276
Ukraine	All	0.030	0.031	0.001	−111,810
Korea, Rep.	All	0.045	0.047	0.001	−525,618
Brazil	All	0.041	0.041	0.001	−176,619
Russian Federation	All	0.009	0.010	0.001	−298,196
Lebanon	All	0.008	0.009	0.001	−1,185
Bhutan	All	0.000	0.001	0.001	−170
European Union	All	0.012	0.012	0.001	−4,134,099
China	MF	0.041	0.056	0.016	−27,500,000
Norway	MF	0.008	0.017	0.010	−2,092,733
Hong Kong SAR, China	MF	0.026	0.031	0.004	−390,103
Bosnia And Herzegovina	MF	0.003	0.007	0.004	−11,950
Botswana	MF	0.002	0.005	0.003	−3,992
Ukraine	MF	0.011	0.013	0.002	−131,633
Sri Lanka	MF	0.051	0.053	0.002	−19,061
Israel	MF	0.009	0.011	0.002	−107,292
United States	MF	0.017	0.019	0.001	−1,982,447
Brazil	MF	0.007	0.008	0.001	−217,877
Argentina	MF	0.007	0.008	0.001	−43,196
Korea, Rep.	MF	0.042	0.043	0.001	−532,827
Indonesia	MF	0.033	0.034	0.001	−122,079
Maldives	MF	0.007	0.007	0.001	−8
European Union	MF	0.010	0.011	0.001	−3,407,266
Norway	AG	0.070	0.218	0.148	−6,214,493
Indonesia	AG	0.062	0.136	0.074	−1,554,168
Russian Federation	AG	0.094	0.131	0.037	−380,338
Kazakhstan	AG	0.019	0.056	0.036	−325,425
Panama	AG	0.029	0.049	0.020	−32,022
United States	AG	0.239	0.248	0.009	−1,697,471
Malaysia	AG	0.059	0.068	0.008	−175,319
Tanzania	AG	0.030	0.037	0.007	−8,690
Bhutan	AG	0.002	0.008	0.005	−145
Bahrain	AG	0.087	0.092	0.004	−349
Kyrgyz Republic	AG	0.046	0.050	0.004	−1,620
Lebanon	AG	0.022	0.025	0.003	−1,038
Switzerland	AG	0.100	0.102	0.002	−14,096
European Union	AG	0.029	0.030	0.001	−726,839
Canada	AG	0.026	0.027	0.001	−221,993
China	AG	0.187	0.188	0.001	−39,327
Sri Lanka	AG	0.054	0.054	0.001	−1,202

Source: Kee, Neagu, and Nicita 2010.

and Russia's lowering of its tariff on imported rice. These are examples of countries whose overall market access opportunities did not deteriorate over the crisis period by as much as one might infer by relying solely on estimates of their realized loss of market access stemming from newly imposed TTBs. The overall impact of G-20 trade policy changes during the crisis era will ultimately be judged by the larger impact of two competing forces: whether exporters receiving new opportunities for market access were ultimately able to capitalize on them, or whether exporters that faced the imposition of new trade barriers were unable to identify ways to overcome them and had to reduce sales or exit the market.

Policy Implications and Conclusions

This chapter has identified a number of stylized facts regarding the evolving pattern of import protection associated with the global economic crisis. Overall, the major economies of the international trading system—in particular the G-20 members—largely refrained from using protectionist instruments that had been used during earlier crisis eras, such as across-the-board increases in applied tariffs and the imposition of new quantitative restrictions. Instead, most of the new protectionism came in the form of potentially WTO-consistent use of temporary trade barriers such as antidumping, countervailing duties, and safeguards.

Developing economies can take away important insights from the crisis-era implementation of new TTBs in particular. On one hand, the global economy could be heartened by the resilience of the world trading system under the WTO. Perhaps the resilience was due to the design of WTO rules allowing for a relatively small incidence of new protectionism through permissible TTBs. Perhaps other factors, such as the globalization of supply chains, have effectively reduced the threat of protectionism stemming from traditional political-economic forces. Whatever the cause, the new protectionism that emerged in 2008–09 was certainly not as bad as it might have been. Overall, by 2009 the stock of products affected by G-20 use of such TTBs had increased by 25 percent over those in place in 2007. Even this 25 percent increase in affected products in the aggregate is estimated to affect less than 0.3 percent of total trade.

On the other hand, it is also clear that the limited incidence of protectionism that did take place during the crisis was developing economy–centric in nature: it was disproportionately imposed by developing economies on developing economy exporters. Policy-imposing countries show substantial differences, with the largest increases in

new TTBs being imposed by developing economies such as Argentina, India, Indonesia, and Turkey. In many instances, the new TTBs continue a precrisis trend of affecting South-South trade: in particular, 68 percent of the stock of 2009 TTBs that developing-economy users had in place were imposed on imports from other developing economies. In the aggregate, 1.3 percent of the 2007 value of developing-economy exports to G-20 developing economies would be subject to new TTBs in 2008–09. This percentage is almost twice as much as the only 0.7 percent of developing-economy exports to G-20 high-income economies that would subsequently be subjected to newly imposed TTBs during the crisis.

One interpretation of these data from the crisis era is that the world trading system somehow better shielded exports from developing economies to the higher-income markets from protectionism. The access of developing-country exporters to markets in high-income economies turned out to be more "secure" than their access to markets in other developing economies. Improving the security of market access associated with South-South trade is an important agenda item for the trading system. One policy implication is the possibility of providing developing-country exporters better access to the WTO dispute settlement system to continue to open up desired markets in other developing economies.[16]

Furthermore, China's exporters present a special case for consideration. Overall, imports sourced from China accounted for 80 percent of the total value of trade on which the G-20 imposed new TTBs in 2008–09. The stock of products exported from China subject to G-20 use of these TTBs in 2009 increased 40 percent relative to precrisis level of 2007. The new TTBs in 2008–09 affected more than US$20 billion worth of China's exports, or almost 2 percent of its (precrisis) 2007 level of exports. The fact that China's exports are subject to TTBs is not a new crisis-era phenomenon (Bown 2010c), but it is one that may have been heightened by the crisis. In part, the endogeneity of the G-20 policy response is likely affected by China's continued export successes even during the crisis.

Finally, it is worth noting that the final cross-country pattern as well as the depth of the new crisis-era protectionism is not yet completely known. Notwithstanding the possibility of a further deepening of the global economic recession begun in 2008 that may lead to a substantial increase in the flow of new government-conducted TTB investigations, the amount and distribution of G-20 import protection after the crisis will be the result of two yet-to-be-resolved policy questions. First, the postcrisis stock of TTBs will partly reflect dozens of forthcoming government policy-making decisions over whether to

impose new TTBs that have yet to be concluded. Second, the postcrisis stock of TTBs that we have described throughout is only "temporary" if they are someday *removed*. Policy makers will ultimately be responsible for how the postcrisis trading system responds to the TTBs now imposed—whether they are removed through WTO dispute settlement or countries' adherence to sunset reviews and safeguards expirations—and this too will also substantially affect the legacy of crisis-era protectionism.[17]

Notes

1. In our discussion of separate estimates using the overall trade restrictiveness index (OTRI) and market access overall trade restrictiveness index (MA-OTRI) described later, we also examine the impact of the limited incidence of increases in applied tariffs. Nevertheless, aside from antidumping, countervailing duties, and safeguards, we do not examine the potential trade impact of other examples of "murky" nontariff barriers to trade taking place during the crisis (Baldwin and Evenett, 2009; Evenett, Hoekman, and Cattaneo, 2009). For example, we leave to future work the more difficult task of assessing the trade impact of subsidies or government bailouts during the crisis, many of which are captured in the Global Trade Alert (Evenett 2009) database.

2. This chapter draws heavily from two separate pieces of research to which the reader should refer for more detailed discussion, especially regarding methodology. See Bown (2010b) and Kee, Neagu, and Nicita (2010).

3. Baldwin (2009) presents a set of early research examining likely culprits behind the trade collapse of 2008–09, most of the evidence pointing toward an adverse demand shock. See also Freund (2009a, 2009b).

4. Antidumping has historically been the most prevalent of these four policy instruments (Prusa 2001; Zanardi 2004). As such, there is well-established theoretical and empirical literature examining determinants and impacts of the use of antidumping across countries. Recent empirical contributions, including examinations of developing economies, using detailed data provided in early versions of the Temporary Trade Barriers Database include Egger and Nelson (forthcoming), Moore and Zanardi (2009), Vandenbussche and Zanardi (2010), Bown (2008), Reynolds (2009), and Bown and Tovar (forthcoming). For a survey of the literature on antidumping, see Blonigen and Prusa (2003).

5. The yearly stock is computed through examination of all initiated investigations, the dates of imposition of the first trade barriers during (preliminary) or at the end of a (completed) investigation, and the date of removal for investigations. There are roughly 5,000 six-digit HS product categories per importing economy.

6. The twelve G-20 members included in figures 6.1 and 6.2 are Argentina, Australia, Brazil, Canada, China, European Union, India, Indonesia, the Republic of Korea, South Africa, Turkey, and the United States. G-20 economy member and TTB user Mexico is not included in the aggregated figures 6.2 and 6.3 for reasons described below. Japan, the Russian Federation, and Saudi Arabia are the only G-20 economies not represented in the analysis of the use of these temporary trade barriers since they did not actively use such policies during this time period. G-20 member countries France, Germany, Italy, and the United Kingdom are not included separately because their trade policy is determined by the European Union, the 20th member of the G-20. Even though many of these economies' use of TTBs started much earlier, we begin in 1997 because that is the time period in which each of the 12 G-20 economies in the sample were using at least one of their TTB policies, China being the last of the 12 as it adopted use of antidumping in 1997.

7. A third factor is that the set of underlying policies is also not identical, since figure 6.2 includes the products affected by the use of the global safeguards policy whereas figure 6.3 does not.

8. Just as in figure 6.3, figures 6.4 and 6.5 are again limited to capturing only these economies' use of the three exporting-country specific policies (antidumping, countervailing duties, and China-specific safeguards) and thus the figures omit any use of global safeguards.

9. Niels and Francois (2006) provide an empirical analysis of Mexico's earlier antidumping use. See also Finger and Nogués (2005).

10. Knetter and Prusa (2003) link macroeconomic determinants such as recessions and exchange rate fluctuations to the earlier use of antidumping by Australia, Canada, the EU, and the United States.

11. While comparable to the first estimates of this issue contained in table 7.4 of Bown (2009a), these figures are "improved" estimates of potential impacts for the following reasons. First, whereas the results in Bown (2009a) covered all newly initiated investigations between first quarter (1Q) 2008 through 1Q 2009, this table reports all temporary trade barriers imposed (preliminary and final) between 1Q 2008 and 4Q 2009. Second, the results in Bown (2009a) were estimated from 6-digit Harmonised System (HS) level data, whereas the results above are computed from actual tariff line import data (at the 8,9,10, or 12 digit level, depending on the reporting convention to UN Comtrade of the importing economy).

12. When comparing the magnitude and distribution of the estimated trade impacts of crisis-era policies, we should note that the exercises reported here drawing from Kee, Neagu, and Nicita (2010) and Bown (2010b) are not strictly comparable for a number of subtle, data-driven reasons. First, in constructing estimates for potential trade impact, Bown uses 2007 import data while Kee, Neagu and Nicita use 2008 import data. Second, Bown does not examine tariff changes but does examine antidumping, countervailing duties, global safeguards, and China-specific safeguards, while Kee, Neagu, and Nicita examine tariff changes and antidumping (but not countervailing duties, global safeguards, and China-specific safeguards). Third, Bown relies on policies imposed in all of 2008 and 2009, whereas Kee, Neagu, and Nicita examine tariff and antidumping duties imposed between June 2008 and September 2009 only. Despite these slight differences in approach, the results are broadly consistent in magnitude of effects across policy-imposing economies and the distribution of the incidence across exporting countries.

13. Turkey is one of the few economies for which newly imposed global safeguards may have also had a large trade impact during the crisis, and these are not captured in the OTRI estimates of table 6.3. While such policies are captured in table 6.2, the table 6.2 estimates would not capture the impact of Turkey's new tariff impositions in the agricultural sector that are captured in table 6.3.

14. These results would be reinforced by inclusion of estimates of the September 2009 U.S. imposition of the China-specific safeguard on imports of Chinese tires.

15. To be consistent with the analysis presented above, again we exclude Mexico and thus focus on the other 12 major TTB-using G-20 economies.

16. Bown (2009b) presents a set of proposals describing how developing-country exporters might use WTO dispute settlement to better secure their access to other developing-country markets.

17. While safeguards have typically been removed as scheduled, the evidence on timely removals for antidumping is much less convincing (Moore 2006; Cadot, de Melo, and Tumurchudur 2007).

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